

EVALUATION DATA

MODEL NAME : OFI700A28

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Approved by : _____
Tomas Isaksson

P R

B X



POWERBOX
A Cosel Group Company

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Remark:

Unless specified the test condition shall be

Input voltage / Frequency: 230 [Vac] / 50 [Hz]

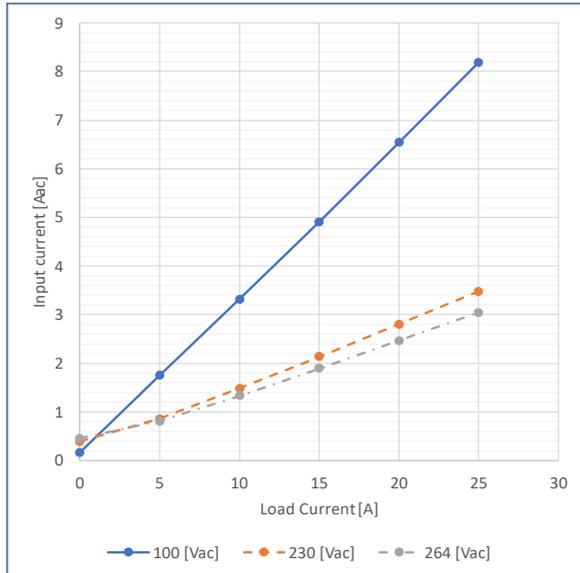
Load current: 25 [A]

Baseplate temperature: 25 [°C]

1. Input Current (by Load Current)

Test Circuitry : Figure A

Graph



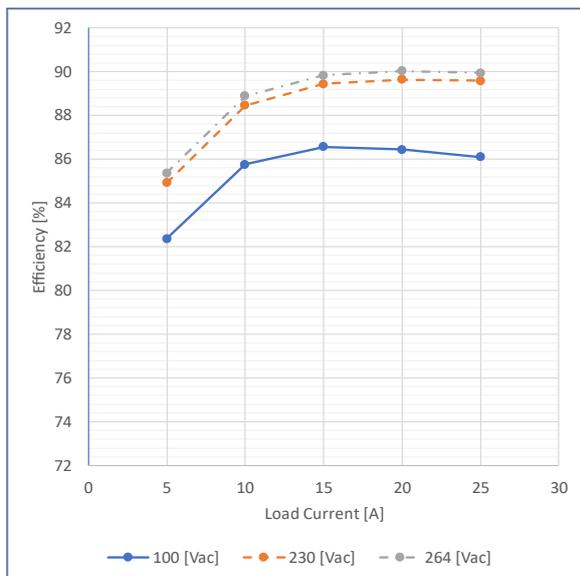
Value

Load Current [A]	Input Current [Aac]		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	0.161	0.388	0.453
5.00	1.752	0.857	0.809
10.00	3.316	1.484	1.334
15.00	4.906	2.135	1.890
20.00	6.536	2.801	2.463
25.00	8.185	3.476	3.045

2. Efficiency (by Load Current)

Test Circuitry : Figure A

Graph



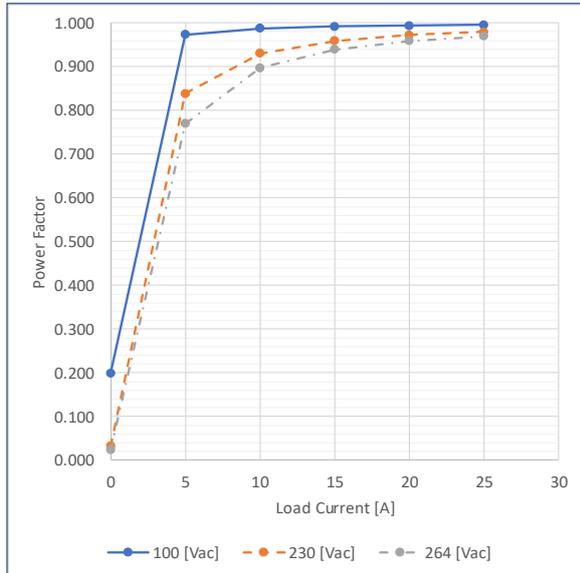
Value

Load Current [A]	Efficiency [%]		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	-	-	-
5.00	82.376	84.929	85.368
10.00	85.767	88.469	88.892
15.00	86.574	89.442	89.840
20.00	86.435	89.637	90.040
25.00	86.096	89.594	89.938

3. Power Factor (by Load Current)

Test Circuitry : Figure A

Graph



Value

Load Current [A]	Power Factor		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	0.199	0.032	0.024
5.00	0.973	0.838	0.770
10.00	0.987	0.930	0.897
15.00	0.992	0.959	0.939
20.00	0.993	0.972	0.959
25.00	0.995	0.979	0.970

4. Leakage Current

Test Circuitry : See table

Test Equipment: Simpson 228

Value

Standard	Testing Circuitry	Measuring Method	Leakage Current [mA]			Note
			Input Voltage			
			100 [Vac]	230 [Vac]	264 [Vac]	
IEC62368-1	Figure B-1	Both phases	0.18	0.45	0.52	Operation
		One of phases	0.34	0.80	0.93	Stand by
	Figure B-2	Both phases	0.18	0.45	0.52	Operation
		One of phases	0.34	0.80	0.93	Stand by

5. Inrush current

Test Circuitry : Figure A

— C1: Input Voltage (200V/div)
— C4: Input Current (20A/div)

Waveform



Input Voltage : 100 [Vac]
(100ms/div)

- ① Primary Inrush Current : 6.1 [A]
- ② Secondary Inrush Current : 18.4 [A]

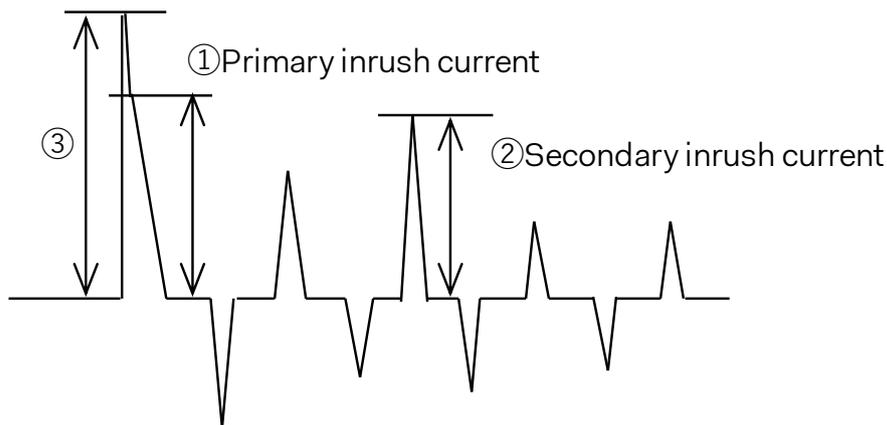


Input Voltage : 230 [Vac]
(100ms/div)

- ① Primary Inrush Current : 14.9 [A]
- ② Secondary Inrush Current : 11.0 [A]

Remark:

A surge current flown into Line-to-Line capacitor (③) would be excluded as primary inrush current (①).

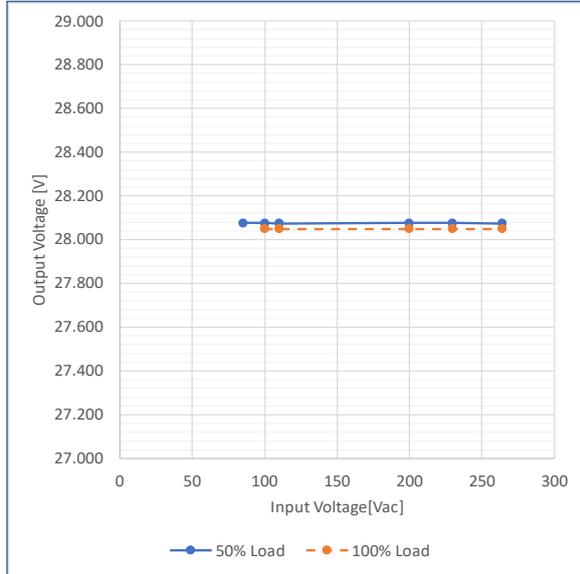


6. Line Regulation

Test Circuitry : Figure A

Change input voltage from 85 to 264[Vac]

Graph



Value

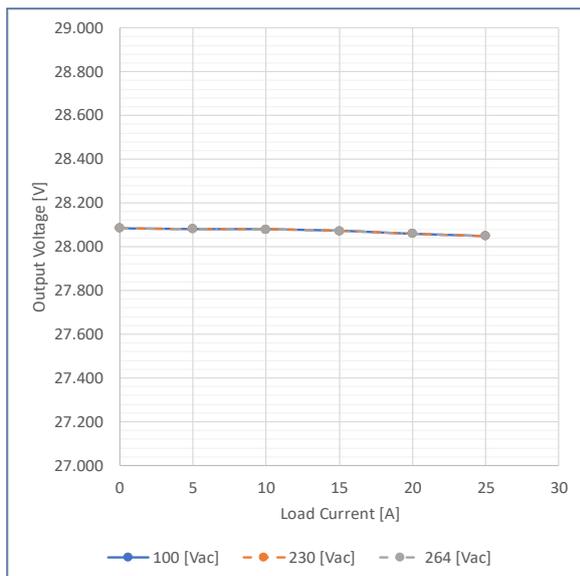
Input Voltage [Vac]	Output Voltage [V]	
	Load Factor	
	50% Load	100% Load
85	28.077	-
100	28.077	28.050
110	28.076	28.050
200	28.077	28.050
230	28.077	28.050
264	28.076	28.050

7. Load Regulation

Test Circuitry : Figure A

Change Load Current from 0 to 25[A]

Graph



Value

Load Current [A]	Output Voltage [V]		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	28.086	28.085	28.085
5.00	28.082	28.081	28.081
10.00	28.080	28.080	28.080
15.00	28.073	28.073	28.072
20.00	28.061	28.061	28.061
25.00	28.050	28.050	28.050

8. Ripple Noise

Test Circuitry : Figure C

C2: Output voltage (50mV/div)
 BW: 20MHz

Waveform



(2μs/div)



(200ms/div)

9. Dynamic Load Response

Test Circuitry : Figure A
 Load Current 2.5 [A] <-> 22.5 [A]

C2: Output voltage (200mV/div)
 C4: Output current (10A/div)

Waveform



(10ms/div)

Load changes from 10% to 90% of rated current.

10. Rise Time Characteristics by AC ON

Test Circuitry : Figure A

— C1: Input voltage (200V/div)
— C2: Output voltage (10V/div)

Waveform



Input Voltage 100 [Vac]
Load Current 25 [A]
(100ms/div)



Input Voltage 230 [Vac]
Load Current 25 [A]
(100ms/div)

11. Rise Time Characteristics with RC signal

Test Circuitry : Figure D

— C2: Output voltage (10V/div)
— C3: RC signal (10V/div)

Waveform



Input Voltage 100 [Vac]
Load Current 25 [A]
(100ms/div)



Input Voltage 230 [Vac]
Load Current 25 [A]
(100ms/div)

12. Fall time / Hold-up Time

Test Circuitry : Figure A

— C1: Input voltage (200V/div)
— C2: Output voltage (10V/div)

Waveform

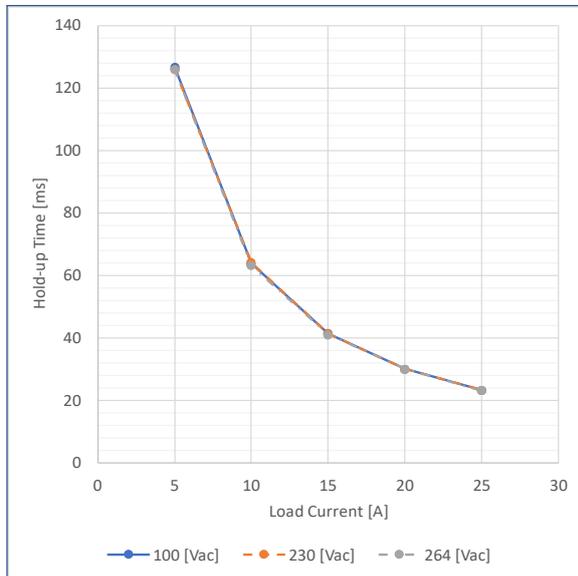


Input Voltage 100 [Vac]
Load Current 25 [A]
(10ms/div)



Input Voltage 230 [Vac]
Load Current 25 [A]
(10ms/div)

Graph



Value

Load Current [A]	Hold-up Time [ms]		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	-	-	-
5.00	126.8	126.0	126.0
10.00	63.8	64.1	63.1
15.00	41.4	41.4	41.0
20.00	30.0	30.0	30.0
25.00	23.3	23.3	23.2

13. DC OK and IOG signal

Test Circuitry : Figure D

— C1: Input voltage (500V/div)
— C2: Output Voltage (20V/div)

— C3: DC OK (10V/div)
— C4: IOG (10V/div)

Waveform



Turn ON AC input Load Current : 0A
(100ms/div)



Turn ON AC input Load Current : 25A
(100ms/div)



Turn OFF AC input Load Current : 0A
(1s/div)



Turn OFF AC input Load Current : 25A
(100ms/div)

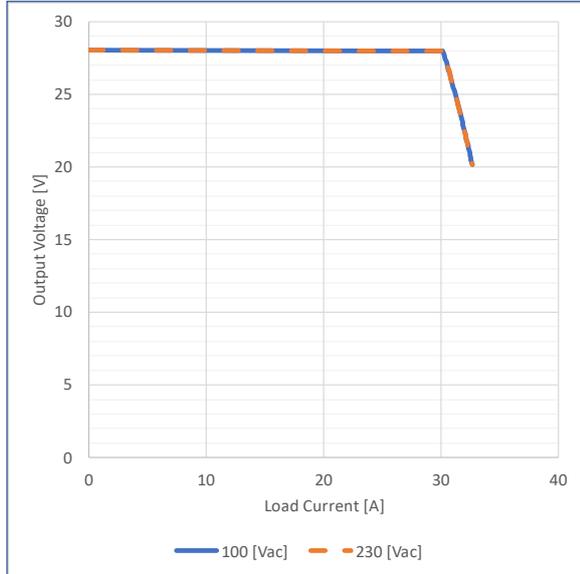


Output Short
(200ms/div)

14. Over Current Protection

Test Circuitry : Figure A

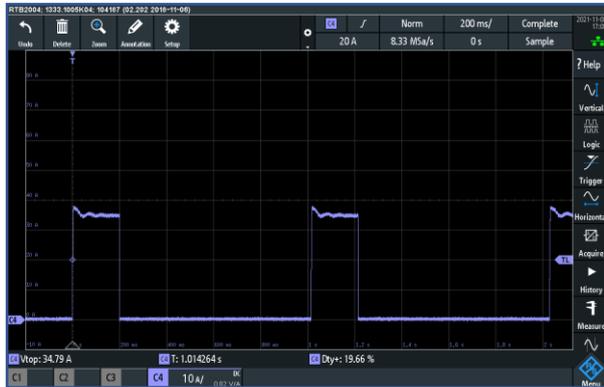
Graph



Value

Output Voltage [V]	Load Current [A]	
	Input Voltage	
	100 [Vac]	230 [Vac]
28.00	24.854	24.870
26.60	30.661	30.671
25.20	31.156	31.164
22.40	32.006	32.001
20.00	32.720	32.666

Waveform



— C4: Output Current (10A/div)

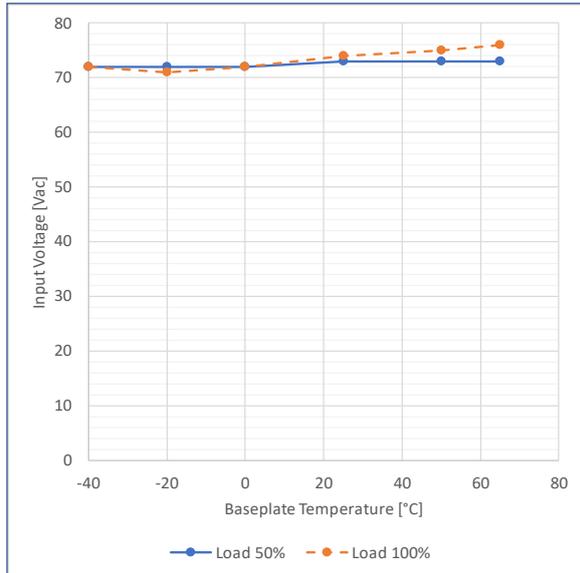
Intermittent operation occurs when the output voltage is from 20V to 0V.

Input Voltage 230 [Vac]
Output Short
(200ms/div)

15. Minimum Input Voltage for Regulated Output Voltage

Test Circuitry : Figure A

Graph



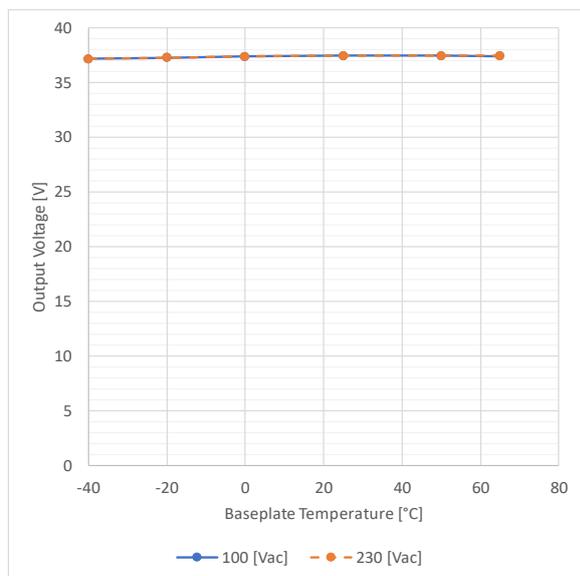
Value

Baseplate Temperature [°C]	Input Voltage [Vac]	
	Load Current	
	Load 50%	Load 100%
-40	72	72
-20	72	71
0	72	72
25	73	74
50	73	75
65	73	76

16. Overvoltage Protection

Test Circuitry : Figure A

Graph

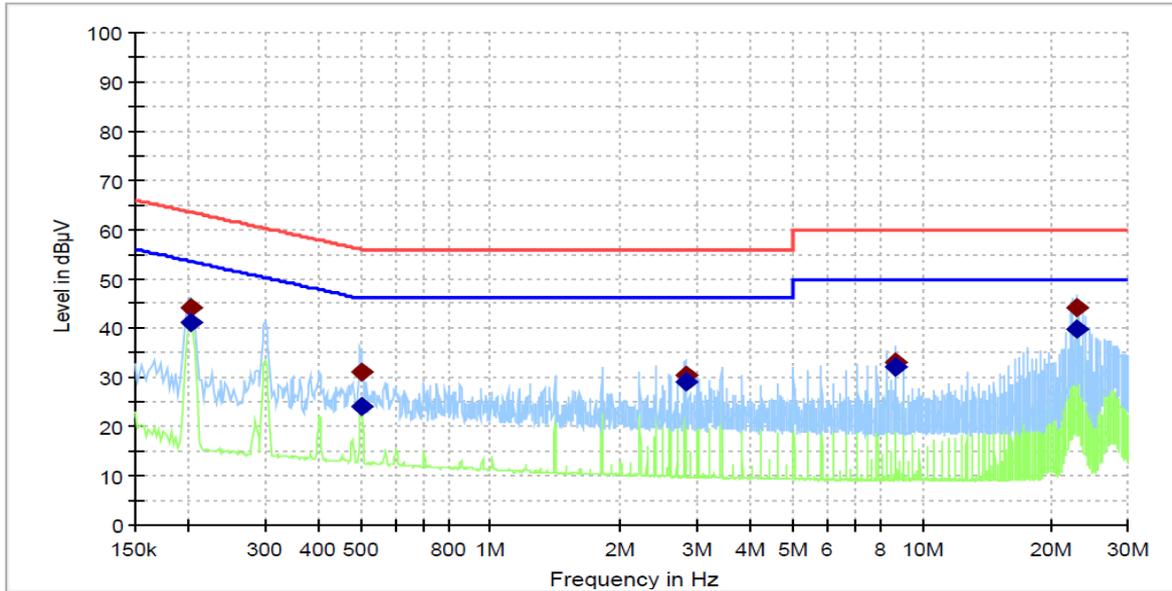


Value

Baseplate Temperature [°C]	Output Voltage [V]	
	Input Voltage	
	100 [Vac]	230 [Vac]
-40	37.160	37.160
-20	37.270	37.270
0	37.390	37.390
25	37.450	37.450
50	37.450	37.450
65	37.440	37.450

17. Conducted Emission

Input Voltage : 230Vac / 50Hz Load : 100 %



— Preview Result 2-AVG
— EN55032 AC Table A.10 Class B QP
◆ Final_Result QPK
— Preview Result 1-PK+
— EN55032 AC Table A.10 Class B AV
◆ Final_Result CAV

Table Conducted emission test result (230Vrms / 50Hz Line L)

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	PE	Corr. (dB)
0.201750	44.08	---	63.54	19.46	L1	GND	11.2
0.201750	---	41.30	53.54	12.24	L1	GND	11.2
0.501000	31.06	---	56.00	24.94	L1	GND	11.2
0.501000	---	24.11	46.00	21.89	L1	GND	11.2
2.820750	---	29.23	46.00	16.77	L1	GND	11.2
2.820750	30.59	---	56.00	25.41	L1	GND	11.2
8.661750	33.20	---	60.00	26.80	L1	GND	11.2
8.664000	---	32.18	50.00	17.82	L1	GND	11.2
22.767000	44.17	---	60.00	15.83	L1	GND	11.2
22.767000	---	39.91	50.00	10.09	L1	GND	11.2

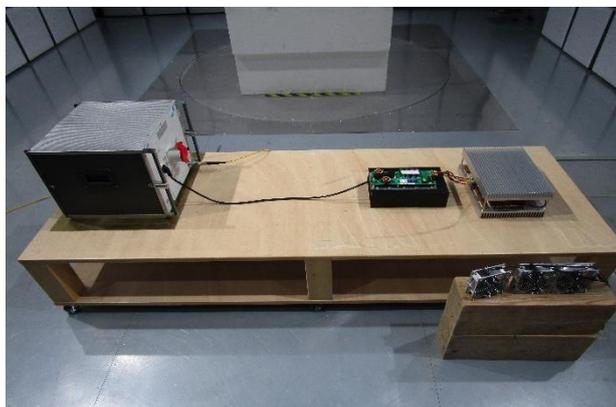


Fig. Conducted emission test environment

18. Figure of Test Circuitry

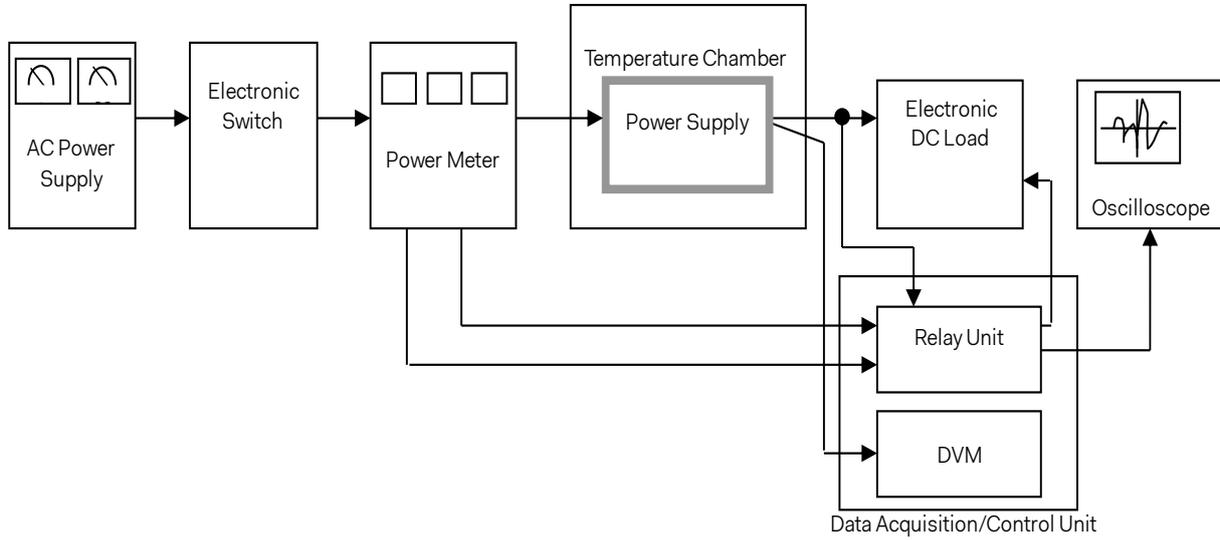


Figure A Test circuitry for general performance measurement

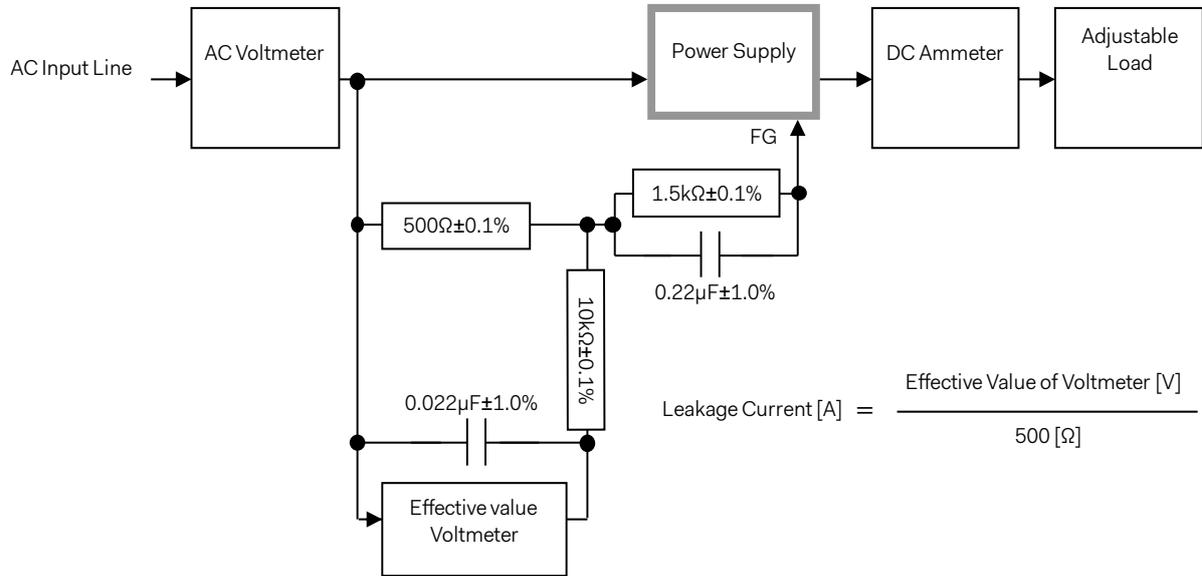


Figure B-2 Leakage current measurement (IEC62368-1, refer to IEC60990 Fig.4)

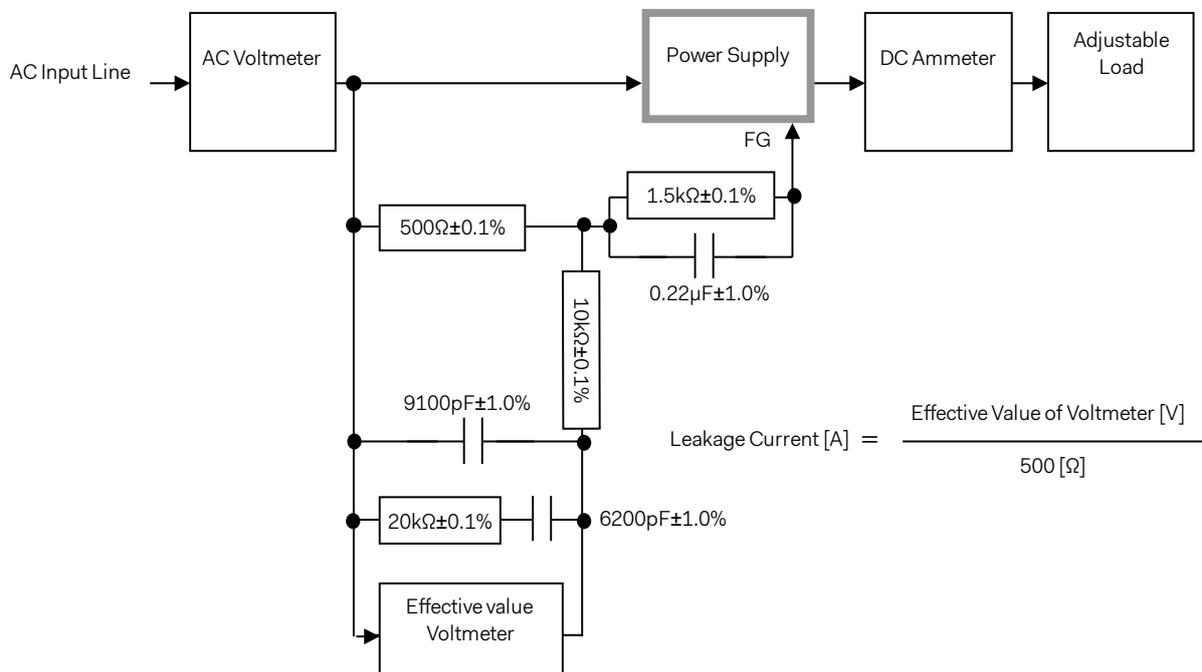


Figure B-2 Leakage current measurement (IEC62368-1, refer to IEC60990 Fig.5)

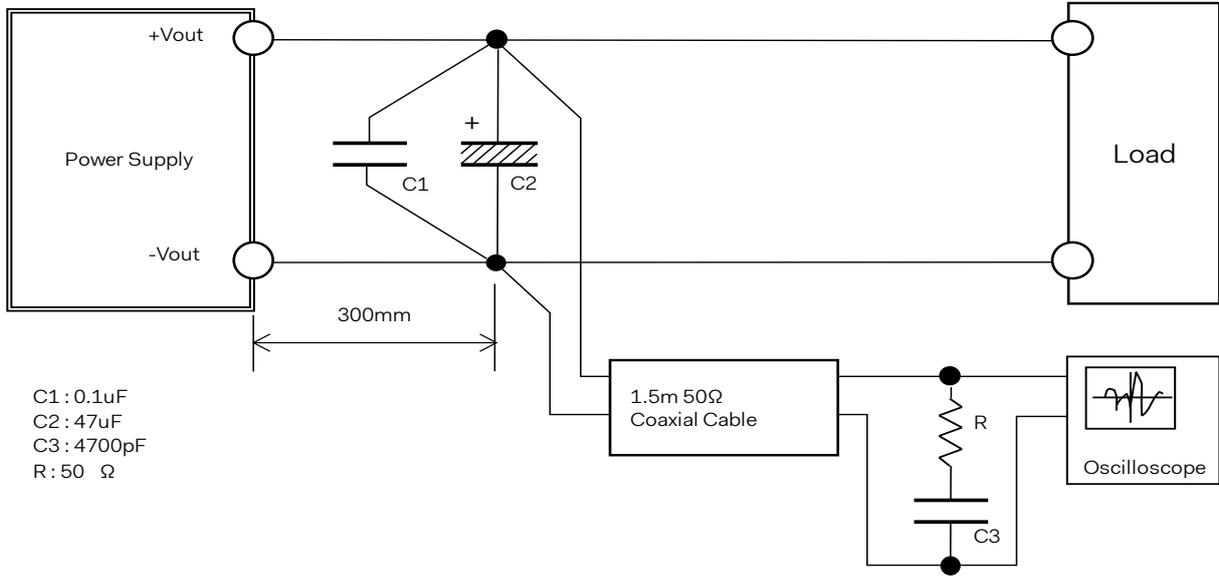


Figure C Ripple voltage measurement (JEITA RC-9131D)

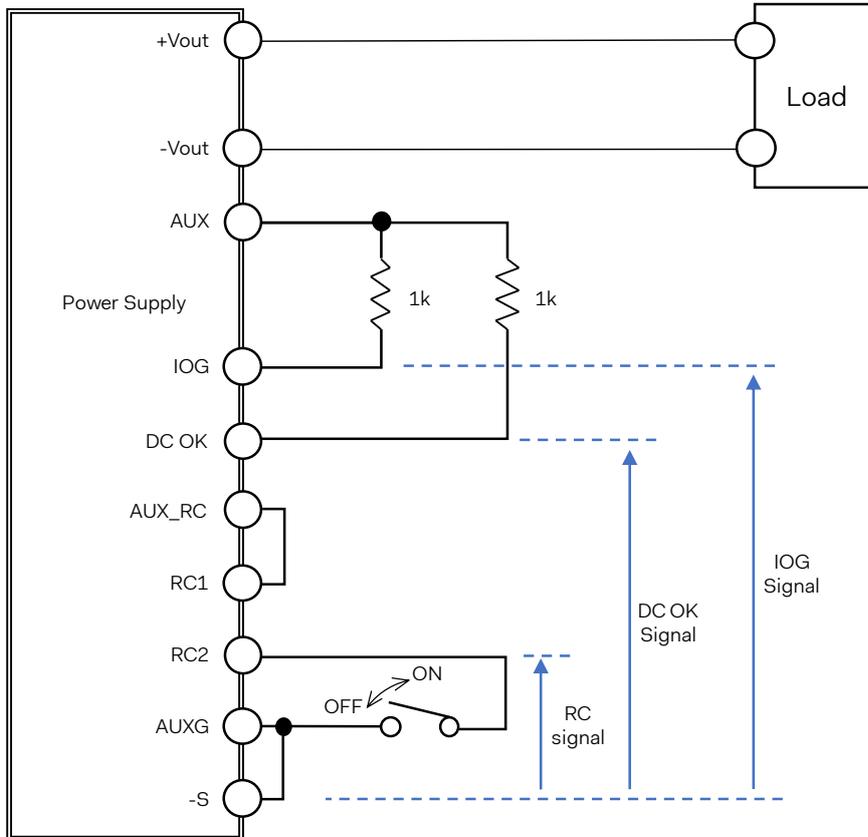


Figure D Alarm signal measurement