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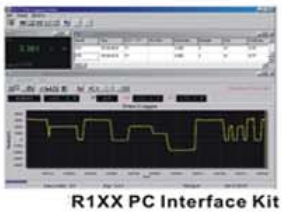
GPS-290P
3-PHASE POWER CLAMP METER

KWHr Recording & 3-Phase Unbalanced-Load Power Made Handy
Easy Display-Guide On Both 3-Wire and 4-Wire Unbalanced-Load Measurements

Features:

- Light weight & stylish; 45mm Large jaws opening
- 1000A AC clamp-on + multimeter ranges
- 600VAC/DC input protection on all functions
- AC True RMS Voltage and current fucntions
- Balanced-load 3-phase / 1-phase power W,VA & VAR measurements
- Dual display power factor(PF) & A-Lags-V phase-shift indication
- Unbalanced-load 3-phase 3-wire / 4-wire power W (with memory recall)
- KWHr recording function (with memory recall)
- ACV and ACA + Dual display total harmonic distortion-Fundamental THD%-F
- Back-lighted LCD display
- Automatic selection of DCV, ACV & ACA measurements (Auto V.A)
- Fast PEAK-rms hold (65ms to 90%) for In-rush ACA & ACV reading
- PC-Comm (optical isolated PC interface capability)
- Software kit for win95/98/ME/2000/XP
- Data hold function
- 5Hz ~ 500Hz line frequency measurement
- DCV & ACV 0.1V to 600.0V
- ACA 0.01A to 1000A non-invasive current measurement
- Ohm 0.1Ω to 999.9Ω
- Fast audible continuity
-Battery cover with probe holders
- Rugged fire-retarded casing
- Trainsient protection 96KV 1.2/50μS lightning surge
- LVD EN61010-2-032 CAT III 600V
- EMC EN61326(1997/1998A1) / EN61000-4-2(1995/2000A2) / EN61000-4-3(2002)



R1XX PC Interface Kit

GENERAL POLYTRONIC SYSTEMS LIMITED.
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GENERAL SPECIFICATION

Display :
Voltage functions: 6000 counts LCD display
Power, Ohm & Hz functions: 9999 counts LCD display
ACA clamp-on function: 4000 counts LCD display
Update Rate :
Power function: 2 per second nominal
Voltage, ACA clamp-on & Ohm functions: 2 per second nominal
Hz function: 1 per second nominal
Polarity : Automatic
Low Battery : Below approx. 2.4V
Operating Temperature : 0°C to 40°C
Relative Humidity : Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 40°C
Altitude : Operating below 2000m
Storage Temperature : -20°C to 60°C, < 80% R.H. (with battery removed)

Temperature Coefficient : nominal 0.15 x (specified accuracy)/°C @(0°C -18°C or 28°C -40°C), or otherwise specified
Sensing : True RMS sensing
Safety : Meets IEC61010-2-032(2002), EN61010-2-032(2002), UL61010B-2-032(2003)
Measurement Category : III 600 Volts ac & dc
Transient protection : 6.5kV (1.2/50μs surge)
Pollution degree : 2
E.M.C. : Meets EN61326(1997, 1998/A1), EN61000-4-2(1995, 2000/A2), and EN61000-4-3(2002)
In an RF field of 3V/m:
Total Accuracy = Specified Accuracy + 50 digits
Performance above 3V/m is not specified
Overload Protections :
ACA Clamp-on jaws : AC 1000A rms continuous
+ & COM terminals (all functions) : 600VDC/VAC rms
Power Supply : standard 1.5V AAA Size (NEDA 24A or IEC LR03) battery X 2

Power Consumption :
Voltage, ACA, Hz & Power functions: 11mA typical
Ohm function: 5.5mA typical
APO Timing : Idle for 30 minutes
APO Consumption : 4μA typical
Dimension : L224mm X W78mm X H40mm
Weight : 224 gm approx
Jaw opening & Conductor diameter : 45mm max
Special features : Backlighted display; AutoVA™ (Auto Selection on ACV, DCV or ACA functions); selectable Power parameters of W, VAR & VA with Total Power Factor in dual-display; Total harmonic distortion THD%-F in dual-display; kWHr Recording; Display Hold; PEAK-rms HOLD; PC-Comm computer interface capabilities
Accessories : Test leads (pair), batteries installed, user's manual & soft carrying pouch
Optional accessories : PC interface kit including (A-1XX optical adapter back, BC-100R cable & Bs157 software CD)

ELECTRICAL SPECIFICATION

Accuracy is ± (% reading digits + number of digits) or otherwise specified, at 23 °C ± 5 °C & less than 75% R.H.

True RMS ACV & ACA clamp-on accuracies are specified from 0% to 100% of range or otherwise specified. Maximum Crest Factor are as specified below, and with frequency spectrums, besides fundamentals, fall within the meter specified AC bandwidth for non-sinusoidal waveforms. Fundamentals are specified at 50Hz and 60Hz.

AC Voltage

RANGE	Accuracy
50Hz / 60Hz	
600.0V	0.5% + 5d
45Hz ~ 500Hz	
600.0V	1.5% + 5d
500Hz ~ 3.1kHz	
600.0V	2.5% + 5d

CMRR : >60dB @ DC to 60Hz, Rs=1kΩ
Input Impedance: 2MΩ, 30pF nominal
Crest Factor: < 2.3 : 1 at full scale & < 4.6 : 1 at half scale
ACV AutoVA™ Threshold: 30VAC (40Hz ~ 500Hz only) nominal

ACA Current (Clamp-on)

RANGE	Accuracy [1] [2]
50Hz / 60Hz	
40.00A, 400.0A, 1000A	1.0% + 5d
45Hz ~500Hz	
40.00A, 400.0A	2.0% + 5d
1000A	2.5% + 5d
500Hz ~ 3.1kHz	
40.00A, 400.0A	2.5% + 5d
1000A	3.0% + 5d

ACA AutoVA™ Threshold: 1A AC (40Hz ~ 500Hz only) nominal
Crest Factor:
< 2.5 : 1 at full scale & < 5.0 : 1 at half scale for 40.00A & 400.0A ranges
< 1.4 : 1 at full scale & < 2.8 : 1 at half scale for 1000A range
[1]Induced error from adjacent current-carrying conductor: < 0.06A/A
[2]Specified accuracy is from 1% to 100% of range and for measurements made at the jaw center. When the conductor is not positioned at the jaw center, position errors introduced are:
Add 1% to specified accuracy for measurements made WITHIN jaw marking lines (away from jaw opening)
Add 4% to specified accuracy for measurements made BEYOND jaw marking lines (toward jaws opening)

THD%-F

RANGE	Harmonic order	Accuracy [1]
0.0% ~50.0%	Fundamental	1.5% + 6d
	2nd ~ 3rd	7% + 6d
	4th ~ 21st	2.5% + 6d [2] [3]
	22nd ~ 51st	10% + 10d [4]
50.0% ~100%	2nd ~ 3rd	Unspecified
	4th ~ 21st	2.5% + 6d [5] [6]
	22nd ~ 51st	10% + 10d [4]
100% ~450% [7]	2nd ~ 3rd	Unspecified
	4th ~ 21st	7% + 6d [2] [4]
	22nd ~ 51st	Unspecified

THD%-F is defined as: (Total Harmonic RMS / Fundamental RMS) x 100%
[1]Accuracy specified @ fundamental ≥ 70V & Total RMS ≤ 600V for ACV THD%-F, fundamental ≥ 6A & Total RMS ≤ 1000A for ACA THD%-F, and Crest Factors @ :
< 2.5 for 600V Range
< 2.5 for 40A Range
< 3.0 for 400A Range
< 1.6 for 1000A Range
[2]Add 4d to specified accuracy @ 40A Range
[3]Add 4.5% to specified accuracy @ 1000A range
[4]Unspecified @ 1000A range
[5]Add 1% + 4d to specified accuracy @ 40A Range
[6]Add 4.5% to specified accuracy @ 400A ~ 750A; unspecified @ > 750A
[7]~150% for 600V Range

PEAK-rms HOLD (ACA & ACV only)

Response: 65ms to >90%

Frequency

RANGE	Accuracy
5Hz ~ 500Hz	0.5%+4d

Sensitivity (Sine RMS)
40A range: > 4A
400A range: > 40A
1000A range: > 400A
600V range: > 30V

DC Voltage

RANGE	Accuracy
600.0V	0.5% + 5d

NMRR : >50dB @ 50/60Hz
CMRR : >120dB @ DC, 50/60Hz, Rs=1kΩ
Input Impedance: 2MΩ, 30pF nominal
DCV AutoVA™ Threshold: 2.4VDC nominal

Ohms

RANGE	Accuracy
999.9Ω	1.0% + 6d

Open Circuit Voltage : 0.4VDC typical

Audible Continuity Tester

Audible threshold: between 10Ω and 300Ω.
Response time: 250μs

Single-Phase & 3-Phase Balanced-Load Power

RANGE	Accuracy [1] [2] [3]		
0 ~ 600.0kVA	**F ~ 10th**	**11th ~ 45th**	**46th ~ 51st**
@ PF = 0.99 ~ 0.1	2.0%+6d	3.5%+6d	5.5%+6d

RANGE	Accuracy [1] [2] [4]			
0 ~ 600.0kW / kVAR	**F ~ 10th**	**11th ~ 25th**	**26th ~ 45th**	**46th ~ 51st**
@ PF = 0.98 ~ 0.70	2.0%+6d	3.5%+6d	4.5%+6d	10%+6d
@ PF = 0.70 ~ 0.50	3.0%+6d			
@ PF = 0.50 ~ 0.30	4.5%+6d			
@ PF = 0.30 ~ 0.20	10%+6d			15%+6d

[1]Specified accuracy is for ACA clamp measurement at the center of jaws. When the conductor is not positioned at the jaw center, position errors introduced are:
Add 1% to specified accuracy for ACA measurements made WITHIN jaw marking lines (away from jaw opening)
Accuracy is not specified for ACA measurement made BEYOND jaw marking lines (toward jaws opening)
[2]Add 4d to specified accuracy for 3-Phase Balanced-Load Power measurements.
[3]Add 1% to specified accuracy @ ACA fundamental < 6A or ACV fundamental < 90V. Accuracy is not specified @ ACA fundamental < 1A or ACV fundamental < 30V
[4]Add 1% to specified accuracy @ ACA fundamental < 6A or ACV fundamental < 90V. Accuracy is not specified @ ACA fundamental < 2A or ACV fundamental < 50V

Total Power Factor (PF)

RANGE	Accuracy [1]	
	F ~ 21st	**22nd ~ 51st**
0.10 ~ 0.99	3d	5d

[1]Specified accuracy @ ACA fundamental > 2A ; ACV fundamental > 50V

A-lags-V Indication:

LCD annunciator A-lags-V turns on to indicate an inductive circuit, or Current A lags Voltage V (i.e., phase-shift angle θ is +).
A-lags-V Indication is specified at 50/60Hz fundamental without the presence of harmonics, and at ACV > 90V, ACA > 9A and PF < 0.95

kWHr (kilo-Watt-Hour Energy)

Time base accuracy: < 30ppm
Non-volatile memory: Separately stores one 3-Phase-Balanced-Load and one Single-Phase result

3-Phase Unbalanced-Load Power

This 3-Phase Unbalanced-Load Power measurement is achieved thru the calculation of discrete single-phase measurements that are taken one at a time manually. Since it is not real-time on all 3 phases simultaneously, it is intended only for stable power conditions without significant power fluctuations over the time of measurements. Result accuracy is hence the accumulated accuracy of the discrete single-phase measurements plus the associated fluctuations.

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