75W Single Output LED Power Supply

CEN-75 series

Features :

- Universal AC input / Full range (up to 295VAC)
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Output voltage and constant current level adjustable
- Built-in active PFC function
- IP66 design for indoor or outdoor installations
- 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
- Suitable for dry / damp / wet locations
- 3 years warranty

SPECIFICATION

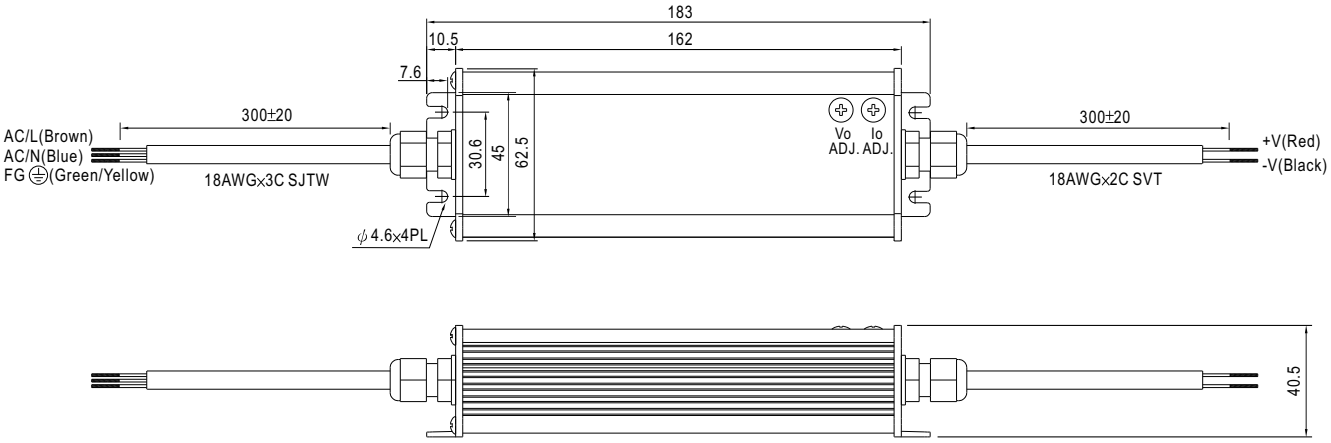
MODEL		CEN-75-15	CEN-75-20	CEN-75-24	CEN-75-30	CEN-75-36	CEN-75-42	CEN-75-48	CEN-75-54
OUTPUT	DC VOLTAGE	15V	20V	24V	30V	36V	42V	48V	54V
	CONSTANT CURRENT OPERATION VOLTAGE Note.5	11.25 ~ 15V	15 ~ 20V	18 ~ 24V	22.5 ~ 30V	27 ~ 36V	31.5 ~ 42V	36 ~ 48V	40.5 ~ 54V
	RATED CURRENT	5A	3.75A	3.15A	2.5A	2.1A	1.8A	1.57A	1.4A
	CURRENT RANGE	0 ~ 5A	0 ~ 3.75A	0 ~ 3.15A	0 ~ 2.5A	0 ~ 2.1A	0 ~ 1.8A	0 ~ 1.57A	0 ~ 1.4A
	RATED POWER	75W	75W	75.6W	75W	75.6W	75.6W	75.36W	75.6W
	RIPPLE & NOISE (max.) Note.2	2.7Vp-p	2Vp-p	2.7Vp-p	3Vp-p	3.6Vp-p	4Vp-p	4.6Vp-p	5Vp-p
	VOLTAGE ADJ. RANGE (SVR1)	13.5 ~ 17V	17 ~ 22V	22 ~ 27V	27 ~ 33V	33 ~ 40V	37 ~ 46V	43 ~ 53V	49 ~ 58V
	CURRENT ADJ. RANGE(SVR2)	3.75 ~ 5A	2.81 ~ 3.75A	2.36 ~ 3.15A	1.88 ~ 2.5A	1.58 ~ 2.1A	1.35 ~ 1.8A	1.18 ~ 1.57A	1.05 ~ 1.4A
	VOLTAGE TOLERANCE Note.3	±10%							
	LINE REGULATION	±3.0%							
	LOAD REGULATION	±5.0%							
	SETUP TIME	1400ms / 230VAC 2800ms / 115VAC at full load							
INPUT	VOLTAGE RANGE Note.4	90 ~ 295VAC 127 ~ 417VDC							
	FREQUENCY RANGE	47 ~ 63Hz							
	POWER FACTOR (Typ.)	PF≧0.9 at 75 ~ 100% load, 115VAC / 230VAC ; PF>0.97 / 115VAC PF>0.95 / 230VAC at full load							
	EFFICIENCY (Typ.)	87%	88%	89%	90%	90%	90%	91%	91%
	AC CURRENT (Typ.)	1.1A/115VAC 0.55A/230VAC							
	INRUSH CURRENT (Typ.)	45A/230VAC							
	LEAKAGE CURRENT	<0.75mA / 240VAC							
PROTECTION	OVER CURRENT	95 ~ 110%							
		Protection type : Constant current limiting, recovers automatically after fault condition is removed							
	SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed							
	OVER VOLTAGE	17.5 ~ 21V	22.8 ~ 26V	28 ~ 34V	34 ~ 38V	41 ~ 46V	47 ~ 52V	54 ~ 60V	59 ~ 65V
		Protection type : Shut down o/p voltage, re-power on to recover							
	OVER TEMPERATURE	85℃ ±10℃ (RTH1)							
		Protection type : Shut down o/p voltage, re-power on to recover							
ENVIRONMENT	WORKING TEMP.	-30 ~ +70℃ (Refer to output load derating curve)							
	WORKING HUMIDITY	20 ~ 95% RH non-condensing							
	STORAGE TEMP., HUMIDITY	-40 ~ +80℃, 10 ~ 95% RH							
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)							
	VIBRATION	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes							
SAFETY & EMC	SAFETY STANDARDS	UL8750, TUV EN61347-1, EN61347-2-13, IP66 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, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃/ 70% RH							
	EMI CONDUCTION & RADIATION	Compliance to EN55015							
	HARMONIC CURRENT	Compliance to EN61000-3-2 Class C (≧75% load) ; EN61000-3-3							
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, EN61547, light industry level (surge 4KV), criteria A							
	MTBF	522.2Khrs min. MIL-HDBK-217F (25℃)							
OTHERS	DIMENSION	183*62.5*40.5mm (L*W*H)							
	PACKING	0.56Kg;24pcs/14.4Kg/1.11CUFT							

NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
   Direct connecting to LEDs is not suggested for models with "RIPPLE & NOISE" >±10% and using additional drivers is highly recommended.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltage. Please check the static characteristics for more details.
5. 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.
6. 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-qualify EMC Directive on the complete installation again.

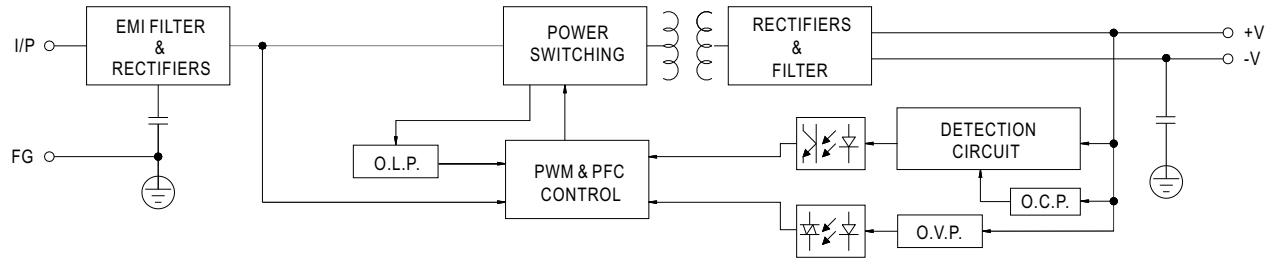
■ Mechanical Specification

Case No.993B Unit:mm

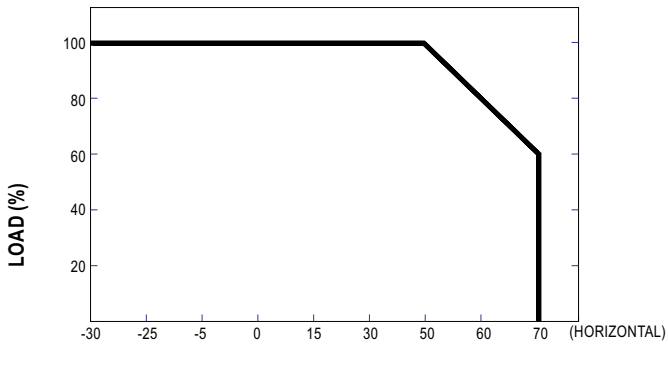


■ Block Diagram

fosc : 50KHz(115VAC)
75KHz(230VAC)

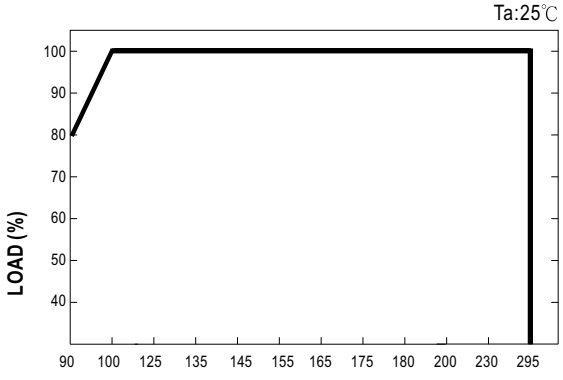


■ Derating Curve



AMBIENT TEMPERATURE (℃)

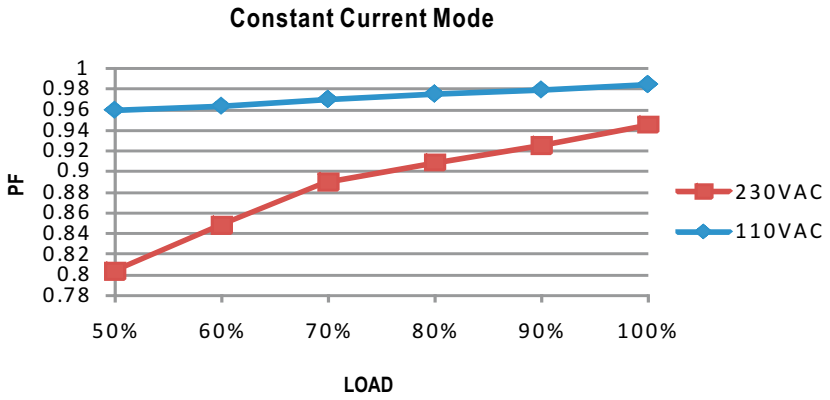
■ Static Characteristics



INPUT VOLTAGE (V) 60Hz

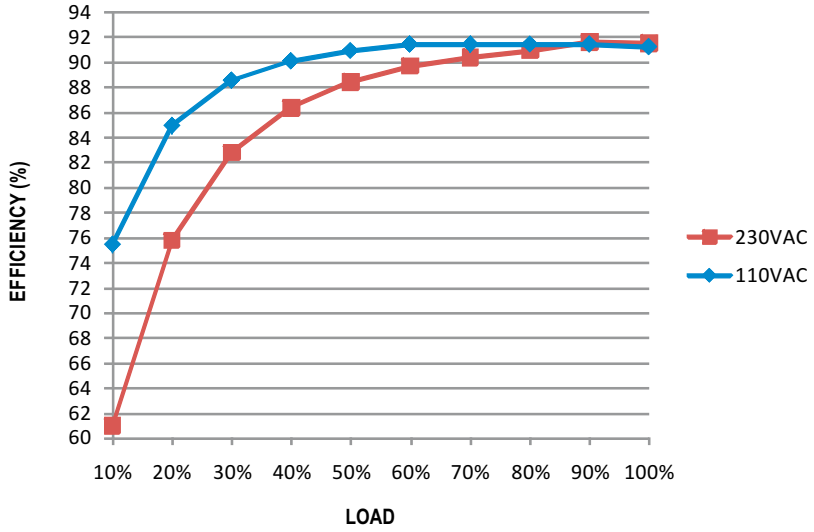
■ Power Factor Characteristic

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



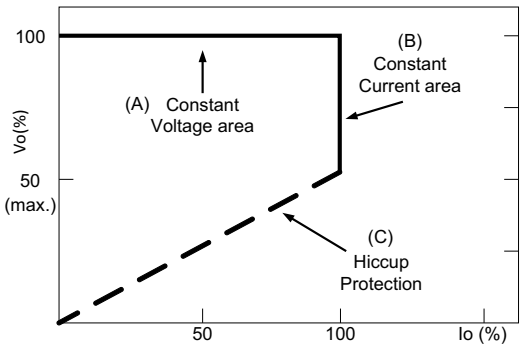
■ EFFICIENCY vs LOAD (48V Model)

CEN-75 series possess superior working efficiency that up to 91% 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: CEN-75-15

75W Single Output LED Power Supply

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Other Test
Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test
E.M.C. Test

■ RELIABILITY TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 2 .7 Vp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	V1: 1.8 Vp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 13.5V ~ 17 V	I/P: 230 VAC I/P:115VAC O/P:MIN LOAD Ta:25℃	12.929V~18.023 V /230VAC 12.929V~18.023 V/115VAC	P
3	CURRENT ADJ RANGE	3.5A ~ 5A	I/P: 230 VAC O/P: CV=Vo-2V Ta:25℃	2.631A~5.587 A	P
4	CONSTANT CURRENT REGION	10.5 V ~ 15V	I/P: 230 VAC O/P:CV MODE Ta:25℃	O/P=10.5V: 5.093 A O/P=14 V: 5.089 A	P
5	OUTPUT VOLTAGE TOLERANCE	V1: 10% ~ -10 % (Max)	I/P: 100 VAC /295VAC O/P:FULL/ 0 % LOAD Ta:25℃	V1: 6.5 %~ -6.5 %	P
6	LINE REGULATION	V1: 3 % ~ -3 % (Max)	I/P:100 VAC ~295 VAC O/P:FULL LOAD Ta:25℃	V1: 0.8 %~ -0.8 %	P
7	LOAD REGULATION	V1: 5 % ~ -5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 3.38 %~ -3.38%	P
8	SET UP TIME	230VAC/1400 ms (Max) 115VAC/ 2800 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 935 ms 115 VAC/ 1870 ms	P
9	OVER/UNDERSHOOT TEST	< ±10%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST:< 10 %	P

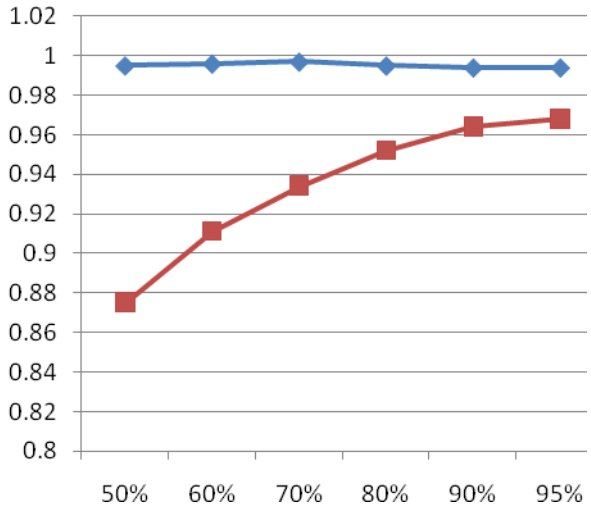
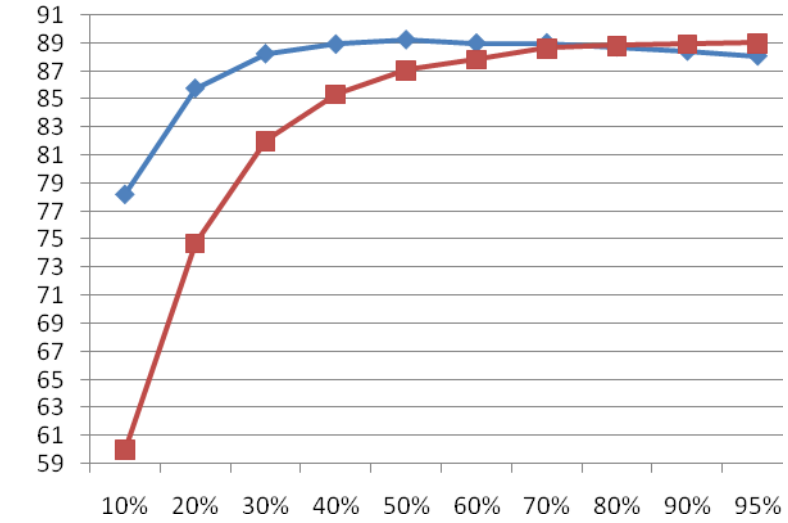
INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~295 VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	41V~264V	P
			I/P: (1)LOW-LINE-3V=87 V (2)HIGH-LINE=305 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 100 VAC ~295AC O/P:FULL~MIN LOAD Ta:25℃	OK	P
3	POWER FACTOR	0.95/ 230 VAC FULL LOAD 0.97/ 115 VAC FULL LOAD 0.9/ 230 VAC 70% LOAD 0.9/ 115 VAC 70%LOAD	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD / 65% LOAD Ta:25℃	PF= 0.965 /230V/100%LOAD PF=0.993 /115V/100%LOAD PF=0.944 /230V/70%LOAD PF=0.993 /115V/70%LOAD	P
4	EFFICIENCY	87% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	89.02 %	P
5	INPUT CURRENT	230 V/ 0.55 A (Typ) 115 V/ 1.1 A (Typ)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 0.37 A/ 230VAC I = 0.73 A/ 115VAC	P
6	INRUSH CURRENT	230 V/ 45 A (Typ) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	I = 38 A/ 230VAC	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	95 %~110 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25℃	105 %/ 230VAC 104 %//115VAC Constant current limiting,	P
2	OVER VOLTAGE PROTECTION	V1: 17.5V~ 21V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	19.8 V/ 230VAC 19.8 V/ 115VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: RTH1: 85±10℃ O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shut down o/p volotage，re-power on to recover	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 295VAC O/P: FULL LOAD Ta:25℃	NO DAMAGE Hiccup Mode	P

OTHER TEST

NO	TEST ITEM	RESULT
1	POWER FACTOR CHARACTERISTIC CONSTANT CURRENT MODE	CONSTANT CURRENT MODE I/P:230V/110V O/P:100/90/80/70/60/50% LOAD Ta:25℃  BLUE WIRE=110V；RED WIRE=230V
2	EFFIENCY VS LOAD	I/P:230V/110V O/P:100/90/80/70/60/50/40/30/20/10% LOAD Ta:25℃  BLUE WIRE=110V；RED WIRE=230V

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated TK13A60D 13A/600V	I/P：High-Line +3V = 298 V O/P： (1)Full Load Turn on (2) Output Short (3)Fulll load continue Ta：25℃	(1) 562 V (2) 488 V (3) 560 V	P
2	Diode Peak Voltage	D100 Rated YA868C15RSC 30A/150V	I/P：High-Line +3V = 298 V O/P： (1)Full Load Turn on (2)Output Short (3)Fulll load continue Ta：25℃	(1) 90 V (2) 73.6 V (3) 89.6 V	P
3	Control IC Voltage Test	U 1 Rated TDA4863G 10.5V~21V	I/P：High-Line +3V = 298 V O/P： (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta：25℃	(1) 14.44 V (2) 14.2 V (3) 14.2 V	P

SAFETY & EMC TEST

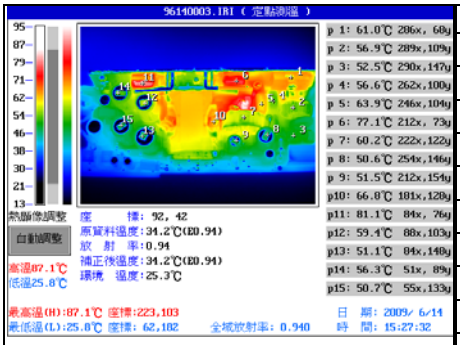
SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	IEC60950-1 I/P-O/P: 3.75KVAC/min<10mA I/P-FG:1.88 KVAC/min<10mA O/P-FG:0.5KVAC/min<10mA	I/P-O/P: 4 KVAC/min I/P-FG: 2.256KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-O/P: 5.12 mA I/P-FG: 3.82 mA O/P-FG: 4.13 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25℃	I/P-O/P: 30 GΩ I/P-FG: 30 G Ω O/P-FG: 30 G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	IEC60950-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	35 mΩ	P
4	LEAKAGE CURRENT	IEC60950-1 < 0.75 mA / 240VAC	I/P: 264 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.4 mA N-FG: 0.36 mA	P
5	APPROVAL	TUV： Certificate NO ：R50181371 UL： File NO ：			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230VAC/50HZ LOAD:LED/ELECTRONIC LOAD O/P:100%/75%/60% LOAD Ta:25℃	PASS	P
2	CONDUCTION	EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P

Reliability Test

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1.</td><td>THERMO TRACER TEST
(ROOM AMBIENT)</td><td colspan="3">MODEL:CEN-75-24 TEST CONDITION: 100 VAC FULL LOAD ROOM AMBIENT = 25.3 ℃
 

<table>
<tr><th></th><th>Position</th><th>Temp</th><th>VERDICT</th></tr>
<tr><td>P1</td><td>BD1</td><td>61.0℃</td><td>PASS</td></tr>
<tr><td>P2</td><td>LF2</td><td>56.9℃</td><td>PASS</td></tr>
<tr><td>P3</td><td>LF1</td><td>52.5℃</td><td>PASS</td></tr>
<tr><td>P4</td><td>C7</td><td>56.6℃</td><td>PASS</td></tr>
<tr><td>P5</td><td>C8</td><td>63.9℃</td><td>PASS</td></tr>
<tr><td>P6</td><td>Q1</td><td>77.1℃</td><td>PASS</td></tr>
<tr><td>P7</td><td>L1</td><td>60.2℃</td><td>PASS</td></tr>
<tr><td>P8</td><td>C5</td><td>50.6℃</td><td>PASS</td></tr>
<tr><td>P9</td><td>C47</td><td>51.5℃</td><td>PASS</td></tr>
<tr><td>P10</td><td>T1 CODE</td><td>66.8℃</td><td>PASS</td></tr>
<tr><td>P11</td><td>D100</td><td>81.1℃</td><td>PASS</td></tr>
<tr><td>P12</td><td>C105</td><td>59.4℃</td><td>PASS</td></tr>
<tr><td>P13</td><td>C108</td><td>51.1℃</td><td>PASS</td></tr>
<tr><td>P14</td><td>C106</td><td>56.3℃</td><td>PASS</td></tr>
<tr><td>P15</td><td>C109</td><td>50.7℃</td><td>PASS</td></tr>
</table></td><td>P</td></tr>
<tr><td>2</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： CEN-75-15
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 31.8 ℃
2. HIGH AMBIENT BURN-IN： 61.5 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 40.5 ℃
<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT
Ta= 31.8 ℃</th><th>HIGH AMBIENT
Ta= 40.5 ℃</th></tr>
<tr><td>1</td><td>LF2</td><td>TR733</td><td>56.5℃</td><td>64.3℃</td></tr>
<tr><td>2</td><td>L1</td><td>TR951</td><td>68.0℃</td><td>74.9℃</td></tr>
<tr><td>3</td><td>BD1</td><td>4A/800V GLASS GBU408</td><td>56.1℃</td><td>63.1℃</td></tr>
<tr><td>4</td><td>Q1</td><td>TK13A60D 13A/600V</td><td>62.3℃</td><td>70.1℃</td></tr>
<tr><td>5</td><td>D100</td><td>YA868C15RSC 30A/150V</td><td>67.1℃</td><td>74.6℃</td></tr>
<tr><td>6</td><td>C105</td><td>1500u/25V UL10Kh 12.5*20 ZLH</td><td>70.1℃</td><td>77.2℃</td></tr>
<tr><td>7</td><td>T1</td><td>TF2036</td><td>71.5℃</td><td>78.5℃</td></tr>
<tr><td>8</td><td>RTH1</td><td>220KΩ 3Φ TTC3A224F4371EY 1%</td><td>66.8℃</td><td>73.1℃</td></tr>
<tr><td>9</td><td>C5</td><td>10u/450V 105℃ 10*20 PX</td><td>62.7℃</td><td>70.0℃</td></tr>
<tr><td>10</td><td>C46</td><td>100u/25V UL10Kh 6.3*11 YXM</td><td>61.9℃</td><td>69.3℃</td></tr>
<tr><td>11</td><td>C125</td><td>820u/25V UL10Kh 10*20 ZLH</td><td>62.8℃</td><td>70.3℃</td></tr>
<tr><td>12</td><td>C150</td><td>0.47u/50V L5Kh 5*11 KY</td><td>59.5℃</td><td>66.8℃</td></tr>
<tr><td>13</td><td>LF100</td><td>TR627</td><td>68.3℃</td><td>75.6℃</td></tr>
<tr><td>14</td><td>U1</td><td>TDA4863G</td><td>65.8℃</td><td>73.2℃</td></tr>
<tr><td>15</td><td>D2</td><td>3A/800V GP30K</td><td>76.8℃</td><td>84.0℃</td></tr>
<tr><td>16</td><td>CASE</td><td>UP</td><td>51.7℃</td><td>59.7℃</td></tr>
</table></td><td>P</td></tr>
<tr><td>3</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P： 230 VAC
O/P：O/P SHORT
Ta：25℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>4</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 264VAC/100VAC
O/P：CV=14V
Ta= -35 ℃</td><td>TEST：OK</td><td>P</td></tr>
</table>

5	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 ℃ NO DAMAGE	I/P： 272 VAC O/P：CV=14V Ta= 50 ℃ HUMIDITY= 95 %R.H	TEST：OK	P
6	TEMPERATURE COEFFICIENT	± 0.03 %(0~50℃)	I/P： 230 VAC O/P：FULL LOAD	± 0.02 %(0~50℃)	P
7	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature： -45℃~ +90℃ 2. Temperature change rate ：25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle：5 CYCLE 5. Input/Output condition： STATIC		OK	P
8.	THERMAL SHOCK TEST	1. Thermal shock Temperature： -35℃~ +55℃ 2. Temperature change rate ：25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle：10 CYCLE 5. Input/Output condition： 230VAC/Full Load AC ON/OFF TEST turn on 58sec；turn off 2sec		OK	P
9	VIBRATION TEST	1 Carton & 1 Set (1) Waveform： Sine Wave (2) Frequency：10~500Hz (3) Sweep Time：12min/sweep cycle (4) Acceleration：5G (5) Test Time：72min in each axis (X.Y.Z) (6) Ta：25℃		TEST：OK	P
10	CAPACITOR LIFE CYCLE	CEN-75-15:SUPPOSE C 105 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Ta= 25 ℃ LIFE TIME (2) I/P： 230VAC O/P：FULL LOAD Ta= 50 ℃ LIFE TIME		(1) 214740HRS (2) 42470.8HRS	P
11	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE： 522.2K HRS			P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2009/10/8	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2010/2/11	PRODUCT SAMPLE W1002B54	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023