3 Phase Power Meter / Data Logger Kit

Model LDW-6093K

The LDW-6093K is a complete hand held 3-phase power meter kit, that supports data logging to SD memory card. The versatile meter measures a large number of power parameters for single phase or 3-phase systems. The meter has a multi-line LCD display showing all measured power parameters, and can be configured to record all its measurements to an SD memory card. Recording time intervals range from 2 seconds to 2 hours, giving enough flexibility to capture short events or record data over a long period.

Parameters measured (single phase or 3 phase):

- Voltage (10 to 600V AC)
- Current (individual per phase and total – 0.2A to 1200A AC using supplied current clamps, or ranges from 20A to 3000A using optional current probes)
- True Power (kW - individual per phase & total)
- Energy (kWh - individual per phase & total)
- Power Factor (individual and average)
- Apparent Power (KVA)
- Reactive Power (KVAR)
- Phase Angle

Measurements are true RMS and take into account the power factor.

The LDW-6093K also includes a full licence of the sophisticated graphing software *DPlot*, which makes it easy to open the data files saved by the unit and generate graphs of the measured parameters. This software is a general purpose graphing and analysis tool, so it can be used for other jobs as well.

The complete kit includes the meter, mains adaptor, 3 clamp-on current transformers (switchable range), 4 voltage leads with alligator clips, 2GB SD card, DPlot graphing software CD, SD card-USB adaptor, and a soft carry case.

Other current transformers available for use with this instrument include the LCP-3000 flexible Rogowski coil, with a range of 30 / 300 / 3000A (available separately) or any CT with a voltage output of 0.2, 0.3, 0.5, 1, 2 or 3 volts.

Typical applications

- **Spot checking** all power parameters, including voltage, current, power, power factor, KVA
- Monitoring over a period of time for **peak demand** (by using the data logging function with a short time interval)
- Checking overall **energy usage** over a period of time (using the data logging function with a longer time interval)
- Recording **voltage dips and highs** from the incoming mains (but not short transients)
- **Energy saving** studies – to help identify what is using the most energy within a site
- On site **demonstrations** of energy saving systems and appliances – show the customer the actual energy savings on their own site!

Specifications – LDW-6093K

Display	* LCD Size: 81.4 X 61 mm (3.2 X 2.4 inch) * Dot Matrix LCD (320 X 240 pixels) with back light	
Measurements	ACV, ACA, AC WATT (True Power) AC WATT(Apparent Power) AC WATT(Reactive Power) Power factor Phase angle Frequency	
Cable connections	1Phase/2Wire, 1Phase/3Wire, 3Phase/3Wire, 3Phase/4Wire	
Voltage ranges	10V AC to 600V AC, auto range.	
Current ranges	Current probe input signal voltage (ACV): 200mV / 300mV / 500mV / 1V / 2V / 3V (manual selection) Current probe measurement range (ACA): 20 A / 200A / 2000A (1200 A) / 30A / 300A / 3000A (manual sel)	
Safety standard	IEC1010 CAT III 600 V	
ACV input impedance	10 Megohms	
Current Clamp Frequency Response	40 Hz to 1 KHz	
AC frequency coverage	45 to 65 Hz.	
Overload protection	ACV	720V AC rms
	ACA	1300A AC with clamp probe CP-1200
Over Indicator	Shows " OL ", recorded data shows “9999” or “999”	
Under Indicator	Shows " UR ", recorded data shows “9999” or “999”	
Data Hold	Freezes the display reading	
Data Record	SD Card Recording of all measured parameters	
Sampling Time	Approx. 1 second	
Power ON/OFF	Manual OFF by push button	
Real time data logger	Real time data logger, saves the measured data into SD memory card along with date/time stamps. Format compatible with Microsoft Excel, and DPlot graphing software	
	Sampling time for data logger: 2 seconds to 7200 seconds, user selectable in 2 second increments.	
USB/RS232 Computer interface	RS232 computer serial interface: Connect the optional USB or RS232 cable plug, to receive measurements in real-time to a PC running optional real-time software package.	
Operating Temperature	0 to 50 °C (0 to 122 °F).	
Operating Humidity	Less than 80% R.H.	
Power Supply	DC 1.5V, AA (UM-3) Battery X 8 PCs (Alkaline or heavy duty battery) for short term measurements AC to DC 9V mains adapter included	
Power Consumption	Meter: 300 mA DC / Clamp: 34mA DC	
Clamp max. conductor size	50 mm (2.0 inch) Dia. (for included clamps CP-1201)	
Weight	Meter: 948g (includes batteries) / Clamp: 467g (includes cables)	
Dimensions	Meter : 225 X 125 X 64 mm (8.86 X 4.92 X 2.52 inch)	
	Clamp : 210 X 64 X 33mm (8.3 X 2.5 X 1.3 inch)	
	Clamp Jaw : 86 mm (3.4 inch)- outside	
Accessories Included	Instruction manual Test Leads (LTL88-4AT) Alligator clips (LTL88-4AC) Clamp-on Current Transformer (LCP-1201) AC to DC 9V adapter SD card (2GB) SD card to USB adaptor DPlot Software CD	1 piece 1 Set (4 pieces) 1 Set (4 pieces) 3 pieces 1 piece 1 piece 1 piece 1 piece
	Carrying bag	1 piece
Optional Accessories	Flexible 3000A Rogowski current probe, LCP-3000 USB Cable , LUSB-01 RS232 cable, LUPCB-02 Data Acquisition software, LSW-U811-WIN	

Note: Product appearance and specifications are subject to change without notice. E&OE.

Electrical Specifications – LDW-6093K

ACV

Range	*Resolution*	*Accuracy*
10.0V to 600.0V (*Phase to neutral line*)	0.1V	± (0.5%+0.5V)
10.0V to 600.0V (*Phase to phase*)		

ACA

Range	*Resolution*	*Accuracy*
20A	0.001A/0.01A	± (0.5%+0.1A)
200A	0.01A/0.1A	± (0.5%+0.5A)
1200A	0.1A/1A	± (0.5%+5A)

Power factor and Φ (Phase angle)

Range	*Resolution*	*Accuracy*
0.00 to 1.00 power factor	0.01	±0.04
-180° to 180° phase angle	0.1°	± 1° * ACOS(PF)
Measures PFH (long term power factor average). Measures PF∑ (average power factor across phases).		

Frequency

Range	*Resolution*	*Accuracy*
45 to 65 Hz	0.1 Hz	0.1 Hz

Real Power

Range	*Resolution*	*Accuracy*
0.000 to 9.999 KW	0.001- 0.1 KW*	± (1%+0.008 KW)
10.00 to 99.99 KW	0.01-0.1 KW*	± (1%+0.08 KW)
100.0 to 999.9 KW	0.1 KW	± (1%+0.8 KW)
1.000 to 9.999 MW	0.001 MW	± (1%+0.008 MW)

* The resolution varies according to the different current (ACA) ranges

Apparent Power

Range	*Resolution*	*Accuracy*
0.000 to 9.999 KVA	0.001-0.1 KVA*	± (1%+0.008 KVA)
10.00 to 99.99 KVA	0.01-0.1 KVA*	± (1%+0.08 KVA)
100.0 to 999.9 KVA	0.1 KVA	± (1%+0.8 KVA)
1.000 to 9.999 MVA	0.001 MVA	± (1%+0.008 MVA)

* The resolution varies according to the different current (ACA) ranges

Reactive Power

Range	*Resolution*	*Accuracy*
0.000 to 9.999 KVAR	0.001-0.1 KVAR*	± (1%+0.008 KVAR)
10.00 to 99.99 KVAR	0.01-0.1 KVAR*	± (1%+0.08 KVAR)
100.0 to 999.9 KVAR	0.1 KVAR	± (1%+0.8 KVAR)
1.000 to 9.999 MVAR	0.001 MVAR	± (1%+0.008 MVAR)

* The resolution varies according to the different current (ACA) ranges

Watt Hour (Real Energy) : WH

Range	*Resolution*	*Accuracy*
0.000 to 9.999 KWH	0.001 KWH	± (2%+0.008 KWH)
10.00 to 99.99 KWH	0.01 KWH	± (2%+0.08 KWH)
100.0 to 999.9 KWH	0.1 KWH	± (2%+0.8 KWH)
1.000 to 9.999 MWH	0.001 MWH	± (2%+0.008 MWH)

VA Hour (Apparent Energy) : SH

Range	*Resolution*	*Accuracy*
0.000 to 9.999 KVAH	0.001 KVAH	± (2%+0.008 KVAH)
10.00 to 99.99 KVAH	0.01 KVAH	± (2%+0.08 KVAH)
100.0 to 999.9 KVAH	0.1 KVAH	± (2%+0.8 KVAH)
1.000 to 9.999 MVAH	0.001 MVAH	± (2%+0.008 MVAH)

VAR Hour (Reactive Energy) : QH

Range	*Resolution*	*Accuracy*
0.000 to 9.999 KVARH	0.001 KVARH	± (2%+0.008 KVARH)
10.00 to 99.99 KVARH	0.01 KVARH	± (2%+0.08 KVARH)
100.0 to 999.9 KVARH	0.1 KVARH	± (2%+0.8 KVARH)
1.000 to 9.999 MVARH	0.001 MVARH	± (2%+0.008 MVARH)

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