



# Test Report: OWA-120U-36

---

120W Single Output Moistureproof Adaptor

## ■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

## ■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

## ■ RELIABILITY TEST

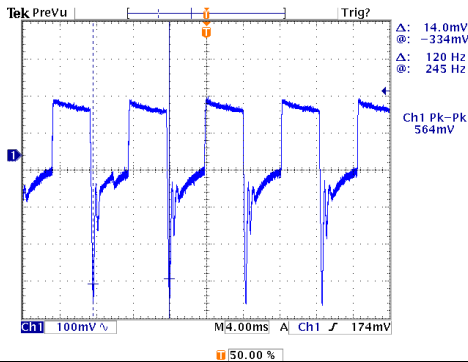
Environment Test

■ DESIGN VERIFY TEST

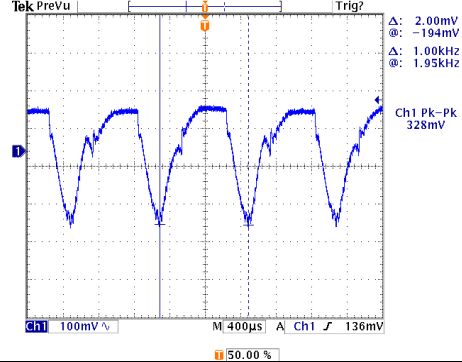
**OUTPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	21.6 ~36V	I/P: 230VAC O/P: LED MODE Ta: 25°C	8V~36V
2	OUTPUT VOLTAGE TOLERANCE	-2.0%~2.0%	I/P: 90 VAC / 264 VAC O/P: FULL/ NO LOAD Ta: 25°C	-0.08%~ +0.14%
3	LINE REGULATION	-0.5%~0.5%	I/P: 100VAC~ 264VAC O/P: FULL LOAD Ta: 25°C	0%~0 %
4	LOAD REGULATION	-0.5%~ 0.5%	I/P: 230VAC O/P: FULL ~NO LOAD Ta: 25°C	-0.08%~0.08 %
5	DYNAMIC LOAD	3600mVp-p	I/P: 230VAC O/P : (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta: 25°C	(1) 564mVp-p (2) 328mVp-p

FULL /50% LOAD 50%DUTY / 120HZ

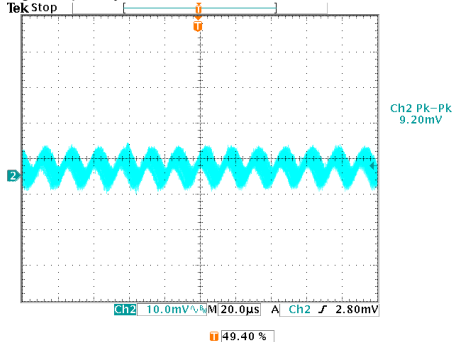


FULL /50% LOAD 50%DUTY / 1KHZ

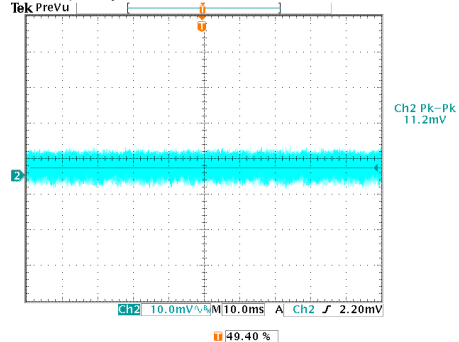


6	OVER/UNDERSHOOT TEST	$\pm 5\%$	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	<5 %
7	RIPPLE & NOISE (Max)	200mVp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	11.2mVp-p

high frequency:



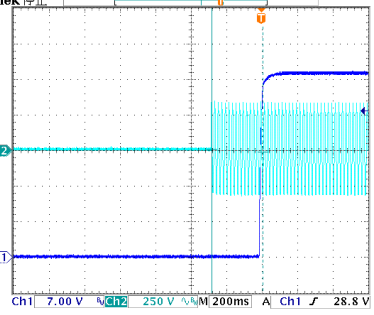
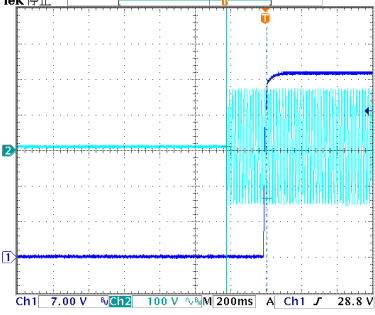
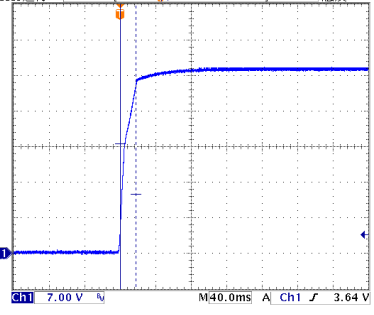
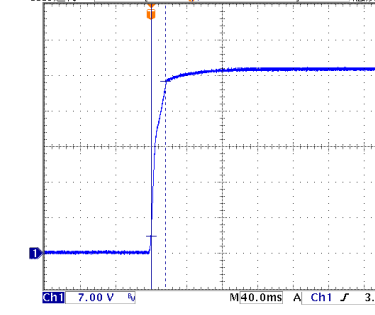
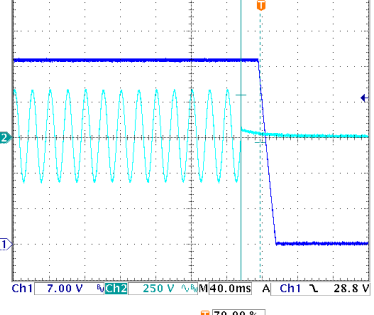
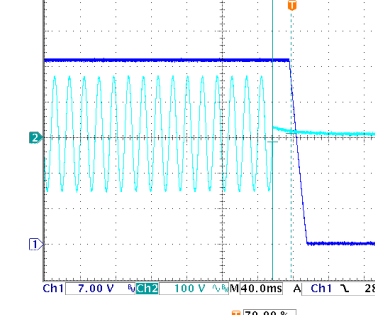
low frequency:





120W Single Output Moistureproof Adaptor

OWA-120U series

8	SET UP TIME(Max)	230VAC/ 500ms 115VAC/ 500ms	I/P: 230 VAC I/P: 115 VAC O/P: 95% LOAD Ta: 25°C	230VAC/ 288ms 115VAC/ 228ms
<p>INPUT=230VAC/50HZ @ 95% LOAD</p> <p>CH1: Output Voltage CH2: AC Input Voltage</p>  <p>Δ: 20.0 V Ⓢ: 10.0 V Δ: 288ms Ⓢ: -284ms</p> <p>Ch1 7.00 V Ch2 250 V M 200ms A Ch1 28.8 V</p>		<p>INPUT=115VAC/50HZ @ 95% LOAD</p> <p>CH1: Output Voltage CH2: AC Input Voltage</p>  <p>Δ: 14.6 V Ⓢ: 12.0 V Δ: 228ms Ⓢ: -224ms</p> <p>Ch1 7.00 V Ch2 100 V M 200ms A Ch1 28.8 V</p>		
9	RISE TIME (Max)	230VAC/ 80ms 115VAC/ 80ms	I/P: 230 VAC I/P: 115 VAC O/P: 95% LOAD Ta: 25°C	230VAC/17.6ms 115VAC/16.0ms
<p>INPUT=230VAC/50HZ @ 95% LOAD</p> <p>CH1: Output Voltage</p>  <p>Δ: 9.94 V Ⓢ: 21.6 V Δ: 17.6ms Ⓢ: 0.00 s</p> <p>Ch1 7.00 V M 40.0ms A Ch1 3.64 V</p>		<p>INPUT=115VAC/50HZ @ 95% LOAD</p> <p>CH1: Output Voltage</p>  <p>Δ: 30.5 V Ⓢ: 3.36 V Δ: 16.0ms Ⓢ: 0.00 s</p> <p>Ch1 7.00 V M 40.0ms A Ch1 3.64 V</p>		
10	HOLD UP TIME(Typ)	230VAC/ 16ms 115VAC/ 16ms	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	230VAC/21.6ms 115VAC/20.8ms
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1: Output Voltage CH2: AC Input Voltage</p>  <p>Δ: 33.5 V Ⓢ: 30.0 V Δ: 21.6ms Ⓢ: -24.0ms</p> <p>Ch1 7.00 V Ch2 250 V M 40.0ms A Ch1 28.8 V</p>		<p>INPUT=115VAC/50HZ @ FULL LOAD</p> <p>CH1: Output Voltage CH2: AC Input Voltage</p>  <p>Δ: 24.0 V Ⓢ: -12.0 V Δ: 20.8ms Ⓢ: -23.2ms</p> <p>Ch1 7.00 V Ch2 100 V M 40.0ms A Ch1 28.8 V</p>		

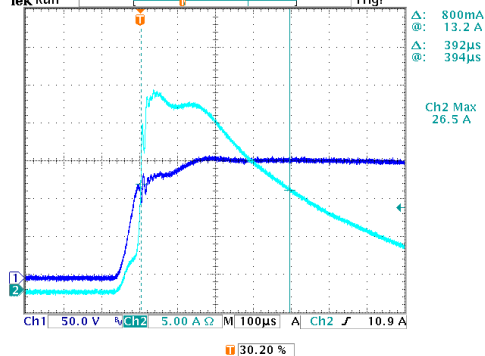


**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~264VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	87V~264V
			I/P: (1)LOW-LINE-3V=87 V HIGH-LINE+15%=300 V O/P: FULL/MIN LOAD ON: 30 Sec OFF: 30 Sec 10MIN (2)230VAC ON: 0.5 Sec OFF: 0.5 Sec 20MIN (3)230VAC ON: 3Sec OFF: 3Sec 12HOURS (POWER ON/OFF NO DAMAGE)	TEST: OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 90 VAC ~264 VAC O/P: FULL~NO LOAD Ta: 25°C	TEST: OK
3	AC CURRENT	1.3A/115VAC 0.65A/230VAC	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	I=1.13A/ 115VAC I=0.58A/ 230VAC
4	LEAKAGE CURRENT	< 0.125mA / 120VAC < 0.25mA / 240VAC	I/P: 120VAC I/P: 240VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.001 mA/120VAC N-FG: 0.001 mA/120VAC L-FG: 0.003 mA/240VAC N-FG: 0.003 mA/240VAC
5	NO LOAD POWER CONSUMPTION	< 0.15W	I/P: 230VAC O/P: NO LOAD Ta: 25°C	0.112W
6	TOTAL HARMONIC DISTORTION	Total harmonic distortion will be lower than 20% when output loading is 60% or higher at 115V/230VAC	I/P: 115VAC I/P: 230VAC O/P: 60% LOAD	THD: 6.13 %/115VAC THD: 14.06 %/230VAC
7	INRUSH CURRENT(Typ)	30A/115VAC 60A/230VAC Twidth =520 us measured at 50% Ipeak COLD START	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	I=26.5A/ 115VAC Twidth =392us I=53.4A/ 230VAC Twidth =432us

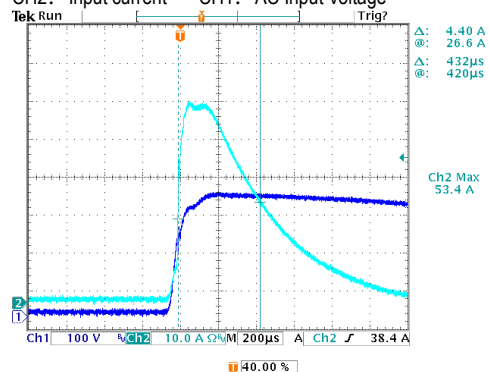
INPUT=115VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



INPUT=230VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



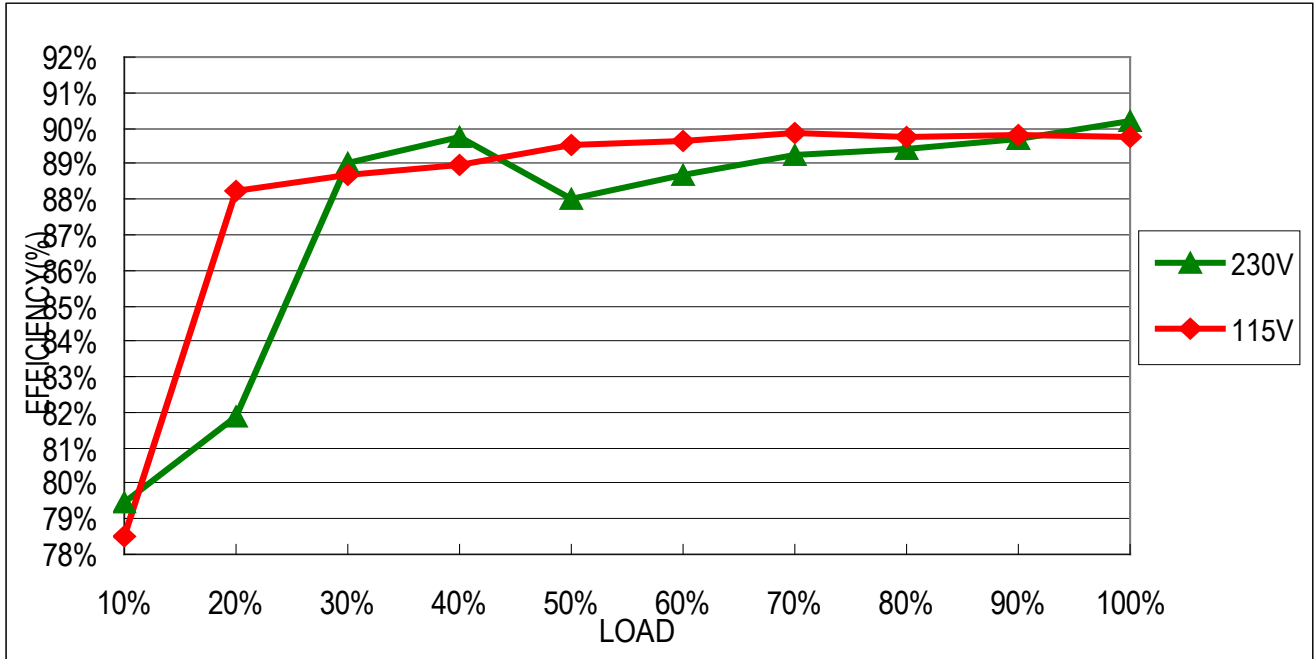


120W Single Output Moistureproof Adaptor

OWA-120U series

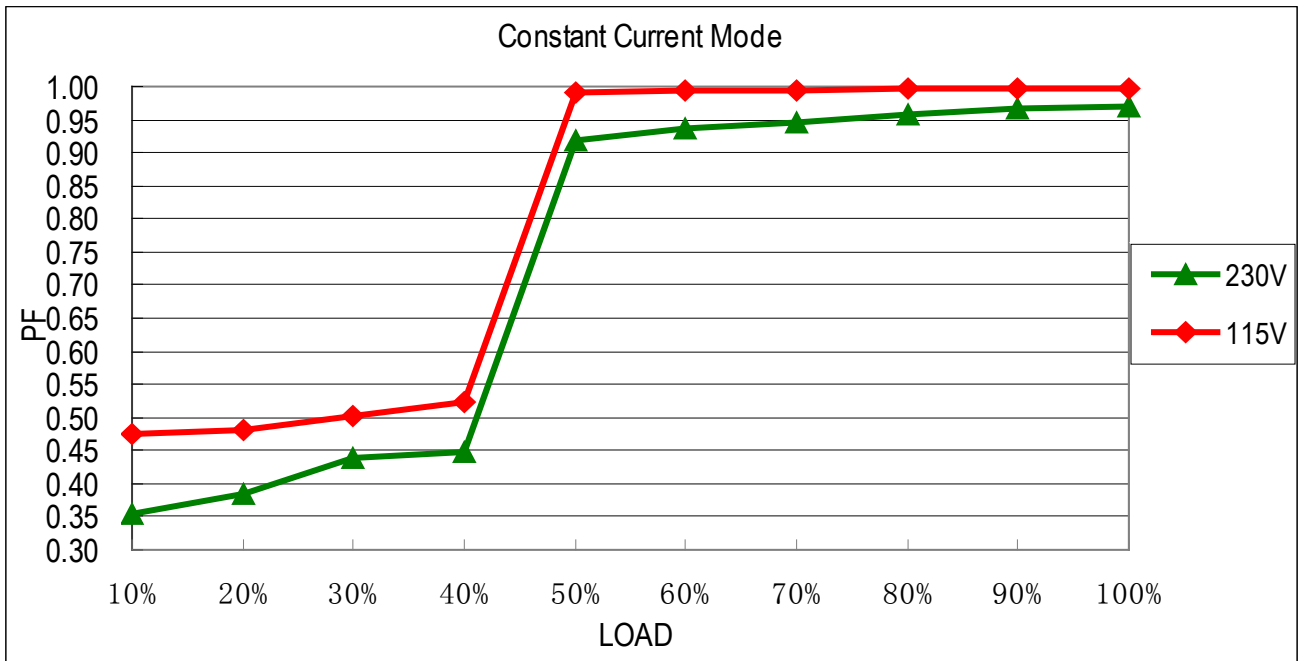
8	EFFICIENCY(Typ)	89%/115VAC 90%/230VAC	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	89.77%/115VAC 90.19%/230VAC
---	-----------------	--------------------------	--	--------------------------------

EFFICIENCY vs LOAD



9	POWER FACTOR	0.97/ 115VAC 0.96/ 230VAC	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PF=0.997/ 115VAC PF=0.969/ 230VAC
---	--------------	------------------------------	--	--------------------------------------

P. F vs LOAD



**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	95 %~ 108 %	I/P: 230VAC O/P: TESTING Ta: 25°C	100.8%/ 230VAC Constant current limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	41V~46V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	43.3V/ 230VAC Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 230VAC O/P: FULL LOAD	O.T.P. Active Shut down o/p voltage, re-power on to recover
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Hiccup mode, recovers automatically after fault condition is removed

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q 2 Rated 730V/10A	I/P: High-Line +3V =267V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 662V (2) 579V (3) 643V
2	<b>Diode Peak Voltage</b>	Q101 Rated 200V/20A	I/P: High-Line +3V =267V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 163V (2) 128V (3) 157V
3	<b>Input Capacitor Voltage</b>	C5 Rated 100u/ 450V	I/P: High-Line +3V =267V O/P: (1) Full Load input on/off (2) Min load input on /Off (3) Full Load /Min load Change Ta: 25°C	(1) 443V (2) 440V (3) 446V
4	<b>Control IC Voltage Test</b>	U1 Rated 28V	I/P: High-Line +3V =267V O/P: (1) Full Load input on/off (2) Min load input on /Off (3) Full Load /Min load Change Ta: 25°C	(1) 17.5V (2) 17.3V (3) 17.2V
5	PFC Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q 1 Rated 600V/15A	I/P: High-Line +3V =267V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 529V (2) 507V (3) 478V





120W Single Output Moistureproof Adaptor

**OWA-120U series**

2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 264VAC/100VAC O/P: FULL LOAD Ta= -45°C / -30°C	TEST: OK
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 45°C NO DAMAGE	I/P: 272VAC O/P: FULL LOAD Ta=45°C HUMIDITY= 95% R.H	TEST: OK
4	TEMPERATURE COEFFICIENT	±0.03%/°C (0~50°C)	I/P: 230 VAC O/P: FULL LOAD	±0.007%/°C (0~50°C)
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature: -45°C ~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle: 5 CYCLE 5. Input/Output condition: STATIC		TEST: OK
6	THERMAL SHOCK TEST	1. Thermal shock Temperature: -45°C ~ +50°C 2. Temperature change rate : 25°C / 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 58 sec, turn off 2 sec;		TEST: OK
7	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°C		TEST: OK
8	CAPACITOR LIFE CYCLE	OWA-120U-36: SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P: 230VAC O/P: FULL LOAD Ta= 25 °C LIFE TIME (2) I/P: 230VAC O/P: FULL LOAD Ta= 45 °C LIFE TIME (3) I/P: 230VAC O/P: 75% LOAD Ta= 45 °C LIFE TIME (4) I/P: 230VAC O/P: 50% LOAD Ta= 45 °C LIFE TIME		(1) 192200 HRS (2) 66137 HRS (3) 90254 HRS (4) 183065 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 2902.2K hrs min. Telcordia SR-332 (Bellcore); 294.4K hrs min. MIL-HDBK-217F (25°C)		
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): 50000 hours @ TC 70°C		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHANGZJ/ZHUOKB	SKY	LIUWY