

**3 phase/4 wire, 3 phase/3 wire, RS232/USB  
1 phase/2 wire, 1 phase/3 wire, SD card data recorder**

# 3 PHASE POWER ANALYZER

Model : DW-6093

ISO-9001, CE, IEC1010



Clamp Probes, A1, A2, A3  
CP-1201



**LUTRON ELECTRONIC**

***The Art of Measurement***

# 3 PHASE POWER ANALYZER

**Model : DW-6093**
**FEATURES**

|                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| * Analysis for 3 phase multi-power system, 1P/2W, 1P/3W, 3P/3W, 3P/4W                                                                                                                                                                                                                                                                                             |
| * Voltage & Current are the True RMS value.                                                                                                                                                                                                                                                                                                                       |
| * True Power ( KW · MW · GW ) measurement.                                                                                                                                                                                                                                                                                                                        |
| * Apparent Power ( KVA · MVA · GVA ) measurement.                                                                                                                                                                                                                                                                                                                 |
| * Reactive Power ( KVAR MVAR · GVAR ) measurement.                                                                                                                                                                                                                                                                                                                |
| * Watt-Hour ( WH · SH · QH · PFH ).                                                                                                                                                                                                                                                                                                                               |
| * Power Factor( PF ) · Phase Angle( Φ ).                                                                                                                                                                                                                                                                                                                          |
| * Voltage measurement range : 10 to 600 ACV                                                                                                                                                                                                                                                                                                                       |
| * Current probe input signal voltage ( ACV ) : 200 mV/300 mV/500 mV/1 V/2 V/3 V.                                                                                                                                                                                                                                                                                  |
| Current probe input current range ( ACA ) : 20 A/200 A/2000 A ( 1200 A )/30 A/300A/3000 A.                                                                                                                                                                                                                                                                        |
| * Meter can cooperate the universal current probe.                                                                                                                                                                                                                                                                                                                |
| * Programmable CT ratio (1 to 600) and PT ratio (1 to 1000).                                                                                                                                                                                                                                                                                                      |
| * ACV input impedance is 10 Mega ohms.                                                                                                                                                                                                                                                                                                                            |
| * Safety Standard : IEC 1010, CAT III 600V                                                                                                                                                                                                                                                                                                                        |
| * Built-in clock and Calendar, real time data record with SD memory card , sampling time set from 2 to 7200 seconds. Just slot in the SD card into the computer, it can down load the all the measured value with the time information ( year/month/data/ hour/minute/second ) to the Excel directly, then user can make the further data analysis by themselves. |
| * Complete set with 4 PCs Test Leads, 4 PCs Alligator clips, 3 PCs Clamp Probe ( CP-1201 ), AC to DC 9V adapter, 2 G SD memory card and Carrying bag.                                                                                                                                                                                                             |
| * Computer data output, can cooperate with USB Cable /USB-01 RS232 cable/UPCB-02 and Data Acquisition software, SW-U811-WIN.                                                                                                                                                                                                                                      |

**GENERAL SPECIFICATIONS:**

|                                      |                                                                                                                                                                                                                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Circuit                              | Custom one-chip of microprocessor LSI circuit.                                                                                                                                                                                                                                                          |
| Display                              | * LCD Size : 81.4 X 61 mm ( 3.2 X 2.4 inch )<br>* Dot Matrix LCD (320 X 240 pixels ) with back light.                                                                                                                                                                                                   |
| Measurement                          | * ACV<br>* ACA<br>* AC WATT ( True Power )<br>AC WATT( Apparent Power )<br>AC WATT( Reactive Power )<br>* Power factor<br>* Phase angle<br>* Frequency                                                                                                                                                  |
| Wire connections                     | 1P/2W, 1P/3W, 3P/3W, 3P/4W.                                                                                                                                                                                                                                                                             |
| Voltage ranges                       | 10 ACV to 600 ACV, auto range.                                                                                                                                                                                                                                                                          |
| Current probe input signal and range | * Current probe input signal voltage ( ACV ) : 200mV/300mV/500mV/1V/2V/3V.<br>* Current probe input current range ( ACA ) : 20 A/200A/2000A (1200 A)/30A/300A/3000A<br>* Meter can cooperate the universal current probe.                                                                               |
| Safety standard                      | IEC1010 CAT III 600 V.                                                                                                                                                                                                                                                                                  |
| ACV input impedance                  | 10 Mega ohms.                                                                                                                                                                                                                                                                                           |
| Range select                         | ACV Auto range.<br>ACA Manual range.                                                                                                                                                                                                                                                                    |
| Clamp frequency response             | 40 Hz to 1 KHz.                                                                                                                                                                                                                                                                                         |
| Spec. tested frequency               | 45 to 65 Hz.                                                                                                                                                                                                                                                                                            |
| Over load protection                 | ACV 720 ACV rms<br>ACA 1300 ACA with clamp probe<br>* For the Clamp ,CP-1201                                                                                                                                                                                                                            |
| Over Indicator                       | * LCD display show " OL ".<br>* The data save into the SD card will show " 9999 " or " 999 " ( overlap the decimal point ).                                                                                                                                                                             |
| Under Indicator                      | * LCD display show " UR ".<br>* The data save into the SD card will show " 9999 " or " 999 " ( overlap the decimal point ).                                                                                                                                                                             |
| Data Hold                            | Freeze the display reading.                                                                                                                                                                                                                                                                             |
| Data Record                          | SD Card Record.                                                                                                                                                                                                                                                                                         |
| Sampling Time                        | Approx. 1 second.                                                                                                                                                                                                                                                                                       |
| Power ON/OFF                         | Manual OFF by push button.                                                                                                                                                                                                                                                                              |
| Real time data logger                | * Real time data logger, saved the data into SD memory card and down load the all the measured value with the time information ( year/month/data/ hour/minute/second ) down load to the Excel<br>* Sampling time for data logger : 2 seconds to 7200 seconds, the during of setting step are 2 seconds. |
| Data Output USB/RS232                | RS232 computer serial interface :                                                                                                                                                                                                                                                                       |
| * Computer interface                 | * Connect the optional USB cable USB-01 will get the USB plug.<br>* Connect the optional RS232 cable UPCB-02 will get the RS232 plug.                                                                                                                                                                   |
| Operating Temperature                | 0 to 50℃ ( 32 to 122℉ ).                                                                                                                                                                                                                                                                                |
| Operating Humidity                   | Less than 80% R.H..                                                                                                                                                                                                                                                                                     |
| Power Supply                         | * DC 1.5V, AA ( UM-3 ) Battery X 8 PCs (Alkaline or heavy-duty battery).<br>* AC to DC 9V power adapter.                                                                                                                                                                                                |
| Power Consumption                    | * Meter : 300 DCmA.<br>* Clamp : 34 DCmA.                                                                                                                                                                                                                                                               |
| Clamp max. conductor Size            | 50 mm ( 2.0 inch ) Dia.                                                                                                                                                                                                                                                                                 |
| Weight                               | * For the Clamp ,CP-1201<br>* Meter : 948g ( includes batteries )<br>* Clamp ( included cable ) : 467g                                                                                                                                                                                                  |
| Dimension                            | Meter : 225 X 125 X 64 mm ( 8.86 X 4.92 X 2.52 inch )                                                                                                                                                                                                                                                   |

\* Appearance and specifications listed in this brochure are subject to change without notice.

|                      |                                                                                                                                                                                                                                                         |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension            | Clamp : 210 X 64 X 33mm ( 8.3 X 2.5 X 1.3 inch )<br>Clamp Jaw : 86 mm (3.4 inch)- outside                                                                                                                                                               |
| Accessories Included | * Instruction manual..... 1 PC<br>* Test Leads (TL88-4AT).....1 Set (4 PCs)<br>* Alligator clips (TL88-4AC) 1 Set (4 PCs)<br>* Clamp Probe ( CP-1201 ).....3 PCs<br>* AC to DC 9V adapter..... 1 PC<br>* SD card ..... 1 PC<br>* Carrying bag..... 1 PC |
| Optional Accessories | * 2000 Amp current probe, CP-2000<br>* 200 Amp current probe, CP-200<br>* Flexible 3000 Amp current probe, CP-3000<br>* USB Cable , USB-01<br>* RS232 cable, UPCB-02<br>* Data Acquisition software, SW-U811                                            |

**ELECTRICAL SPECIFICATIONS:**
**ACV**

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

**ACA**

| Range | Resolution                      | Accuracy                                                   |
|-------|---------------------------------|------------------------------------------------------------|
| 20A   | 0.001A, < 10 A<br>0.01A, ≥ 10 A | Meter + CP-1201 ± (1 %+0.1A)<br>Meter only ± (0.5 %+0.02A) |
| 200A  | 0.01A, < 100 A<br>0.1A, ≥ 100 A | Meter + CP-1201 ± (1 %+0.5A)<br>Meter only ± (0.5 %+0.2A)  |
| 1200A | 0.1A, < 1000 A<br>1A, ≥ 1000 A  | Meter + CP-1201 ± (1 %+5A)<br>Meter only ± (0.5 %+2A)      |

**Power factor**

| Range                                           | Resolution | Accuracy |
|-------------------------------------------------|------------|----------|
| 0.00 to 1.00                                    | 0.01       | ± 0.04   |
| <b>Remark :</b>                                 |            |          |
| * <b>PFH</b> : Long term power factor           |            |          |
| * <b>PFZ</b> :                                  |            |          |
| For 3Φ 4W, 3Φ 3W<br>PFZ = ( PF1 + PF2 + PF3 )/3 |            |          |
| For 1Φ 3W<br>PFZ = ( PF1 + PF2 )/2              |            |          |

**Φ ( Phase angle )**

| Range         | Resolution | Accuracy          |
|---------------|------------|-------------------|
| -180° to 180° | 0.1°       | ± 1° *ACOS ( PF ) |

**Frequency**

| Range       | Resolution | Accuracy |
|-------------|------------|----------|
| 45 to 65 Hz | 0.1 Hz     | 0.1 Hz   |

**Active (Real) Power**

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

\* : The resolution is changed according the different ACA range.

**Apparent Power**

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

\* : The resolution is changed according the different ACA range.

**Reactive Power**

| Range               | Resolution          | Accuracy          |
|---------------------|---------------------|-------------------|
| 0.000 to 9.999 KVAR | *0.001/0.01/0.1KVAR | ± (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 is changed according the different ACA range.

**Watt Hour ( Active Power Hour ) : 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 Power Hour ) : 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 Power Hour ) : 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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