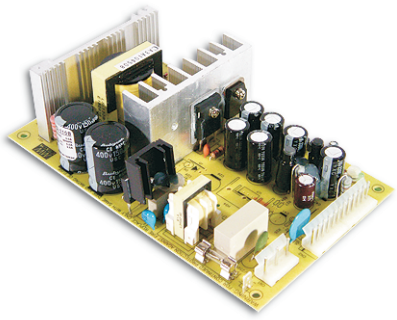
JAMECO ELECTRONICS **Jameco SKU Number: 2104647**

MEAN WELL

110W Dual Output Switching Power Supply

# PD-110 series



■ Features :

- Universal AC input / Full range
- Protections: Short circuit / Overload / Over voltage
- Cooling by free air convection
- With power good signal output(Optional)
- 100% full load burn-in test
- Fixed switching frequency at 45KHz
- 2 years warranty

## SPECIFICATION

| MODEL | | PD-110A | | PD-110B | |
|---|---|---|---|---|---|
| OUTPUT | OUTPUT NUMBER | CH1 | CH2 | CH1 | CH2 |
| | DC VOLTAGE | 5V | 12V | 5V | 24V |
| | RATED CURRENT | 5A | 6.5A | 5A | 3.5A |
| | CURRENT RANGE | 0.5 ~ 5A | 0.5 ~ 6.5A | 0.5 ~ 5A | 0.5 ~ 3.5A |
| | RATED POWER | 103W | | 109W | |
| | RIPPLE & NOISE (max.) Note.2 | 100mVp-p | 150mVp-p | 100mVp-p | 200mVp-p |
| | VOLTAGE ADJ. RANGE | CH1:4.75 ~ 5.5V | | CH1:4.75 ~ 5.5V | |
| | VOLTAGE TOLERANCE Note.3 | ±2.0% | ±6.0% | ±2.0% | ±6.0% |
| | LINE REGULATION | ±1.0% | ±2.0% | ±1.0% | ±2.0% |
| | LOAD REGULATION | ±1.0% | ±5.0% | ±1.0% | ±5.0% |
| | SETUP, RISE TIME | 1200ms, 50ms at full load | | | |
| | HOLD UP TIME (Typ.) | 80ms at full load | | | |
| INPUT | VOLTAGE RANGE | 100 ~ 264VAC 141 ~370VDC (90 ~ 100VAC 90% load max.) | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | |
| | EFFICIENCY(Typ.) | 75% | | 78% | |
| | AC CURRENT (Typ.) | 3A/115VAC 1.5A/230VAC | | | |
| | INRUSH CURRENT (Typ.) | COLD START 40A | | | |
| | LEAKAGE CURRENT | <1mA /240VAC | | | |
| PROTECTION | OVERLOAD | 105% ~ 135% rated output power | | | |
| | | Protection type : Hiccup mode, recovers automatically after fault condition is removed | | | |
| | OVER VOLTAGE | CH1: 5.75 ~ 6.75VDC | | | |
| | | Protection type : Hiccup mode, recovers automatically after fault condition is removed | | | |
| ENVIRONMENT | WORKING TEMP. | -10 ~ +50℃,60 ℃ with cooling fan(Refer to output load derating curve) | | | |
| | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | |
| | STORAGE TEMP., HUMIDITY | -20 ~ +85℃, 10 ~ 95% RH | | | |
| | TEMP. COEFFICIENT | ±0.03%/℃ (0 ~ 50℃) | | | |
| | VIBRATION | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes | | | |
| SAFETY & EMC (Note 4) | SAFETY STANDARDS | UL60950-1, TUV EN60950-1 approved | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC | | | |
| | EMI CONDUCTION & RADIATION | Compliance to EN55022 (CISPR22) Class B | | | |
| | HARMONIC CURRENT | Compliance to EN61000-3-2,-3 | | | |
| | EMS IMMUNITY | Compliance to EN61000-4-2,3,4,5,6,11; ENV50204, light industry level, criteria A | | | |
| OTHERS | MTBF | 323K hrs min. MIL-HDBK-217F (25℃) | | | |
| | DIMENSION | 177.8*107.95*46mm (L*W*H) | | | |
| | PACKING | 0.51Kg; 24pcs/13.1Kg/1.19CUFT | | | |
| NOTE | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. | | | | |

JAMECO ELECTRONICS **Jameco SKU Number: 2104647**

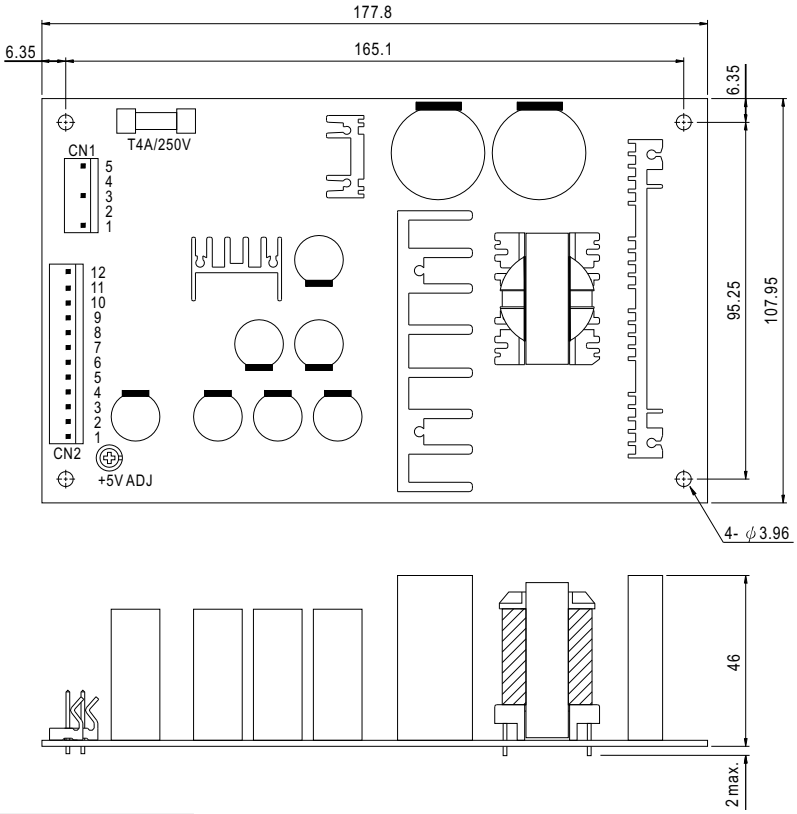
MEAN WELL

110W Dual Output Switching Power Supply

# PD-110 series

## ■ Mechanical Specification

Unit:mm




AC Input Connector (CN1) : Molex 5273-05 or equivalent

| Pin No. | Assignment | Mating Housing | Terminal |
|---|---|---|---|
| 1 | FG ⏚ | Molex 5195 or equivalent | Molex 5194 or equivalent |
| 2,4 | No Pin | | |
| 3 | AC/N | | |
| 5 | AC/L | | |

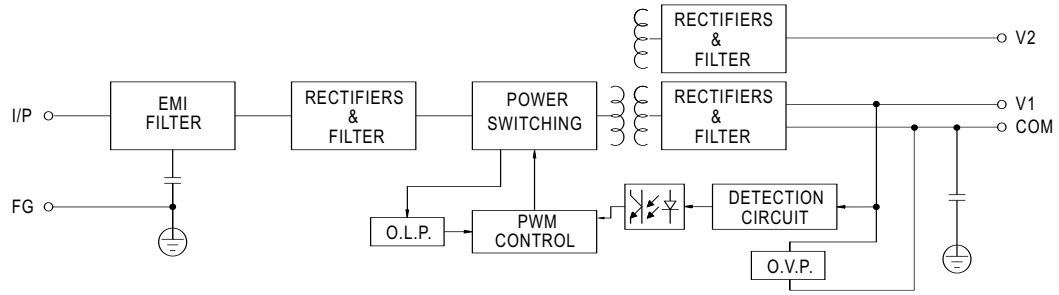
DC Output Connector (CN2) : Molex 5273-12 or equivalent

| Pin No. | Assignment | Mating Housing | Terminal |
|---|---|---|---|
| 1,2,3 | V1 | Molex 5195 or equivalent | Molex 5194 or equivalent |
| 4,5,6,7 | COM | | |
| 8,9,10 | V2 | | |
| 11,12 | V3(Option) | | |

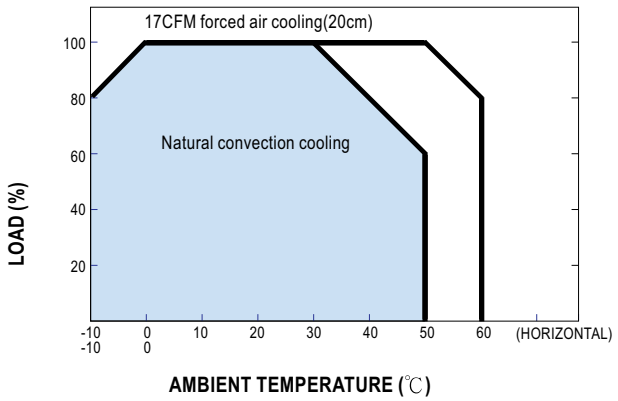
| MODEL / Pin No. | PD-110A | PD-110B |
|---|---|---|
| 1,2,3 | +5V | +5V |
| 8,9,10 | +12V | +24V |

## ■ Block Diagram

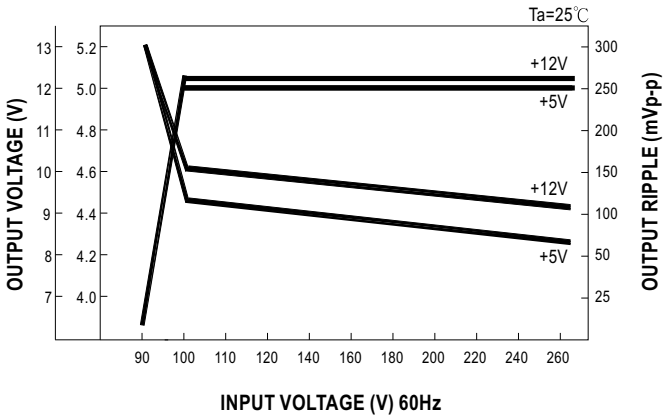
fosc : 45KHz




## ■ Derating Curve




## ■ Static Characteristics (A)



# Quality Engineering Test Report

**SERIES: PD-110 103W AC-DC DUAL OUTPUT SWITCHING POWER SUPPLY**
**SAMPLE: A : PD-110A V1: 5V / 5A B :PD-110B V1: 5V / 5A**
**V2: 12V / 6.5A V2: 24V / 3.5A**

| NO | TEST ITEM | TEST CONDITION / SPECIFICATION | RESULT | VERDICT |
|---|---|---|---|---|
| 1 | AC INPUT VOLTAGE RANGE | I/P:TESTING SPEC:100~264VAC<br>O/P:FULL LOAD | A:81VAC~267VAC | P |
| 2 | LINE REGULATION | I/P:100~264VAC SPEC:<br>O/P:FULL LOAD<br>A: V1: ±1%<br>V2: ±2%<br>B: V1: ±1%<br>V2:: ±2% | A: V1: 0% ~ 0%<br>V2: 0.05% ~ +0.3%<br>B: V1: 0% ~ 0%<br>V2: -0.05% ~ +0.20% | P |
| 3 | LOAD REGULATION | I/P:230VAC SPEC:<br>O/P:MIN. TO FULL LOAD<br>A: V1: ±1%<br>V2: ±5%<br>B: V1: ±1%<br>V2: ±5% | A: V1: -0.6% ~ +0.49%<br>V2: -0.05% ~ +0.26%<br>B: V1: -0.12% ~ +0.12%<br>V2: -1.40% ~ +0.94% | P |
| 4 | OUTPUT VOLTAGE TOLERANCE | I/P:100~264VAC SPEC:<br>O/P:20%TO FULL LOAD<br>A: V1: ±2%<br>V2: ±6%<br>B: V1: ±2%<br>V2: ±6% | A: V1: 0.118% ~ +1.1%<br>V2: -2.7% ~ +5.6%<br>B: V1: 1.50% ~ +1.74%<br>V2: 0% ~ +6.30% | P |
| 5 | RIPPLE＆NOISE | I/P:230VAC SPEC:<br>O/P:FULL LOAD<br>A: V1: 100mV<br>V2: 150mV<br>B: V1: 100mV<br>V2: 200mV | A: V1: 3mV<br>V2: 8mV<br>B: V1: 4mV<br>V2: 7mV | P |
| 6 | AC INPUT CURRENT | I/P:230VAC SPEC:1.5A<br>O/P:FULL LOAD | A:1.159A | P |
| 7 | MAX. INRUSH CURREN | I/P:230VAC SPEC:50A<br>O/P: FULL LOAD | A:41A | P |
| 8 | O/P VOLTAGE ADJ.RANGE | I/P:230VAC SPEC:CH1:-5%~+10%<br>O/P:MIN. LOAD | A: 4.5V~5.87V<br>B: 4.48V~5.V | P |
| 9 | SET UP TIME | I/P:230VAC SPEC:1200mS<br>O/P:FULL LOAD | A: 424mS | P |
| 10 | HOLD UP TIME | I/P:230VAC SPEC:20mS<br>O/P:FULL LOAD | A: 109mS | P |
| 11 | EFFICIENCY | I/P:230VAC SPEC:<br>O/P:FULL LOAD<br>A:75%<br>B:78% | A:75.8%<br>B:80.7% | P |
| 12 | OVER LOAD PROTECTION | I/P:230VAC SPEC:105%~135%<br>O/P:TESTING | A:125%<br>B:121% | P |
| 13 | OVER VOLTAGE PROTECTION | I/P:230VAC<br>O/P:TESTING SPEC: CH1:5.75~6.75V | A:6.26V<br>B:6.3V | P |
| 14 | GROUND LEAKAGE CURRENT | I/P:240VAC SPEC: L-FG--<1mA<br>N-FG--<1mA | A: L-FG:0.4mA<br>N-FG;0.42mA | P |
| 15 | GROUNDING CONTINUITY | SPEC: FG--CHASSIS<0.1Ohms/2min | A ----mOhms | P |
| 16 | INSULATION RESISTANCE | SPEC: I/P-O/P: 500VDC/100MOhms MIN.<br>I/P-FG: 500VDC/100MOhms MIN.<br>O/P-FG: 500VDC/100MOhms MIN. | A: O/P-FG >100MOhms<br>I/P-O/P >100MOhms<br>I/P-FG >100MOhms | P |
| 17 | DIELECTRIC / WITHSTAND VOLTAGE | SPEC: I/P- O/P: 3KVAC/ 1 min. (10mA CUT-OFF)<br>I/P - FG: 1.5KVAC/ 1 min. (10mA CUT-OFF)<br>O/P - FG: 0.5KVAC/ 1 min. (10mA CUT-OFF) | A: I/P-O/P :0.329mA<br>I/P-FG :0.09mA<br>O/P-FG :0.029mA | P |
| 18 | BURN-IN TEST | I/P: 230VAC O/P: FULL LOAD<br>TA:26.4℃ BURN-IN DURATION : 2 hrs | A:NON BREAK | P |

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>TEST CONDITION / SPECIFICATION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td rowspan="3">19</td><td rowspan="3">ENVIRONMENT TEST</td><td>1.LOW TEMPERATURE TEST<br>I/P:230 VAC O/P:FULL LOAD<br>AMBIENT TEMPERATURE:-9.8ºC</td><td>A:<br>AFTER 2 hrs<br>POWER ON OK</td><td rowspan="3">P</td></tr>
<tr><td>2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST<br>I/P:230VAC O/P:FULL LOAD<br>AMBIENT TEMPERATURE:45ºC</td><td>A:<br>AFTER 12 hrs<br>NON BREAK</td></tr>
<tr><td>3.High Humidity, High Voltage After On/Off Test<br>I/P:272VAC O/P:FULL LOAD<br>AMBIENT TEMPERATURE:25ºC<br>AMBIENT HUMIDITY:95%</td><td>A :<br>AFTER 12 hrs<br>POWER ON OK</td></tr>
<tr><td>20</td><td>TEMPERATURE RISE TEST T rise OF PARTS</td><td colspan="2">A: I/P :230VAC AFTER 2 hr BURN-IN WITH COOLING 17CFM FAN<br>O/P :FULL LOAD Ta:26.4ºC
<table>
<tr><th></th><th>POSITION</th><th>P/N</th><th>TEMP</th><th>T rise</th></tr>
<tr><td></td><td>BD1</td><td>BRIDGE DIODE</td><td>51.5ºC</td><td>25.1ºC</td></tr>
<tr><td></td><td>Q1</td><td>MAIN TRANSISTOR</td><td>58.6ºC</td><td>32.2ºC</td></tr>
<tr><td></td><td>T1</td><td>MAIN TRANSFORMER COIL</td><td>76.1ºC</td><td>49.7ºC</td></tr>
<tr><td></td><td>T1</td><td>MAIN TRANSFORMER CORE</td><td>61.8ºC</td><td>35.4ºC</td></tr>
<tr><td></td><td>C24</td><td>O/P FILTER CAPACITOR</td><td>46.6ºC</td><td>20.2ºC</td></tr>
<tr><td></td><td>LF1</td><td>LINE FILTER TRANSFORMER</td><td>50.8ºC</td><td>24.4ºC</td></tr>
<tr><td></td><td>C6</td><td>I/P FILTER CAPACITOR</td><td>54.5ºC</td><td>28.1ºC</td></tr>
<tr><td></td><td>D5</td><td>O/P DIODE</td><td>67.5ºC</td><td>41.1ºC</td></tr>
<tr><td></td><td>D4</td><td>O/P DIODE</td><td>75.0ºC</td><td>48.6ºC</td></tr>
<tr><td></td><td>D1</td><td>CLAMP DIODE</td><td>76.6ºC</td><td>50.2ºC</td></tr>
<tr><td></td><td>R5</td><td>SUNBBER RESISTANCE</td><td>85.0ºC</td><td>58.6ºC</td></tr>
</table></td><td>P</td></tr>
<tr><td>21</td><td>LIFE CYCLE</td><td colspan="2">A: SUPPOSE C24IS THE MOST CRITICAL COMPONENT<br>I/P:230VAC O/P:FULL LOAD Ta:25ºC Tc24:45.2ºC Life: 366089 hrs<br>I/P:230VAC O/P:FULL LOAD Ta:50ºC Tc24:61.7ºC Life: 116650hrs</td><td>P</td></tr>
<tr><td>22</td><td>CRITICAL COMPONENT RECORD ( FOR QC INSPECTION REFERENCE ONLY )</td><td colspan="3">A:: FUSE :4AL/250V UL<br>BRIDGE DIODE :D3SB60<br>LINE FILTER :TF096-R2 EE-25<br>TRANSFOMER TF574<br>POWER SWITCHER :K2607TO-3P<br>OUTPUT DIODE :30GWJ2C TO-3P<br>OUTPUT CAPACITOR :ELNA 3300uF/10V RJH 105ºC<br>INPUT CAPACITOR :HITACHI 150uF/400V HP-3 85ºC<br>P.C.B PQ-100 CEM-1 2 OZ SS</td></tr>
<tr><th>DATE</th><th>SAMPLE</th><th colspan="2">TEST RESULT</th><th>TEST</th><th>APPROVAL</th></tr>
<tr><td>19990127</td><td>RD SAMPLE PD110</td><td colspan="2">PASS</td><td>H.C.LIOU</td><td>Max Lin</td></tr>
<tr><td>19990324</td><td>PRODUCTION SAMPLE 9903B17 PD110-A,B</td><td colspan="2">PASS</td><td>H.C.LIOU</td><td>Max Lin</td></tr>
<tr><td>20000619</td><td>PRODUCTION SAMPLE A006B27 PD110A</td><td colspan="2">PASS</td><td>VINCENT</td><td>Max Lin</td></tr>
</table>