

MANUFACTURING TEST REQUIREMENT

MODEL NO : PA-1650-03D5

OUTPUT POWER : 65W

DATE : 2020/06/08

REV : A

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REV. NO.	DESCRIPTIONS OF CHANGE		Item	Change Date	REF. DOC. NO.
	BEFORE	AFTER			
A	INITIAL			2020/06/08	

TEST ITEM

1.	INPUT \ OUTPUT REQUIREMENT	4
2.	DETAIL DESCRIPTION :	4
2.1	INRUSH CURRENT	4
2.2	RATED CURRENT	4
2.3	HOLD UP TIME	4
2.4	TURN ON TIME	4
2.5	POWER SUPPLY EFFICIENCY	5
2.6	POWER CONSUMPTION	5
2.7	OUTPUT COMBINE REGULATION & RIPPLE / NOISE TEST	6
2.8	DYNAMIC LOAD	7
2.9	RISE TIME	7
3.	PROTECTION	7
3.1	OUTPUT OVER VOLTAGE PROTECTION	7
3.2	OUTPUT OVER CURRENT PROTECTION	7
3.3	OUTPUT SHORT CIRCUIT PROTECTION	7
3.4	OVER TEMPERATURE PROTECTION	8
4.	HI-POT TEST	8
5.	INSULATION RESISTANCE	8
6.	BANDWIDTH	8
7.	Temperature	8

INPUT \ OUTPUT REQUIREMENT

Input Voltage	Input Frequency
90VAC ~ 264VAC	47Hz ~ 63Hz

DC OUTPUT	Min	Nom	Max	Peak	Unit
19.5 Vdc	0.1	1.65	3.34	4.35(4 second duration)	Amps

Note1: When the load is at peak current 4.35A during 4 second under 110/230Vac, the output voltage must meet the output regulation (18.525V ~ 20.475V)

Note2: When the load is at no load 0A, the output voltage regulation is 14.0V to 20.5V.

2. DETAIL DESCRIPTION :

2.1 INRUSH CURRENT

Test Condition			Design Requirement
AC Input	DC Output		
115V 60Hz	+19.5V	3.34A	Shall be less than 70 Amps. (cold start)
230V 50Hz			Shall be less than 140 Amps. (cold start)

2.2 RATED CURRENT

Test Condition			Design Requirement
AC Input	DC Output		
90V 47Hz	+19.5V	3.34A	1.7A (max)

2.3 HOLD UP TIME

Test Condition			Design Requirement
AC Input	DC Output		
115V 50Hz	+19.5V	3.34A	5mS min.

2.4 TURN ON TIME

Test Condition			Design Requirement
AC Input	DC Output		
90V 47Hz	+19.5V	0A	5sec. Max
264 63Hz		3.34A	

Note : A 2200PF/25V electrical capacitor shall be used to terminate output at the measurement point for turn on test.

2.5 POWER SUPPLY EFFICIENCY

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+19.5V	3.34A	Instantaneous Efficiency > 85%(min)
115V/60Hz	+19.5V	3.34A	Average Efficiency > 87%(min)
230V/50Hz			

Note1: Average Efficiency value of 25%, 50%, 75%, 100% load condition shall be more than 87% (after B/I 30min) and 85.0%(at cold start) with both 115Vac/230Vac.

Note2: Instantaneous efficiency value at 100% load condition shall be more than 85% (after B/I 30min) and 84%(at cold start) with 90Vac.

Note3: As factory manufacture procedure can't meet standard test method, manufacture procedure can use below test condition in factory.

(1)For CPK calculation Test method:

Instantaneous efficiency value at 100% load conduction shall be more then 82% at cold start.

Instantaneous efficiency value at 100% load conduction shall be more then 85% (after B/I 30min).

(2)For mass production line auto-test Test method:

Instantaneous efficiency value at 100% load conduction shall be more then 83.5% at cold start.

2.6 POWER CONSUMPTION

Test condition			Design Requirement
AC input	DC output		
115V/60Hz 230V/50Hz	+19.5V	0A	< 150mW (cold start) <70mW after 3 minute
115V/60Hz 230V/50Hz	+19.5V	0.25W	< 480mW (cold start)

Note1: Using the Power Meter of YOKOGAWA WT-210.

Note2: When AC Input is 230/50Hz in no load test, the DC output voltage should Hiccup, the range must be from 19.8V to 14V.

Note3: As factory manufacture procedure can't meet standard test method, manufacture procedure can use below test condition in factory.

(A) For CPK calculation Test method:

(1) Delay 2mins, then integrate 3mins at DC output equal to 0W and 0.25W.

(2) Delay 2S, then integrate 3S at DC output equal to 0.5W,

1W and 1.5W.

Design Requirement:

When Pout=0W, Pin should be less than 0.2W

When Pout=0.25W, Pin should be less than 0.55W

When Pout=0.5W, Pin should be less than 1W

When Pout=1W, Pin should be less than 1.7W

When Pout=1.5W, Pin should be less than 2.4W

(B) For mass production line auto-test Test method: Delay 2S,
then integrate 3S.

Design Requirement:

When Pout=0W, Pin should be less than 0.3W

When Pout=0.25W, Pin should be less than 0.6W

When Pout=0.5W, Pin should be less than 1W

When Pout=1W, Pin should be less than 1.7W

When Pout=1.5W, Pin should be less than 2.4W

2.7 OUTPUT COMBINE REGULATION & RIPPLE / NOISE TEST

Test Condition		Design Requirement	
AC Input	DC Output	Item	+19.5V
90VAC 47Hz	0.1A	Ripple & Noise	<600m Vp-p
		Regulation	18.525V ~ 20.475V
90VAC 47Hz	3.34A	Ripple & Noise	<600m Vp-p
		Regulation	18.525V ~ 20.475V
100VAC 60Hz	0.1A	Ripple & Noise	<600m Vp-p
		Regulation	18.525V ~ 20.475V
100VAC 60Hz	3.34A	Ripple & Noise	<600m Vp-p
		Regulation	18.525V ~ 20.475V
240VAC 50Hz	0.1A	Ripple & Noise	<600m Vp-p
		Regulation	18.525V ~ 20.475V
240VAC 50Hz	3.34A	Ripple & Noise	<600m Vp-p
		Regulation	18.525V ~ 20.475V
264VAC 63Hz	0.1A	Ripple & Noise	<600m Vp-p
		Regulation	18.525V ~ 20.475V
264VAC 63Hz	3.34A	Ripple & Noise	<600m Vp-p
		Regulation	18.525V ~ 20.475V

Note1: The ripple & noise voltage of the outputs shall be measured at the pins of the mating output connector .

Note2: A high frequency 1 μ f ceramic capacitor and a 10 μ f ELE. capacitor shall be used to terminate each output at the measurement point. (Bandwidth is 20MHz)

2.8 DYNAMIC LOAD

Test condition			Design Requirement
AC input	DC output		
90V/60Hz	+18~+21V	0.05~3.34A	Rise: 0.2A/uS Fall: 0.2A/uS Frequency: 50Hz~10KHz
100V/60Hz			
240V/50Hz			
264V/50Hz			

Note1: Set the load change frequency at 50Hz & 1 KHz & 10 KHz and duty at 50%.

2.9 RISE TIME

The output rise time (measured from the 10% point to the 90% point on the waveform) shall be 2ms to 400ms at 110Vac/60Hz & 240Vac/50Hz (CC mode).

3. PROTECTION

3.1 OUTPUT OVER VOLTAGE PROTECTION

Test Condition		Design Requirement		
AC Input	DC Output	Min	Max	Shutdown & latch off
100V 60Hz	+19.5V	21.5V	26V	
240V 50Hz				

3.2 OUTPUT OVER CURRENT PROTECTION

Test Condition			Design Requirement
AC Input	DC Output		(Shut down & latch off.)
90V 60Hz	+19.5V	4.3A~6.5A	
264V 63Hz			

Note: the test result should meet table 3.2 (4.3A~6.5A) at cold start and Burn in 30 minute (minimum).

Note: the OCP time delay should be large then 30ms.

3.3 OUTPUT SHORT CIRCUIT PROTECTION

Test Condition		Design Requirement
AC Input	DC Output	No damage shall occur & Output shall shutdown and latch off
90V 60Hz	Short Output	
100V 60Hz	Terminal of the	

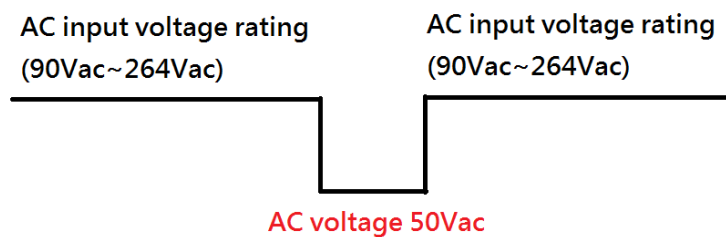
240V 60Hz	DC plug + and	
264V 60Hz	-	

3.4 OVER TEMPERATURE PROTECTION

When the inside temperature of PSU rise to 105~125 degree C, the PSU will shout down and latch off until the AC reset. Please short the RT100 to make sure the OTP circuit could work well . It simulation the over temperature condition occur.

Note:

For release protection status, AC voltage is turned from AC input rating (90Vac~264Vac) to AC 50Vac then return AC input rating.



4. HI-POT TEST

Apply DC 4242V on primary to secondary 1 sec. No component, no arcing, no noise, and the cut off current shall below 10mA.

5. INSULATION RESISTANCE

Apply DC 500V to primary-secondary .The resistance shall large then 30M ohms.

6. BANDWIDTH

Bandwidth condition is 20MHz or 100MHz for de-rating testing.

7. TEMPERATURE

For case temperature, the ambient is from 0 to 40 degrees centigrade

For component temperature, the ambient temperature is from 0 to 35 degrees C