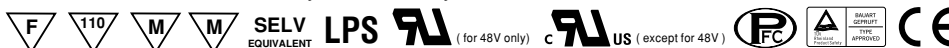




### ■ Features :

- Universal AC input / Full range
- Fully isolated plastic case with terminal block style of I/O
- Built-in constant current limiting circuit
- Adjustable output voltage and current level
- Protections: Short circuit/Over load/Over voltage/Over temperature
- Built-in active PFC function, comply with EN61000-3-2 class C ( $\geq 75\%$  load)
- UL1310 class 2 power unit
- Pass LPS
- Cooling by free air convection
- 100% full load burn-in test
- High reliability
- Suitable for LED lighting and moving sign applications
- Compliance to worldwide safety regulations for lighting
- 2 years warranty

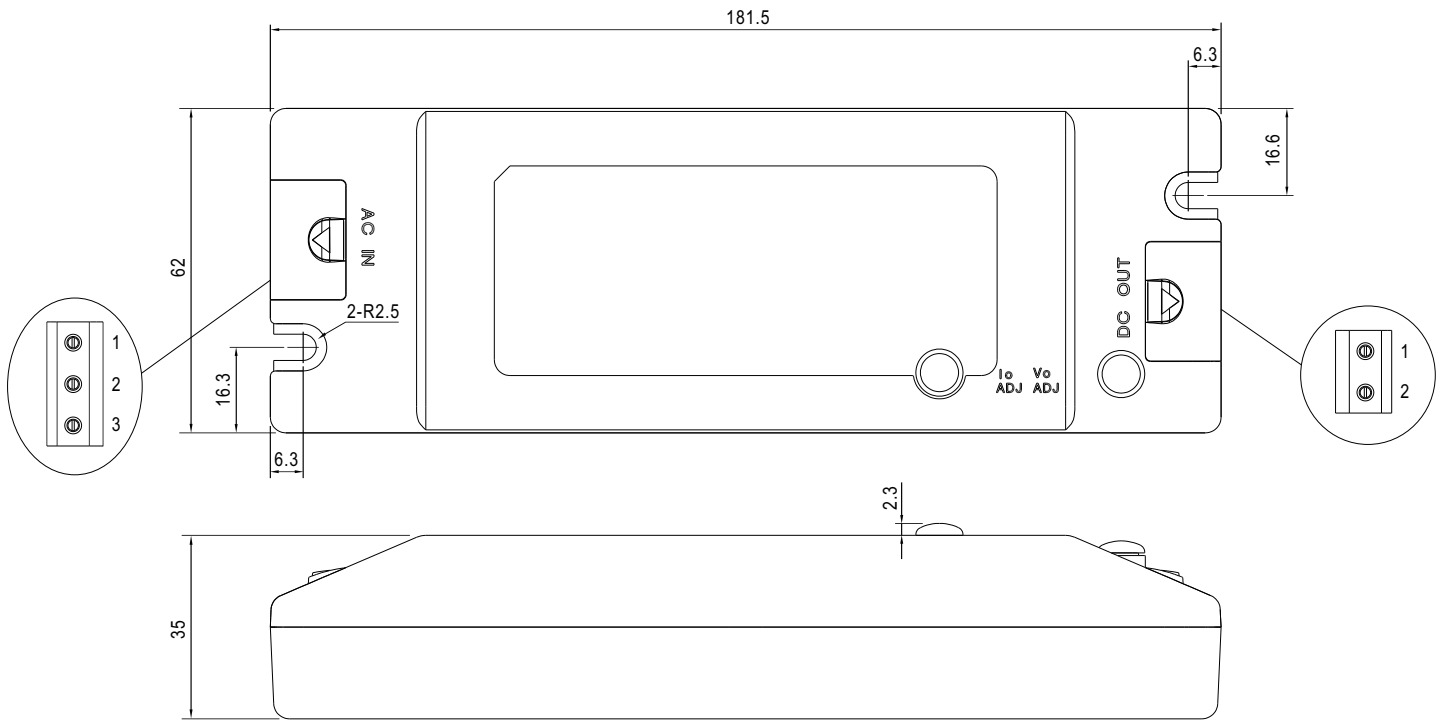


### SPECIFICATION

| MODEL           |  | PLC-45-12  | PLC-45-15    | PLC-45-20     | PLC-45-24      | PLC-45-27     | PLC-45-36      | PLC-45-48      |
|-----------------|--|--|--------------|---------------|----------------|---------------|----------------|----------------|
| OUTPUT          | DC VOLTAGE   | 12V  | 15V          | 20V           | 24V            | 27V           | 36V            | 48V            |
|                 | CONSTANT CURRENT REGION Note.6   | 9 ~ 12V  | 11.25 ~ 15V  | 15 ~ 20V      | 18 ~ 24V       | 20.25 ~ 27V   | 27 ~ 36V       | 36 ~ 48V       |
|                 | RATED CURRENT  | 3.8A   | 3A           | 2.3A          | 1.9A           | 1.7A          | 1.25A          | 0.95A          |
|                 | CURRENT RANGE  | 0 ~ 3.8A   | 0 ~ 3A       | 0 ~ 2.3A      | 0 ~ 1.9A       | 0 ~ 1.7A      | 0 ~ 1.25A      | 0 ~ 0.95A      |
|                 | RATED POWER  | 45.6W  | 45W          | 46W           | 45.6W          | 45.9W         | 45W            | 45.6W          |
|                 | RIPPLE & NOISE (max.) Note.2   | 2Vp-p  | 2.4Vp-p      | 1.8Vp-p       | 2.7Vp-p        | 2.7Vp-p       | 3.6Vp-p        | 4.6Vp-p        |
|                 | VOLTAGE ADJ. RANGE Note.5  | 11.5 ~ 13V   | 14.5 ~ 16.2V | 19.5 ~ 22V    | 24 ~ 26V       | 25 ~ 30V      | 32.5 ~ 39V     | 43.6 ~ 51.8V   |
|                 | CURRENT ADJ. RANGE Note.5  | 2.85 ~ 3.914A  | 2.25 ~ 3.1A  | 1.725 ~ 2.37A | 1.425 ~ 1.957A | 1.275 ~ 1.75A | 0.938 ~ 1.288A | 0.713 ~ 0.979A |
|                 | VOLTAGE TOLERANCE Note.3   | $\pm 10\%$   |              |               |                |               |                |                |
|                 | LINE REGULATION  | $\pm 3.0\%$  |              |               |                |               |                |                |
| LOAD REGULATION | $\pm 5.0\%$  |  |              |               |                |               |                |                |
| SETUP TIME      | 1500ms / 230VAC 3000ms / 115VAC at full load   |  |              |               |                |               |                |                |
| INPUT           | VOLTAGE RANGE Note.4   | 90 ~ 264VAC 127 ~ 370VDC   |              |               |                |               |                |                |
|                 | FREQUENCY RANGE  | 47 ~ 63Hz  |              |               |                |               |                |                |
|                 | POWER FACTOR   | PF $\geq 0.9$ at 75 ~ 100% load, 115VAC / 230VAC   |              |               |                |               |                |                |
|                 | EFFICIENCY(Typ.)   | 83.5%  | 85%          | 86.5%         | 86.5%          | 86.5%         | 87.5%          | 87.5%          |
|                 | AC CURRENT   | 0.55A/115VAC 0.25A/230VAC  |              |               |                |               |                |                |
|                 | INRUSH CURRENT(max.)   | 40A/230VAC   |              |               |                |               |                |                |
| LEAKAGE CURRENT | <0.75mA / 240VAC   |  |              |               |                |               |                |                |
| PROTECTION      | OVER CURRENT   | 95 ~ 110%  | 110% (max)   |               |                |               |                |                |
|                 | SHORT CIRCUIT  | Hiccup mode, recovers automatically after fault condition is removed.  |              |               |                |               |                |                |
|                 | OVER VOLTAGE   | 13.8 ~ 16V   | 17.5 ~ 21V   | 22.8 ~ 25V    | 28 ~ 32V       | 31 ~ 35V      | 41 ~ 46V       | 54 ~ 60V       |
|                 | OVER TEMPERATURE   | 95°C $\pm 10^\circ\text{C}$ (TSW1) detect on heatsink of power transistor<br>Protection type : Shut down o/p voltage, recovers automatically after temperature goes down |              |               |                |               |                |                |
| ENVIRONMENT     | WORKING TEMP.  | -30 ~ +50°C (Refer to output load derating curve)  |              |               |                |               |                |                |
|                 | WORKING HUMIDITY   | 20 ~ 95% RH non-condensing   |              |               |                |               |                |                |
|                 | STORAGE TEMP., HUMIDITY  | -40 ~ +80°C, 10 ~ 95% RH   |              |               |                |               |                |                |
|                 | TEMP. COEFFICIENT  | $\pm 0.03\%/^\circ\text{C}$ (0 ~ 50°C)   |              |               |                |               |                |                |
|                 | VIBRATION  | 10 ~ 500Hz, 2G 12min./1cycle, period for 72min. each along X, Y, Z axes  |              |               |                |               |                |                |
| SAFETY & EMC    | SAFETY STANDARDS   | UL1310 Class 2, TUV EN61347-1, EN61347-2-13, CAN/CSA C22.2 No. 223-M91(except for 48V) approved  |              |               |                |               |                |                |
|                 | WITHSTAND VOLTAGE  | I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FG:0.5KVAC  |              |               |                |               |                |                |
|                 | ISOLATION RESISTANCE   | I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH   |              |               |                |               |                |                |
|                 | EMI CONDUCTION & RADIATION   | Compliance to EN55015, EN55022 (CISPR22) Class B   |              |               |                |               |                |                |
|                 | HARMONIC CURRENT   | Compliance to EN61000-3-2 Class C ( $\geq 75\%$ load) ; EN61000-3-3  |              |               |                |               |                |                |
|                 | EMS IMMUNITY   | Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, EN61547, light industry level, criteria A   |              |               |                |               |                |                |
| OTHERS          | MTBF   | 515Khrs min. MIL-HDBK-217F (25°C)  |              |               |                |               |                |                |
|                 | DIMENSION  | 181.5*62*35mm (L*W*H)  |              |               |                |               |                |                |
|                 | PACKING  | 0.41Kg; 30pcs/13.3Kg/0.67CUFT  |              |               |                |               |                |                |
| NOTE            | <ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF &amp; 47uF parallel capacitor. Direct connecting to LEDs is not suggested for models with "RIPPLE &amp; NOISE" <math>&gt; \pm 10\%</math> and using additional drivers is highly recommended.</li> <li>3. Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>4. Derating may be needed under low input voltage. Please check the static characteristics for more details.</li> <li>5. Output voltage can be adjusted through the SVR1 on the PCB ; limit of output constant current level can be adjusted through the SVR2 on the PCB.</li> <li>6. Constant current operation region is within 75% ~ 100% rated output voltage. This is the suitable operation region for LED related applications, but please reconfirm special electrical requirements for some specific system design.</li> <li>7. The power supply is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-quality EMC Directive on the complete installation again.</li> </ol> |  |              |               |                |               |                |                |

■ Mechanical Specification

Case No.991A Unit:mm



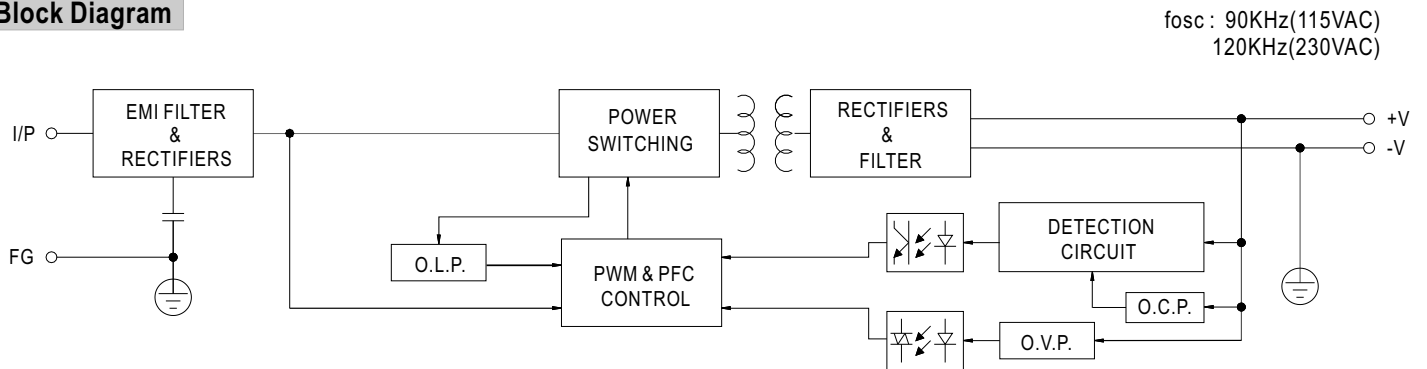
Terminal Pin No. Assignment (TB1):  
SWITCLAB MB310-75003

| Pin No. | Assignment |
|---------|------------|
| 1       | AC/L       |
| 2       | AC/N       |
| 3       | FG ⊕       |

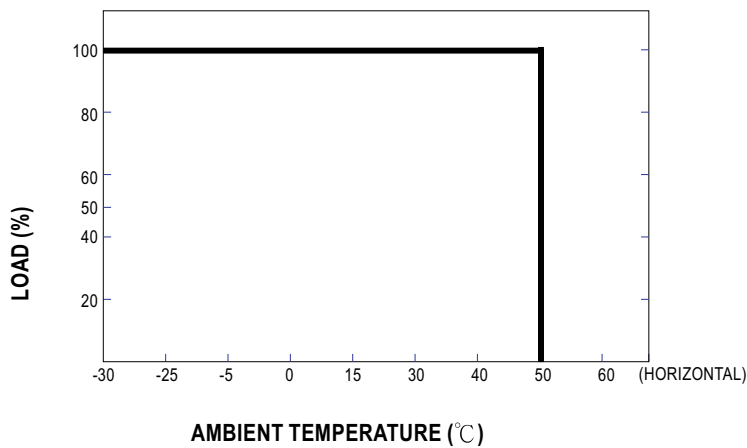
Terminal Pin No. Assignment (TB2):  
SWITCLAB MB310-75002

| Pin No. | Assignment |
|---------|------------|
| 1       | +V         |
| 2       | -V         |

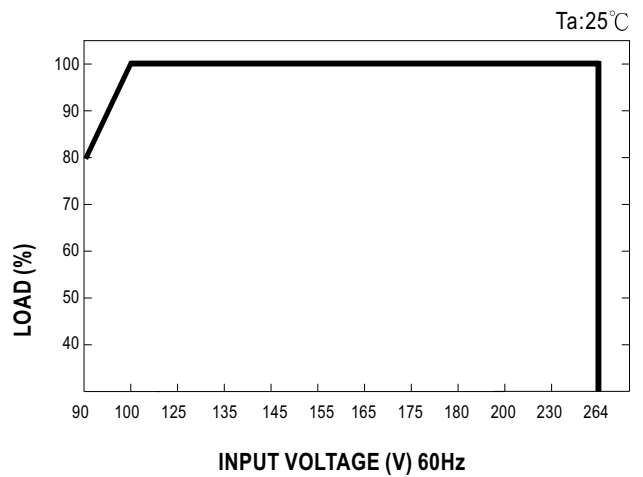
■ Block Diagram



■ Derating Curve

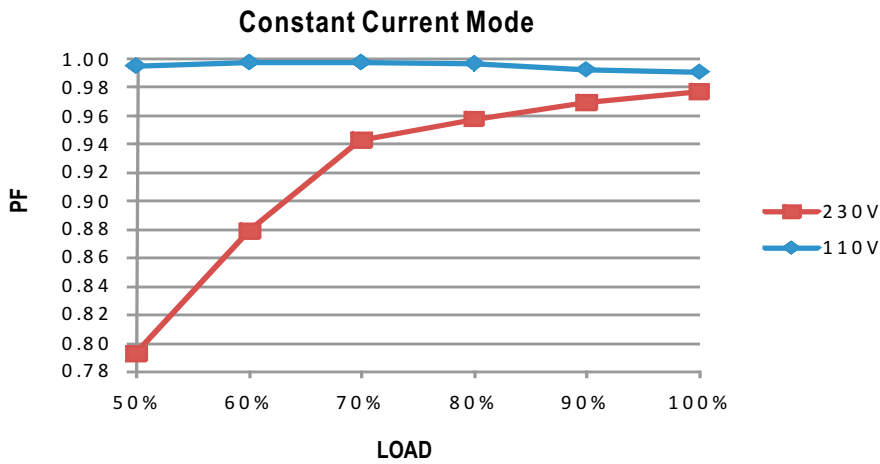


■ Static Characteristics



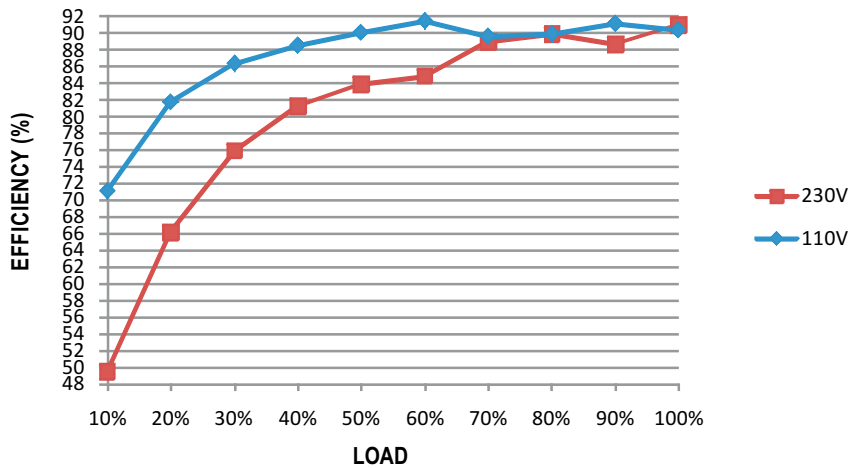
**Power Factor Characteristic**

Power factor will be higher than 0.9 when output loading is 75% or higher.



**EFFICIENCY vs LOAD (48V Model)**

PLC-45 series possess superior working efficiency that up to 87.5% can be reached in field applications.

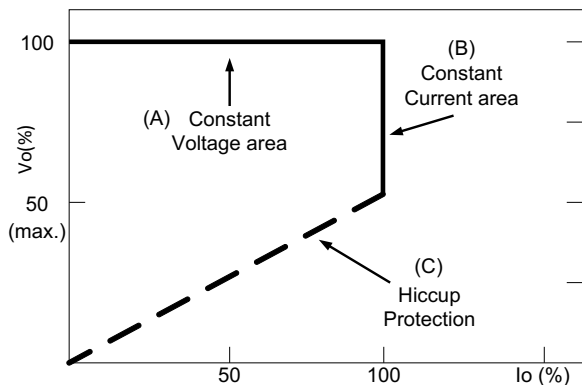


**DRIVING METHODS OF LED MODULE**

There are two major kinds of LED drive method "direct drive" and "with LED driver".

A typical LED power supply may either work in "constant voltage mode (CV) or constant current mode (CC)" to drive the LEDs.

Mean Well's LED power supply with CV+ CC characteristic can be operated at both CV mode [with LED driver, at area (A)] and CC mode [direct drive, at area (B)].



Typical LED power supply I-V curve



# Test Report: PLC-45-20

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45W Single Output LED Power Supply

## ■ DESIGN VERIFY TEST

Output Function Test  
Input Function Test  
Protection Function Test  
Control Function Test  
Component Stress Test

## ■ SAFETY & E.M.C. TEST

Safety Test  
E.M.C. Test

## ■ RELIABILITY TEST

ENVIRONMENT TEST

**DESIGN VERIFY TEST**
**OUTPUT FUNCTION TEST**

| NO | TEST ITEM                          | SPECIFICATION                                    | TEST CONDITION   | RESULT  | VERDICT |
|----|------------------------------------|--|--|---|---------|
| 1  | RIPPLE & NOISE                     | V1 : 1.8 Vp-p (Max)                              | I/P : 230VAC<br>O/P : FULL LOAD<br>Ta : 25°C                   | V1 : 1.03 Vp-p (Max)                                      | P       |
| 2  | OUTPUT VOLTAGE ADJUST RANGE        | CH1 : 19.5 V ~ 22 V                              | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C  | 16.67 V ~ 22.45 V / 230 VAC<br>16.9 V ~ 22.45 V / 115 VAC | P       |
| 3  | OUTPUT VOLTAGE TOLERANCE           | V1 : -10 % ~ 10 % (Max)                          | I/P : 100 VAC / 295 VAC<br>O/P : FULL / MIN LOAD<br>Ta : 25°C  | V1 : -1.9 % ~ 1.9 %                                       | P       |
| 4  | LINE REGULATION                    | V1 : -3 % ~ 3 % (Max)                            | I/P : 100VAC ~ 295 VAC<br>O/P : FULL LOAD<br>Ta : 25°C         | V1 : -0.34 % ~ 0.34 %                                     | P       |
| 5  | LOAD REGULATION                    | V1 : -5 % ~ 5 % (Max)                            | I/P : 230 VAC<br>O/P : FULL ~ MIN LOAD<br>Ta : 25°C            | V1 : -0.25 % ~ 0.25 %                                     | P       |
| 6  | SET UP TIME                        | 230VAC : 1500 ms (Max)<br>115VAC : 3000 ms (Max) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C | 230VAC / 1102 ms<br>115VAC / 2204 ms                      | P       |
| 9  | OVER/UNDERSHOOT TEST               | < ±10%   | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                  | TEST : < 10 %   | P       |
| 10 | CONSTANT CURRENT OPERATION VOLTAGE | 15V ~ 20 V                                       | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : CV MODE<br>Ta : 25°C   | 230VAC / 12.42V~20 V<br>115VAC / 12.44V~20 V              | P       |

**INPUT FUNCTION TEST**

| NO | TEST ITEM             | SPECIFICATION   | TEST CONDITION   | RESULT   | VERDICT |
|----|-----------------------|---|--|--|---------|
| 1  | INPUT VOLTAGE RANGE   | 90 VAC~ 295 VAC   | I/P : TESTING<br>O/P : FULL LOAD<br>Ta : 25°C<br><br>I/P :<br>LOW-LINE -3V= 87V<br>HIGH-LINE+15%=300 V<br>O/P : FULL/MIN LOAD<br>ON : 30 Sec . OFF : 30 Sec 10MIN<br>( AC POWER ON/OFF NO DAMAGE ) | 63V~295V<br><br>TEST : OK  | P       |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~63 HZ<br>NO DAMAGE OSC  | I/P : 90 VAC ~ 295 VAC<br>O/P : FULL -MIN LOAD<br>Ta : 25°C  | TEST : OK  | P       |
| 3  | POWER FACTOR          | 0.9 / 230 VAC(TYP)<br>0.9 / 115 VAC(TYP)<br>0.9 /230VAC(TYP)<br>0.9 /115VAC(TYP)) | I/P : 230 VAC<br>I/P : 115VAC<br>O/P : 75% ~100% LOAD<br>Ta : 25°C   | PF= 0.97 / 100%<br>PF= 1 / 100%<br>PF= 0.94 / 75%<br>PF= 1 / 75% | P       |
| 4  | EFFICIENCY            | 86.5 % (TYP)  | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C  | 87.3 %   | P       |
| 5  | INPUT CURRENT         | 230V/ 0.25 A<br>115V/ 0.55 A  | I/P : 230 VAC<br>I/P : 115VAC<br>O/P : FULL LOAD<br>Ta : 25°C  | I = 0.23 A/ 230 VAC<br>I = 0.45 A/ 230 VAC                       | P       |
| 6  | INRUSH CURRENT        | 230V/ 40 A (TYP)<br><br>COLD START  | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C  | I = 30 A/ 230 VAC  | P       |
| 7  | LEAKAGE CURRENT       | < 0.75 mA / 240 VAC   | I/P : 264 VAC<br>O/P : Min LOAD<br>Ta : 25°C   | L-FG : 0.36 mA<br>N-FG : 0.34 mA                                 | P       |

**PROTECTION FUNCTION TEST**

| NO | TEST ITEM                   | SPECIFICATION                                  | TEST CONDITION  | RESULT  | VERDICT |
|----|-----------------------------|--|---|---|---------|
| 1  | OVER LOAD PROTECTION        | 110%(max)                                      | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : TESTING<br>Ta : 25°C  | 103%/ 230 VAC<br>103%/ 115 VAC<br>Constant Current Limiting                                       | P       |
| 2  | OVER VOLTAGE PROTECTION     | CH1 : 22.8V~ 25 V                              | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C | 23.20V/ 230 VAC<br>23.22V/ 115 VAC<br>Shut down Re- power ON                                      | P       |
| 3  | OVER TEMPERATURE PROTECTION | SPEC :<br>TSW1 : 95 ± 10°C O.T.P.<br>NO DAMAGE | I/P : 230 VAC<br>O/P : FULL LOAD                              | O.T.P. Active<br>Shut down o/p voltage , recovers<br>automatically after temperature<br>goes down | P       |
| 4  | SHORT PROTECTION            | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE         | I/P : 264 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                 | NO DAMAGE<br>Hiccup Mode  | P       |

**CONTROL FUNCTION TEST**

|   |                    |            |   |   |   |
|---|--------------------|------------|---|---|---|
| 1 | CURRENT ADJ. RANGE | 3% ~ -25 % | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C | 1.155 A ~ 2.452 A/230VAC<br>1.153 A ~ 2.451 A/115 VAC | P |
|---|--------------------|------------|---|---|---|

**COMPONENT STRESS TEST**

| NO | TEST ITEM  | SPECIFICATION                          | TEST CONDITION   | RESULT                                       | VERDICT |
|----|--|--|--|--|---------|
| 1  | Power Transistor<br>( D to S) or (C to E) Peak Voltage | Q 1 Rated :<br>2SK4111 10A/600V        | I/P : High-Line +3V = 298 V<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>(3)Full load continue<br>Ta : 25°C                          | (1) 570 V<br>(2) 498 V<br>(3) 558 V          | P       |
| 2  | Diode Peak Voltage                                     | D100 Rated :<br>STPS20170C 20A/170V    | I/P : High-Line +3V = 298 V<br>O/P : (1)Full Load Turn on<br>(2)Output Short<br>(3)Full load continue<br>Ta : 25°C                           | (1) 154 V<br>(2) 105 V<br>(3) 126 V          | P       |
| 3  | Clamp Diode Peak Voltage                               | D 2 Rated :<br>2A/800V GP20K           | I/P : High-Line +3V = 298 V<br>O/P : (1)Full load continue<br>Ta : 25°C  | (1) 472 V                                    | P       |
| 4  | Control IC Voltage Test                                | U1 Rated :<br>PWM TDA4863G 10.5V~ 22 V | I/P : High-Line +3V = 298 V<br>O/P : (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load<br>Change<br>Ta : 25°C | (1) 15.460 V<br>(2) 13.468 V<br>(3) 13.469 V | P       |

**SAFETY & E.M.C. TEST**
**SAFETY TEST**

| NO | TEST ITEM            | SPECIFICATION  | TEST CONDITION   | RESULT   | VERDICT |
|----|----------------------|--|--|--|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P : 3.75KVAC/min<br>I/P-FG : 1.5 KVAC/min<br>O/P-FG : 0.5 KVAC/min | I/P-O/P : 4.2 KVAC/min<br>I/P-FG : 2.25 KVAC/min<br>O/P-FG : 0.6 KVAC/min<br>Ta : 25°C | I/P-O/P : 4.98 mA<br>I/P-FG : 4.51 mA<br>O/P-FG : 2.36 mA<br>NO DAMAGE | P       |
| 2  | ISOLATION RESISTANCE | I/P-O/P : 500VDC>100MΩ<br>I/P-FG : 500VDC>100MΩ<br>O/P-FG : 500VDC>100MΩ | I/P-O/P : 500 VDC<br>I/P-FG : 500 VDC<br>O/P-FG : 500 VDC<br>Ta : 25°C /70%RH          | I/P-O/P : 30 GΩ<br>I/P-FG : 16.4 GΩ<br>O/P-FG : 30 GΩ<br>NO DAMAGE     | P       |
| 3  | GROUNDING CONTINUITY | FG(PE) TO CHASSIS<br>OR TRACE < 100 mΩ                                   | 40 A / 2min<br>Ta : 25°C / 70%RH   | 41 mΩ  | P       |
| 4  | APPROVAL             | TUV : Certificate NO :<br>UL : File NO :                                 |  |  | N/A     |

**E.M.C TEST**

| NO | TEST ITEM                                   | SPECIFICATION  | TEST CONDITION  | RESULT                        | VERDICT |
|----|---|--|---|-------------------------------|---------|
| 1  | HARMONIC                                    | EN61000-3-2<br>CLASS C                                     | I/P : 230 VAC/50HZ<br>O/P : 95% LOAD/75%LOAD<br>Ta : 25°C     | PASS                          | P       |
| 2  | CONDUCTION                                  | EN55015<br>CLASS B   | I/P : 230 VAC (50HZ)<br>O/P : 95% LOAD /50% LOAD<br>Ta : 25°C | PASS<br>Test by certified Lab | P       |
| 3  | RADIATION                                   | EN55015<br>CLASS B   | I/P : 230 VAC (50HZ)<br>O/P : 95% LOAD<br>Ta : 25°C           | PASS<br>Test by certified Lab | P       |
| 4  | E.S.D                                       | EN61000-4-2<br>LIGHT INDUSTRY<br>AIR : 8KV / Contact : 4KV | I/P : 230 VAC/50HZ<br>O/P : 95% LOAD<br>Ta : 25°C             | CRITERIA A                    | P       |
| 5  | E.F.T                                       | EN61000-4-4<br>INDUSTRY<br>INPUT : 2KV                     | I/P : 230 VAC/50HZ<br>O/P : 95% LOAD<br>Ta : 25°C             | CRITERIA A                    | P       |
| 6  | SURGE                                       | IEC61000-4-5<br>INDUSTRY<br>L-N : 1KV<br>L,N-PE : 4KV      | I/P : 230 VAC/50HZ<br>O/P : 95% LOAD<br>Ta : 25°C             | CRITERIA A                    | P       |
| 7  | Test by certified Lab & Test Report Prepare |  |   |                               |         |



**RELIABILITY TEST**
**ENVIRONMENT TEST**

| NO | TEST ITEM   | SPECIFICATION  | TEST CONDITION   | RESULT                    | VERDICT  |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
|----|---|--|--|---------------------------|----------|-----|-----------------------------|---------------------------|---|-----|-------------------------------|--------|--------|---|----|-------------------|--------|--------|---|----|----------|--------|--------|---|----|---------------|--------|---------|---|-----|--------------------------|--------|--------|---|---------|------------|--------|--------|---|------|-------------------|--------|--------|---|------|-----------------------------|--------|--------|---|------|---------------------|--------|--------|----|----|--------------|--------|--------|----|----|-----------------------|--------|--------|----|------|---------|--------|--------|--|---|
| 1  | TEMPERATURE RISE TEST   | MODEL : PLN-45-12<br>1. ROOM AMBIENT BURN-IN : 1.5 HRS<br>I/P : 230VAC O/P : FULL LOAD Ta= 27.9 °C<br>2. HIGH AMBIENT BURN-IN : 4 HRS<br>I/P : 230VAC O/P : FULL LOAD Ta= 43 °C  | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT<br/>Ta= 27.9 °C</th> <th>HIGH AMBIENT<br/>Ta= 43 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>BD1</td><td>4A/800V SILICON US4KB80R-7000</td><td>61.9°C</td><td>72.3°C</td></tr> <tr><td>2</td><td>Q1</td><td>TK10B60D 10A/600V</td><td>73.9°C</td><td>84.4°C</td></tr> <tr><td>3</td><td>L1</td><td>TR623-R3</td><td>67.6°C</td><td>77.7°C</td></tr> <tr><td>4</td><td>D2</td><td>3A/600V GP30J</td><td>90.9°C</td><td>101.4°C</td></tr> <tr><td>5</td><td>C46</td><td>100u/50V UL7Kh 8*11.5 KY</td><td>67.8°C</td><td>78.3°C</td></tr> <tr><td>6</td><td>T1 COIL</td><td>TF1544A-R0</td><td>73.9°C</td><td>84.0°C</td></tr> <tr><td>7</td><td>D100</td><td>FME-220A 20A/100V</td><td>72.9°C</td><td>83.7°C</td></tr> <tr><td>8</td><td>C106</td><td>2200u/16V UL10Kh 12.5*20 KY</td><td>71.4°C</td><td>81.9°C</td></tr> <tr><td>9</td><td>TSW1</td><td>ST-22W-R0 95°C 60mm</td><td>65.5°C</td><td>75.8°C</td></tr> <tr><td>10</td><td>U1</td><td>PWM TDA4863G</td><td>70.9°C</td><td>81.2°C</td></tr> <tr><td>11</td><td>C8</td><td>224/450V 10% P=10 MMX</td><td>72.9°C</td><td>82.8°C</td></tr> <tr><td>12</td><td>CASE</td><td>UP CASE</td><td>52.9°C</td><td>63.6°C</td></tr> </tbody> </table> | NO                        | Position | P/N | ROOM AMBIENT<br>Ta= 27.9 °C | HIGH AMBIENT<br>Ta= 43 °C | 1 | BD1 | 4A/800V SILICON US4KB80R-7000 | 61.9°C | 72.3°C | 2 | Q1 | TK10B60D 10A/600V | 73.9°C | 84.4°C | 3 | L1 | TR623-R3 | 67.6°C | 77.7°C | 4 | D2 | 3A/600V GP30J | 90.9°C | 101.4°C | 5 | C46 | 100u/50V UL7Kh 8*11.5 KY | 67.8°C | 78.3°C | 6 | T1 COIL | TF1544A-R0 | 73.9°C | 84.0°C | 7 | D100 | FME-220A 20A/100V | 72.9°C | 83.7°C | 8 | C106 | 2200u/16V UL10Kh 12.5*20 KY | 71.4°C | 81.9°C | 9 | TSW1 | ST-22W-R0 95°C 60mm | 65.5°C | 75.8°C | 10 | U1 | PWM TDA4863G | 70.9°C | 81.2°C | 11 | C8 | 224/450V 10% P=10 MMX | 72.9°C | 82.8°C | 12 | CASE | UP CASE | 52.9°C | 63.6°C |  | P |
| NO | Position  | P/N  | ROOM AMBIENT<br>Ta= 27.9 °C  | HIGH AMBIENT<br>Ta= 43 °C |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 1  | BD1   | 4A/800V SILICON US4KB80R-7000  | 61.9°C   | 72.3°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 2  | Q1  | TK10B60D 10A/600V  | 73.9°C   | 84.4°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 3  | L1  | TR623-R3   | 67.6°C   | 77.7°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 4  | D2  | 3A/600V GP30J  | 90.9°C   | 101.4°C                   |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 5  | C46   | 100u/50V UL7Kh 8*11.5 KY   | 67.8°C   | 78.3°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 6  | T1 COIL   | TF1544A-R0   | 73.9°C   | 84.0°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 7  | D100  | FME-220A 20A/100V  | 72.9°C   | 83.7°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 8  | C106  | 2200u/16V UL10Kh 12.5*20 KY  | 71.4°C   | 81.9°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 9  | TSW1  | ST-22W-R0 95°C 60mm  | 65.5°C   | 75.8°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 10 | U1  | PWM TDA4863G   | 70.9°C   | 81.2°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 11 | C8  | 224/450V 10% P=10 MMX  | 72.9°C   | 82.8°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 12 | CASE  | UP CASE  | 52.9°C   | 63.6°C                    |          |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 2  | OVER LOAD BURN-IN TEST  | NO DAMAGE<br>1 HOUR ( MIN )  | I/P : 230 VAC<br>O/P : FULL LOAD O/P SHORT<br>Ta : 25°C  | TEST : OK                 | P        |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 3  | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR   | I/P : 295VAC/100VAC<br>O/P : 100 % LOAD<br>Ta= -30 °C  | TEST : OK                 | P        |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 4  | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 40 °C<br>NO DAMAGE  | I/P : 295 VAC<br>O/P : FULL LOAD<br>Ta= 40 °C<br>HUMIDITY= 95 %R.H   | TEST : OK                 | P        |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 5  | TEMPERATURE<br>COEFFICIENT  | ± 0.03 %(0-50°C)   | I/P : 230 VAC<br>O/P : FULL LOAD   | ± 0.015 %(0-50°C)         | P        |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 6  | STORAGE TEMPERATURE TEST  | 1. Thermal shock Temperature : -45°C~ +90°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 5 CYCLE<br>5. Input/Output condition : STATIC            |  | OK                        | P        |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |
| 7  | THERMAL SHOCK TEST  | 1. Thermal shock Temperature : -35°C~ +45°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 10 CYCLE<br>5. Input/Output condition : 230VAC/Full Load |  | OK                        | P        |     |                             |                           |   |     |                               |        |        |   |    |                   |        |        |   |    |          |        |        |   |    |               |        |         |   |     |                          |        |        |   |         |            |        |        |   |      |                   |        |        |   |      |                             |        |        |   |      |                     |        |        |    |    |              |        |        |    |    |                       |        |        |    |      |         |        |        |  |   |

|    |                      |  |                                   |   |
|----|----------------------|--|-----------------------------------|---|
| 8  | VIBRATION TEST       | 1 Carton & 1 Set<br>(1) Waveform : Sine Wave<br>(2) Frequency : 10-500Hz<br>(3) Sweep Time : 12min/sweep cycle<br>(4) Acceleration : 2G<br>(5) Test Time : 60min in each axis (X.Y.Z)<br>(6) Ta : 25°C | TEST : OK                         | P |
| 9  | CAPACITOR LIFE CYCLE | PLN-45-12 : SUPPOSE C106 IS THE MOST CRITICAL COMPONENT<br>(1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME<br>(2) I/P : 230VAC O/P : FULL LOAD Ta= 40 °C LIFE TIME                                | (1) 151729.5HRS<br>(2) 73869.9HRS | P |
| 10 | MTBF                 | MIL-HDBK-217F NOTICES2 PARTS COUNT<br>TOTAL FAILURE RATE : 497.8K HRS  |                                   | P |

| DATE       | SAMPLE                     | TEST RESULT | TESTER     | APPROVAL      |
|------------|----------------------------|-------------|------------|---------------|
| 2009/10/7  | RD SAMPLE                  | PASS        | SANFORD SU | VINCENT TSENG |
| 2009/11/10 | PRODUCT SAMPLE<br>W0910C56 | PASS        | SANFORD SU | VINCENT TSENG |

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