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Jameco Part Number 212274



# 120W Single Output Industrial DIN RAIL Power Supply

# DR-120 series



### ■ Features :

- AC input range selectable by switch
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Cooling by free air convection
- Can be installed on DIN rail TS-35/7.5 or 15
- UL 508(industrial control equipment)approved
- LED indicator for power on
- 100% full load burn-in test
- Fixed switching frequency at 55KHz
- 3 years warranty

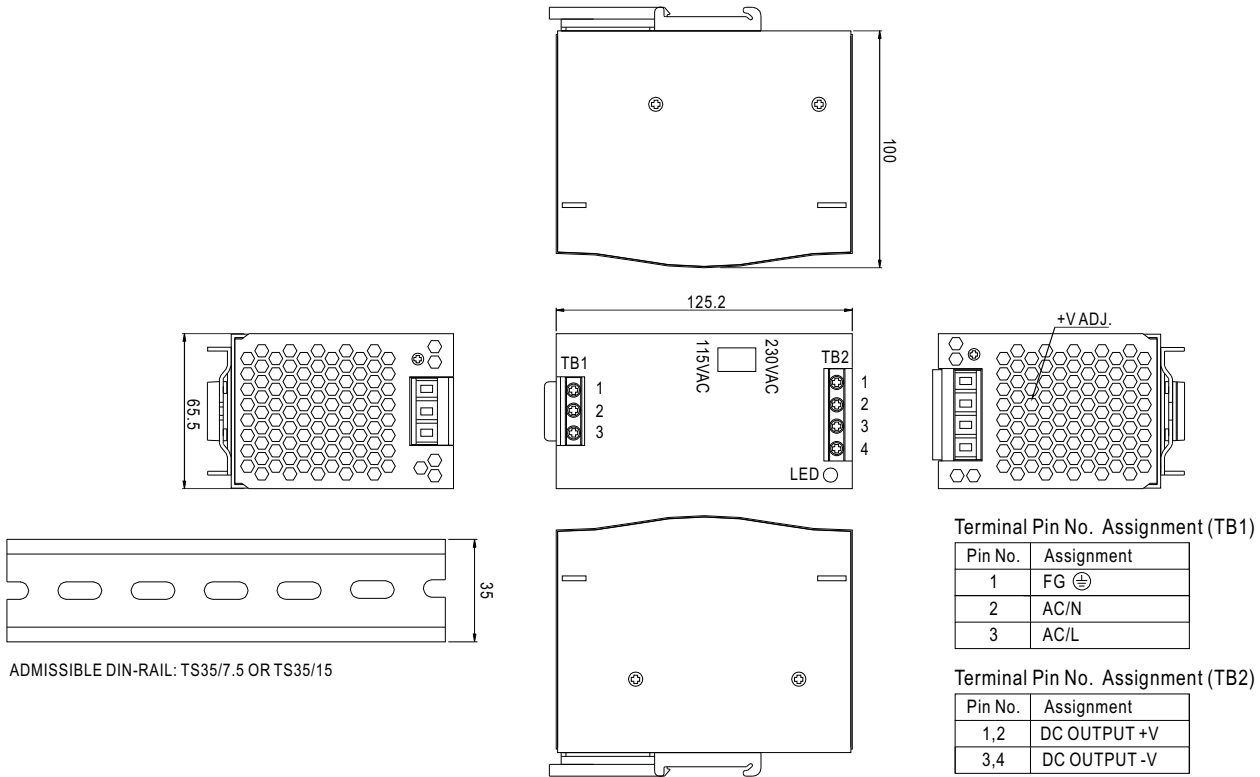


### SPECIFICATION

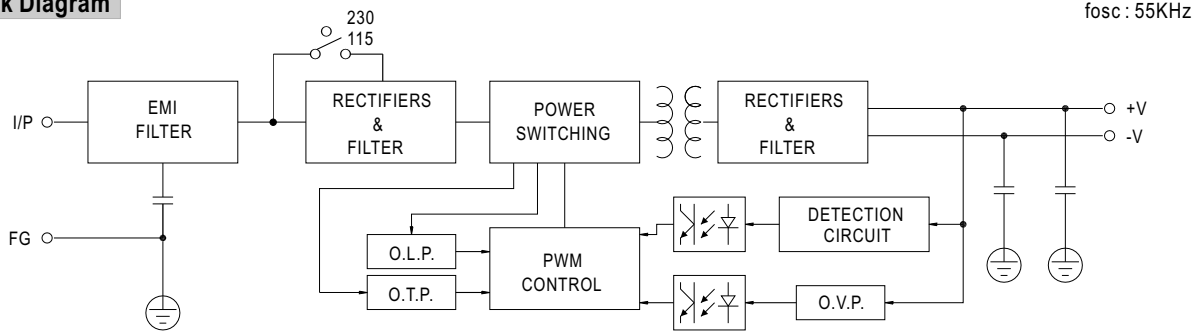
| MODEL                 | DR-120-12   | DR-120-24   | DR-120-48        |                  |
|-----------------------|---|---|------------------|------------------|
| OUTPUT                | DC VOLTAGE  | 12V   | 24V              | 48V              |
|                       | RATED CURRENT   | 10A   | 5A               | 2.5A             |
|                       | CURRENT RANGE   | 0 ~ 10A   | 0 ~ 5A           | 0 ~ 2.5A         |
|                       | RATED POWER   | 120W  | 120W             | 120W             |
|                       | RIPPLE & NOISE (max.) Note.2  | 80mVp-p   | 80mVp-p          | 100mVp-p         |
|                       | VOLTAGE ADJ. RANGE  | 12 ~ 14V  | 24 ~ 28V         | 48 ~ 53V         |
|                       | VOLTAGE TOLERANCE Note.3  | ±2.0%   | ±1.0%            | ±1.0%            |
|                       | LINE REGULATION   | ±0.5%   | ±0.5%            | ±0.5%            |
|                       | LOAD REGULATION   | ±1.0%   | ±1.0%            | ±1.0%            |
|                       | SETUP, RISE TIME  | 500ms, 70ms/230VAC    500ms, 70ms/115VAC at full load   |                  |                  |
| HOLD UP TIME (Typ.)   | 36ms/230VAC    32ms/115VAC at full load   |   |                  |                  |
| INPUT                 | VOLTAGE RANGE   | 88 ~ 132VAC/176 ~ 264VAC by switch  |                  | 248 ~ 370VDC     |
|                       | FREQUENCY RANGE   | 47 ~ 63Hz   |                  |                  |
|                       | EFFICIENCY (Typ.)   | 80%   | 84%              | 85%              |
|                       | AC CURRENT (Typ.)   | 2.6A/115VAC    1.6A/230VAC  |                  |                  |
|                       | INRUSH CURRENT (Typ.)   | COLD START 20A/115VAC    40A/230VAC   |                  |                  |
| LEAKAGE CURRENT       | <3.5mA / 240VAC   |   |                  |                  |
| PROTECTION            | OVERLOAD  | 105 ~ 150% rated output power<br>Protection type : Constant current limiting, recovers automatically after fault condition is removed |                  |                  |
|                       | OVER VOLTAGE  | 15 ~ 16.5V  | 29 ~ 33V         | 58 ~ 65V         |
|                       | OVER TEMPERATURE  | 85°C ±5°C (TSW1)<br>Protection type : Shut down o/p voltage, recovers automatically after temperature goes down                       | 90°C ±5°C (TSW1) | 90°C ±5°C (TSW1) |
| ENVIRONMENT           | WORKING TEMP.   | -10 ~ +60°C (Refer to output load derating curve)   |                  |                  |
|                       | WORKING HUMIDITY  | 20 ~ 90% RH non-condensing  |                  |                  |
|                       | STORAGE TEMP., HUMIDITY   | -20 ~ +85°C, 10 ~ 95% RH  |                  |                  |
|                       | TEMP. COEFFICIENT   | ±0.03%/°C (0 ~ 50°C)  |                  |                  |
|                       | VIBRATION   | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6                                    |                  |                  |
| SAFETY & EMC (Note 4) | SAFETY STANDARDS  | UL508, 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 EN55011, EN55022 (CISPR22) Class B  |                  |                  |
|                       | HARMONIC CURRENT  | Compliance to EN61000-3-2,-3  |                  |                  |
|                       | EMS IMMUNITY  | Compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024, EN61000-6-2 (EN50082-2), heavy industry level, criteria A                  |                  |                  |
| OTHERS                | MTBF  | 136.8Khrs min.    MIL-HDBK-217F (25°C)  |                  |                  |
|                       | DIMENSION   | 65.5*125.2*100mm (W*H*D)  |                  |                  |
|                       | PACKING   | 0.79Kg; 20pcs/16.5Kg/1.29CUFT   |                  |                  |
| 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.</li> <li>3. Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>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.</li> </ol> |   |                  |                  |

**Mechanical Specification**

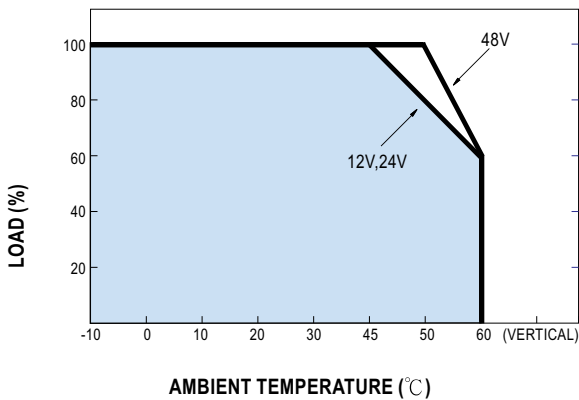
Case No. 921A Unit:mm



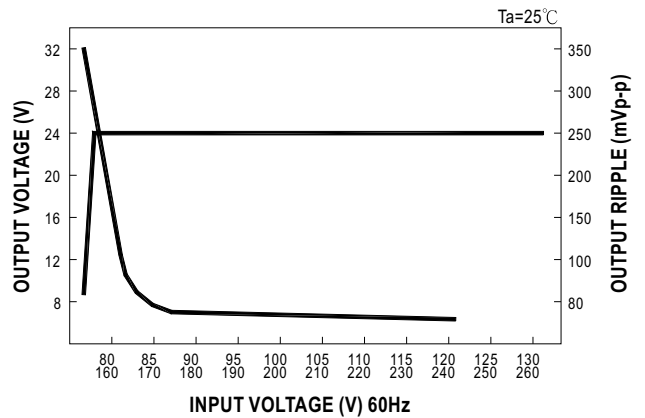
**Block Diagram**



**Derating Curve**



**Static Characteristics (24V)**



# Quality Engineering Test Report

**SERIES: DR-120     120W AC-DC SINGLE OUTPUT SWITCHING POWER SUPPLY**

**SAMPLE: A. DR-120-12     12V/10A     B. DR-120-24     24V/5A     C. DR-120-48     48V/2.5A**

| NO | TEST ITEM                    | TEST CONDITION / SPECIFICATION  | RESULT   | VERDICT |                              |    |                              |    |                              |   |
|----|------------------------------|---|--|---------|------------------------------|----|------------------------------|----|------------------------------|---|
| 1  | MAX. INRUSH CURREN           | I/P:230VAC     SPEC:60A<br>O/P: FULL LOAD   | A: 30.617A<br>B: 37.656A<br>C: 27.812A   | P       |                              |    |                              |    |                              |   |
| 2  | SET UP TIME                  | I/P:230VAC     SPEC:500mS<br>O/P:FULL LOAD  | A: 268.86mS<br>B: 309.21mS<br>C: 301.30mS  | P       |                              |    |                              |    |                              |   |
| 3  | RISE TIME                    | I/P:230VAC     SPEC:70mS<br>O/P:FULL LOAD   | A: 18.82 mS<br>B: 45.88 mS<br>C: 32.29 mS  | P       |                              |    |                              |    |                              |   |
| 4  | HOLD UP TIME                 | I/P:230VAC     SPEC:30mS<br>O/P:FULL LOAD   | A: 39.19mS<br>B: 43.18mS<br>C: 44.21mS   | P       |                              |    |                              |    |                              |   |
| 5  | LINE REGULATION              | I/P:176-264VAC     SPEC: A: ± 0.5 %<br>O/P:FULL LOAD     B: ± 0.5 %<br>C: ± 0.5 %             | A. +0.00 % ~ +0.05 %<br>B. -0.00 % ~ +0.024 %<br>C. -0.012 % ~ +0.037 %  | P       |                              |    |                              |    |                              |   |
| 6  | LOAD REGULATION              | I/P:230VAC     SPEC: A: ± 1 %<br>O/P:MIN. TO FULL     B: ± 1 %<br>LOAD     C: ± 1 %           | A. -0.35 % ~ +0.35 %<br>B. -0.024 % ~ +0.024 %<br>C. -0.04 % ~ +0.08 %   | P       |                              |    |                              |    |                              |   |
| 7  | OUTPUT VOLTAGE TOLERANCE     | I/P:176-264VAC     SPEC: A: ± 2 %<br>O/P:0% TO FULL LOAD     B: ± 1 %<br>C: ± 1 %             | A. -0.73 % ~ +0.049 %<br>B. -0.078 % ~ +0.000 %<br>C. -0.077 % ~ +0.039 %  | P       |                              |    |                              |    |                              |   |
| 8  | OVER LOAD PROTECTION         | I/P:230VAC     SPEC: A: 105 % ~ 150 %<br>O/P:TESTING     B: 105 % ~ 150 %<br>C: 105 % ~ 150 % | A: 129%<br>B: 120%<br>C: 135%  | P       |                              |    |                              |    |                              |   |
| 9  | AC INPUT VOLTAGE RANGE       | I/P:TESTING     SPEC:176-264VAC<br>O/P:FULL LOAD  | A. 125.0V ~ 264 VAC<br>B. 129.087V ~ 264 VAC<br>C. 125.062V ~ 264 VAC  | P       |                              |    |                              |    |                              |   |
| 10 | RIPPLE&NOISE                 | I/P:230VAC     SPEC: A: 80 mVp-p<br>O/P:FULL     B: 80 mVp-p<br>LOAD     C: 100 mVp-p         | A: 24 mVp-p<br>B: 16 mVp-p<br>C: 37 mVp-p  | P       |                              |    |                              |    |                              |   |
| 11 | AC INPUT CURRENT             | I/P:230VAC     SPEC:1.7A<br>O/P:FULL LOAD   | A: 1.229 A<br>B: 1.208 A<br>C: 1.149 A   | P       |                              |    |                              |    |                              |   |
| 12 | EFFICIENCY                   | I/P:230VAC     SPEC: A: 80 %<br>O/P:FULL LOAD     B: 84 %<br>C: 85 %                          | A: 81.938%<br>B: 85.422%<br>C: 85.977%   | P       |                              |    |                              |    |                              |   |
| 13 | OVER VOLTAGE PROTECTION      | I/P:230VAC     SPEC: A: 15~16.5V<br>O/P:MIN LOAD     B: 29~33V<br>C: 58~65V                   | A: 16.2V<br>B: 31.2V<br>C: 59.9V   | P       |                              |    |                              |    |                              |   |
| 14 | O/P VOLTAGE ADJ.RANGE        | I/P:230VAC     SPEC: A: 12 V ~ 14 V<br>O/P:MIN. LOAD     B: 24 V ~ 28 V<br>C: 48 V ~ 53 V     | A. 10.65 V ~ 15.084 V<br>B. 21.339 V ~ 29.781 V<br>C. 39.76 V ~ 55.88 V  | P       |                              |    |                              |    |                              |   |
| 15 | GROUND LEAKAGE CURRENT       | I/P:240VAC     SPEC: L-FG--<3.5mA<br>N-FG--<3.5mA   | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">A:</td> <td>L-FG: 1.74mA<br/>N-FG: 1.75mA</td> </tr> <tr> <td>B:</td> <td>L-FG: 1.74mA<br/>N-FG: 1.75mA</td> </tr> <tr> <td>C:</td> <td>L-FG: 1.74mA<br/>N-FG: 1.75mA</td> </tr> </table> | A:      | L-FG: 1.74mA<br>N-FG: 1.75mA | B: | L-FG: 1.74mA<br>N-FG: 1.75mA | C: | L-FG: 1.74mA<br>N-FG: 1.75mA | P |
| A: | L-FG: 1.74mA<br>N-FG: 1.75mA |   |  |         |                              |    |                              |    |                              |   |
| B: | L-FG: 1.74mA<br>N-FG: 1.75mA |   |  |         |                              |    |                              |    |                              |   |
| C: | L-FG: 1.74mA<br>N-FG: 1.75mA |   |  |         |                              |    |                              |    |                              |   |

| NO       | TEST ITEM  | TEST CONDITION / SPECIFICATION  | RESULT   | VERDICT  |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
|----------|--|---|--|----------|---|------|--|----|---|--------------|--------|--------|--|----|-----------------|--------|--------|--|----|-----------------------|--------|--------|--|-----|-----------|--------|--------|--|-----|----------------------|--------|--------|--|----|----------------------|--------|--------|--|-----|------------------------|--------|--------|---|
| 16       | DIELECTRIC / WITHSTAND VOLTAGE                                 | SPEC: I/P- O/P: 3KVAC/ 1 min.<br>I/P - FG: 1.5KVAC/ 1 min.<br>O/P -FG: 0.5KVAC/ 1 min.  | <table border="1"> <tr> <td>A:</td> <td>I/P-O/P: 8mA<br/>I/P-FG: 5.9mA<br/>O/P-FG: 14.8mA</td> </tr> <tr> <td>B:</td> <td>I/P-O/P: 6.2mA<br/>I/P-FG: 4.8mA<br/>O/P-FG: 7.2mA</td> </tr> <tr> <td>C:</td> <td>I/P-O/P: 9.45mA<br/>I/P-FG: 7.79mA<br/>O/P-FG: 15.5mA</td> </tr> </table> | A:       | I/P-O/P: 8mA<br>I/P-FG: 5.9mA<br>O/P-FG: 14.8mA | B:   | I/P-O/P: 6.2mA<br>I/P-FG: 4.8mA<br>O/P-FG: 7.2mA | C: | I/P-O/P: 9.45mA<br>I/P-FG: 7.79mA<br>O/P-FG: 15.5mA | P            |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| A:       | I/P-O/P: 8mA<br>I/P-FG: 5.9mA<br>O/P-FG: 14.8mA                |   |  |          |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| B:       | I/P-O/P: 6.2mA<br>I/P-FG: 4.8mA<br>O/P-FG: 7.2mA               |   |  |          |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| C:       | I/P-O/P: 9.45mA<br>I/P-FG: 7.79mA<br>O/P-FG: 15.5mA            |   |  |          |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 17       | INSULATION RESISTANCE  | SPEC: I/P-O/P: 500VDC/100M $\Omega$ ms MIN.<br>I/P-FG: 500VDC/100M $\Omega$ ms MIN.<br>O/P-FG: 500VDC/100M $\Omega$ ms MIN.   | <table border="1"> <tr> <td>A:</td> <td>TEST OK</td> </tr> <tr> <td>B:</td> <td>TEST OK</td> </tr> <tr> <td>C:</td> <td>TEST OK</td> </tr> </table>  | A:       | TEST OK   | B:   | TEST OK  | C: | TEST OK   | P            |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| A:       | TEST OK  |   |  |          |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| B:       | TEST OK  |   |  |          |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| C:       | TEST OK  |   |  |          |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 18       | BURN-IN TEST   | I/P: 230VAC O/P: FULL LOAD<br>TA:25.7°C BURN-IN DURATION : 2.5 hrs  | B:NON BREAK  | P        |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 19       | ENVIRONMENT TEST   | <p>1.LOW TEMPERATURE TEST<br/>I/P:230VAC O/P:FULL LOAD<br/>AMBIENT TEMPERATURE:-13.8°C</p> <p>2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST<br/>I/P:230VAC O/P:FULL LOAD<br/>AMBIENT TEMPERATURE:52.2C</p> <p>3.High Humidity High Voltage On/Off Test<br/>I/P:267VAC O/P:FULL LOAD<br/>AMBIENT TEMPERATURE:26.7°C<br/>AMBIENT HUMIDITY:95%</p>   | <p>AFTER 14.5 hrs<br/>POWER ON <u>OK</u></p> <p>AFTER 6.5 hrs<br/>NON BREAK</p> <p>AFTER 14 hrs POWER ON<br/>NON BREAK</p>   | P        |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 20       | TEMPERATURE RISE TEST<br>Trise OF PARTS                        | <p>B: I/P :230VAC AFTER1.5 hr BURN-IN<br/>O/P :FULL LOAD TA:26.1°C</p> <table border="1"> <thead> <tr> <th></th> <th>POSITION</th> <th>P/N</th> <th>TEMP</th> <th>Trise</th> </tr> </thead> <tbody> <tr> <td></td> <td>BD1</td> <td>BRIDGE DIODE</td> <td>66.8°C</td> <td>40.7°C</td> </tr> <tr> <td></td> <td>Q1</td> <td>MAIN TRANSISTOR</td> <td>76.6°C</td> <td>50.5°C</td> </tr> <tr> <td></td> <td>T1</td> <td>MAIN TRANSFORMER WIRE</td> <td>80.7°C</td> <td>54.6°C</td> </tr> <tr> <td></td> <td>D51</td> <td>O/P DIODE</td> <td>74.1°C</td> <td>48.0°C</td> </tr> <tr> <td></td> <td>C52</td> <td>O/P FILTER CAPACITOR</td> <td>67.8°C</td> <td>41.7°C</td> </tr> <tr> <td></td> <td>C5</td> <td>I/P FILTER CAPACITOR</td> <td>51.2°C</td> <td>25.1°C</td> </tr> <tr> <td></td> <td>LF2</td> <td>I/P FILTER TRANSFORMER</td> <td>63.4°C</td> <td>37.3°C</td> </tr> </tbody> </table> |  | POSITION | P/N   | TEMP | Trise  |    | BD1   | BRIDGE DIODE | 66.8°C | 40.7°C |  | Q1 | MAIN TRANSISTOR | 76.6°C | 50.5°C |  | T1 | MAIN TRANSFORMER WIRE | 80.7°C | 54.6°C |  | D51 | O/P DIODE | 74.1°C | 48.0°C |  | C52 | O/P FILTER CAPACITOR | 67.8°C | 41.7°C |  | C5 | I/P FILTER CAPACITOR | 51.2°C | 25.1°C |  | LF2 | I/P FILTER TRANSFORMER | 63.4°C | 37.3°C | P |
|          | POSITION   | P/N   | TEMP   | Trise    |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
|          | BD1  | BRIDGE DIODE  | 66.8°C   | 40.7°C   |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
|          | Q1   | MAIN TRANSISTOR   | 76.6°C   | 50.5°C   |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
|          | T1   | MAIN TRANSFORMER WIRE   | 80.7°C   | 54.6°C   |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
|          | D51  | O/P DIODE   | 74.1°C   | 48.0°C   |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
|          | C52  | O/P FILTER CAPACITOR  | 67.8°C   | 41.7°C   |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
|          | C5   | I/P FILTER CAPACITOR  | 51.2°C   | 25.1°C   |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
|          | LF2  | I/P FILTER TRANSFORMER  | 63.4°C   | 37.3°C   |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 21       | CRITICAL COMPONENT RECORD ( FOR QC INSPECTION REFERENCE ONLY ) | <p>B: FUSE :4A/250V<br/>BRIDGE DIODE :D3SB60<br/>LINE FILTER :TF-411<br/>TRANSFOMER TF-798<br/>POWER SWITCHER :2SK2850<br/>OUTPUT DIODE :ESAD92-02 20A/200V<br/>OUTPUT CAPACITOR : N.C.C KY1500uF/35V 105°C<br/>INPUT CAPACITOR :RUBYCON 330uF/200V 85°C<br/>P.C.B :DR-120A-R1 FR-4 20Z DS</p>  |  |          |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 22       | LIFE CYCLE   | <p>B: SUPPOSE C52 IS THE MOST CRITICAL COMPONENT<br/>I/P:230VAC O/P:FULL LOAD Ta:25°C Tc52:66.7°C Life: 97264.8hrs<br/>I/P:230VAC O/P:FULL LOAD Ta:45°C Tc52:89.8°C Life: 19630.8hrs</p>  |  | P        |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| DATE     | SAMPLE   | TEST RESULT   | TEST   | APPROVAL |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 20011012 | RD SAMPLE<br>12V,24V,48V                                       | PASS  | VINCENT  | MAX LIN  |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 20020423 | A111B01<br>12V,24V,48V   | PASS  | VINCENT  | MAX LIN  |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 20020605 | A205B02<br>12V,24V   | PASS  | VINCENT  | MAX LIN  |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |
| 20021206 | A2011b01<br>24V  | PASS  | VINCENT  | MAX LIN  |   |      |  |    |   |              |        |        |  |    |                 |        |        |  |    |                       |        |        |  |     |           |        |        |  |     |                      |        |        |  |    |                      |        |        |  |     |                        |        |        |   |