

TEST DATA OF LHA75F-3R3-Y

Regulated DC Power Supply
September 26, 2019

Approved by : Junya Kaneda
Junya Kaneda Design Manager

Prepared by : Shuto Takai
Shuto Takai Design Engineer

COSEL CO.,LTD.

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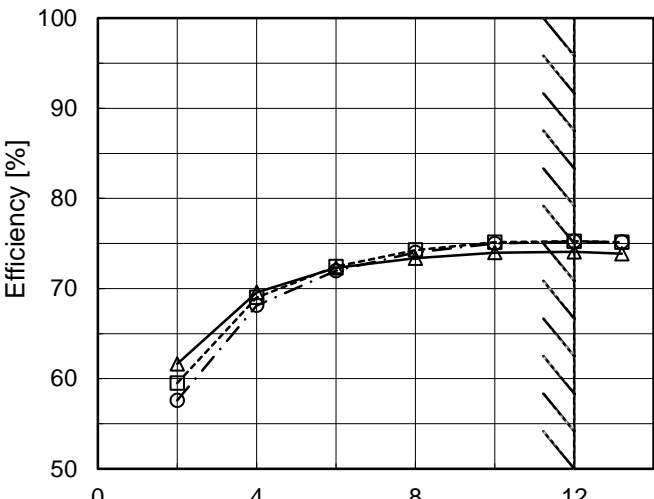
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Model		LHA75F-3R3-Y		Temperature Testing Circuitry	25°C Figure A																																																			
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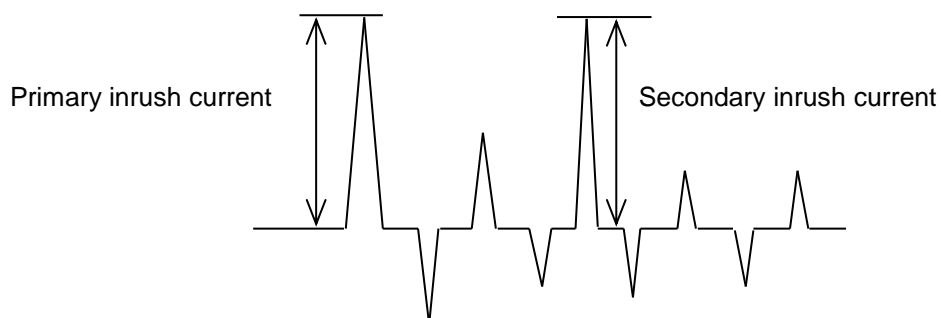
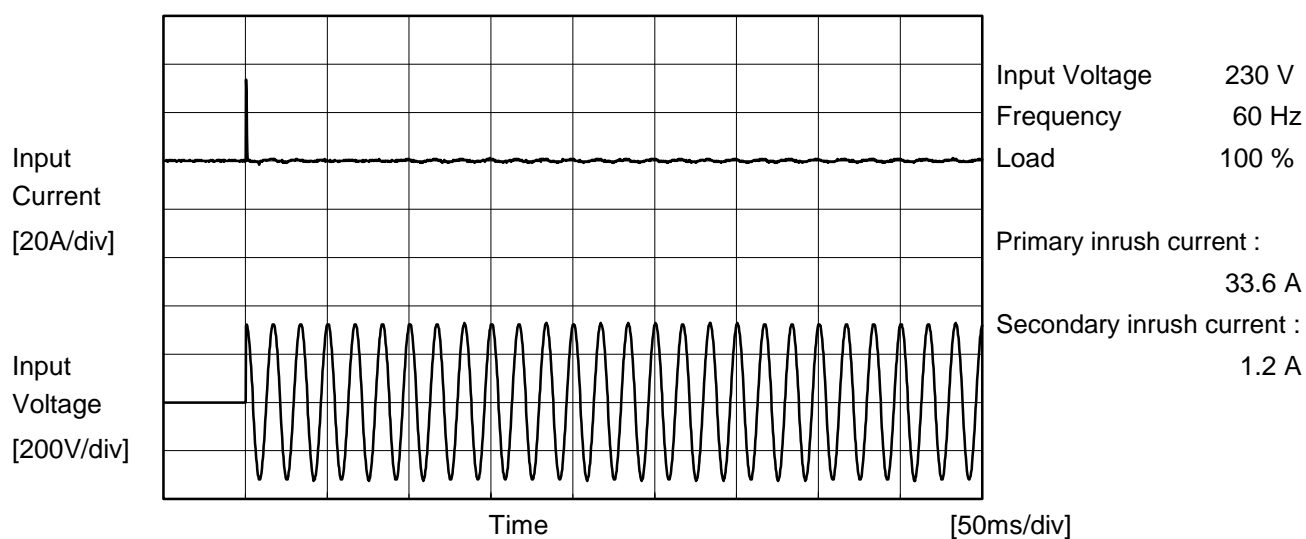
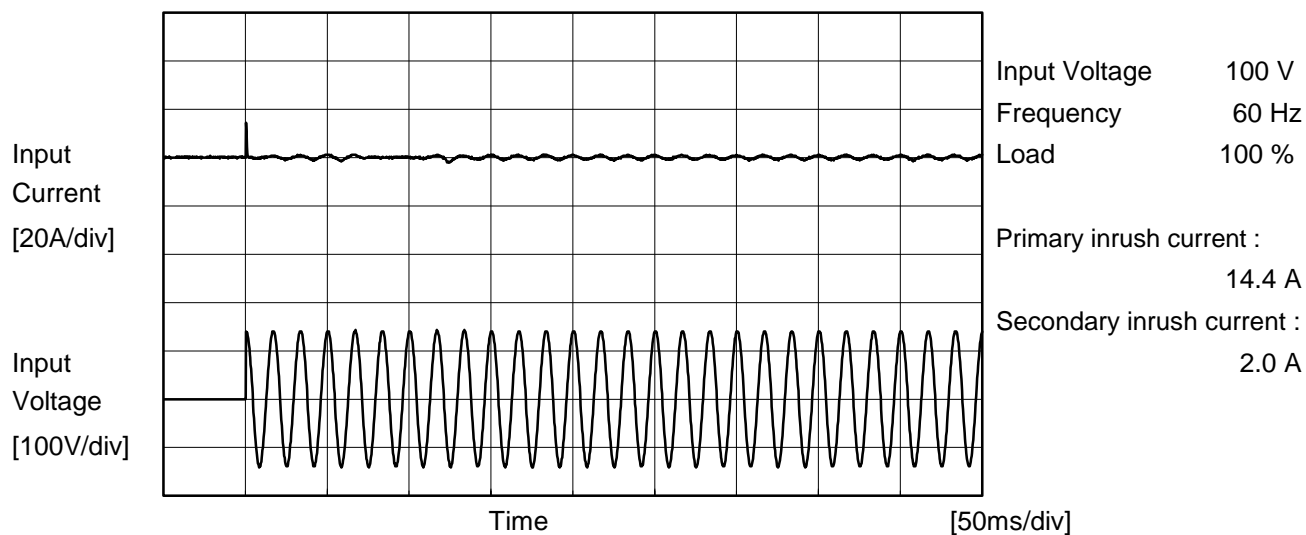
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Model	LHA75F-3R3-Y	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





Model		LHA75F-3R3-Y	Temperature 25°C Testing Circuitry Figure B
Item		Leakage Current	
Object		_____	

1.Results

[mA]

Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			100 [V]	230 [V]	240 [V]	
DEN-AN	Figure B-1	Both phases	0.13	0.34	0.36	Operation
		One of phases	0.26	0.67	0.71	Stand by
IEC62368-1	Figure B-2	Both phases	0.11	0.28	0.29	Operation
		One of phases	0.21	0.56	0.58	Stand by
	Figure B-3	Both phases	0.11	0.28	0.30	Operation
		One of phases	0.21	0.55	0.58	Stand by

The value for "One of phases" is the reference value only.

2.Condition

Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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Item		Line Regulation	Testing Circuitry		Figure A																																
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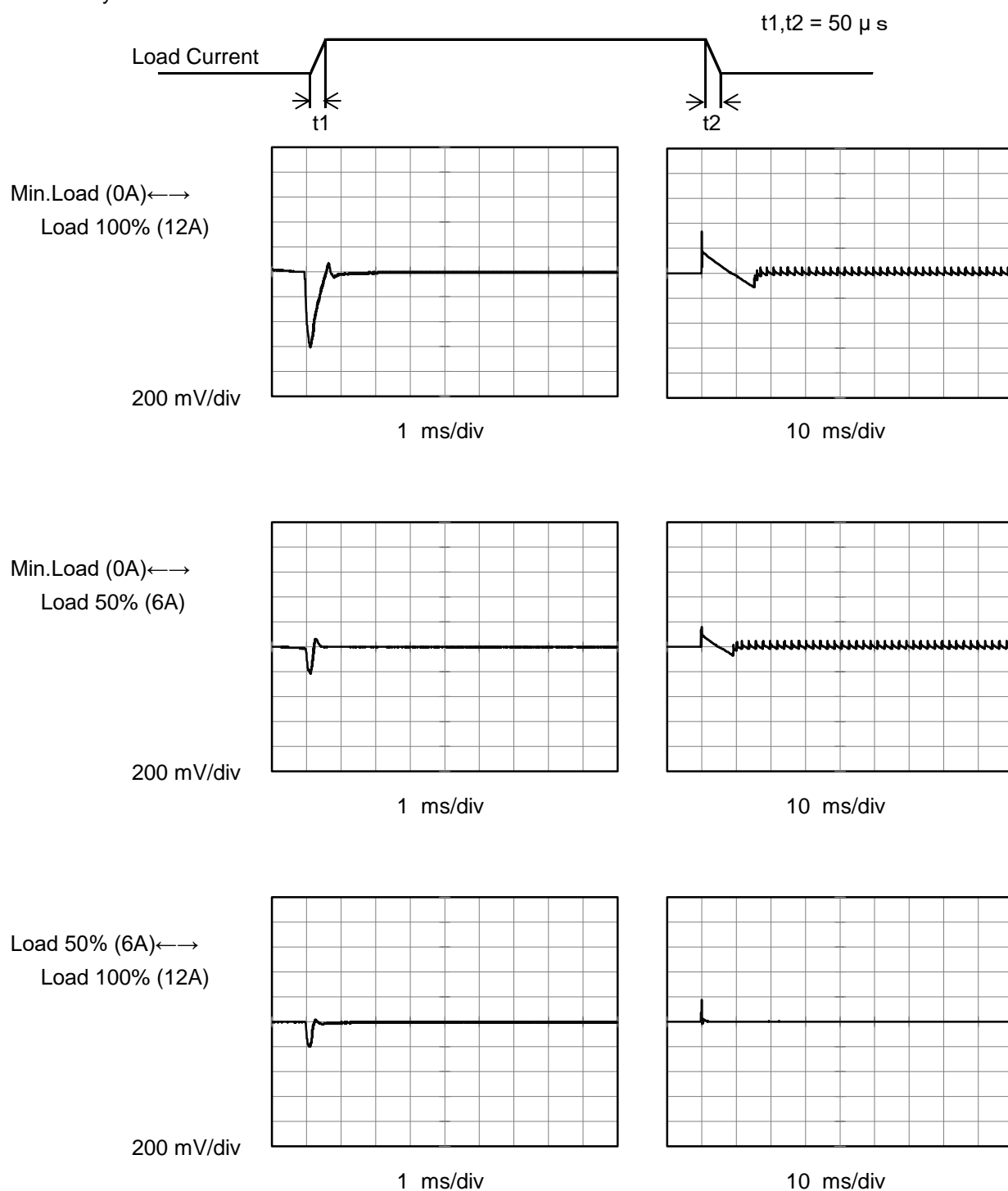
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Model	LHA75F-3R3-Y	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+3.3V12A		

Input Volt. 230 V
Cycle 1000 ms



Model		LHA75F-3R3-Y		Temperature 25°C																																					
Item		Ripple-Noise (by Load Current)		Testing Circuitry Figure C																																					
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<p>Measured by 20 MHz Oscilloscope.</p> <p>Ripple-Noise is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p>																																									
<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div></div> <p>Ripple-Noise [mVp-p]</p> <p>T1</p> <p>T2</p>																																									
<p>Fig. Complex Ripple Wave Form</p>																																									

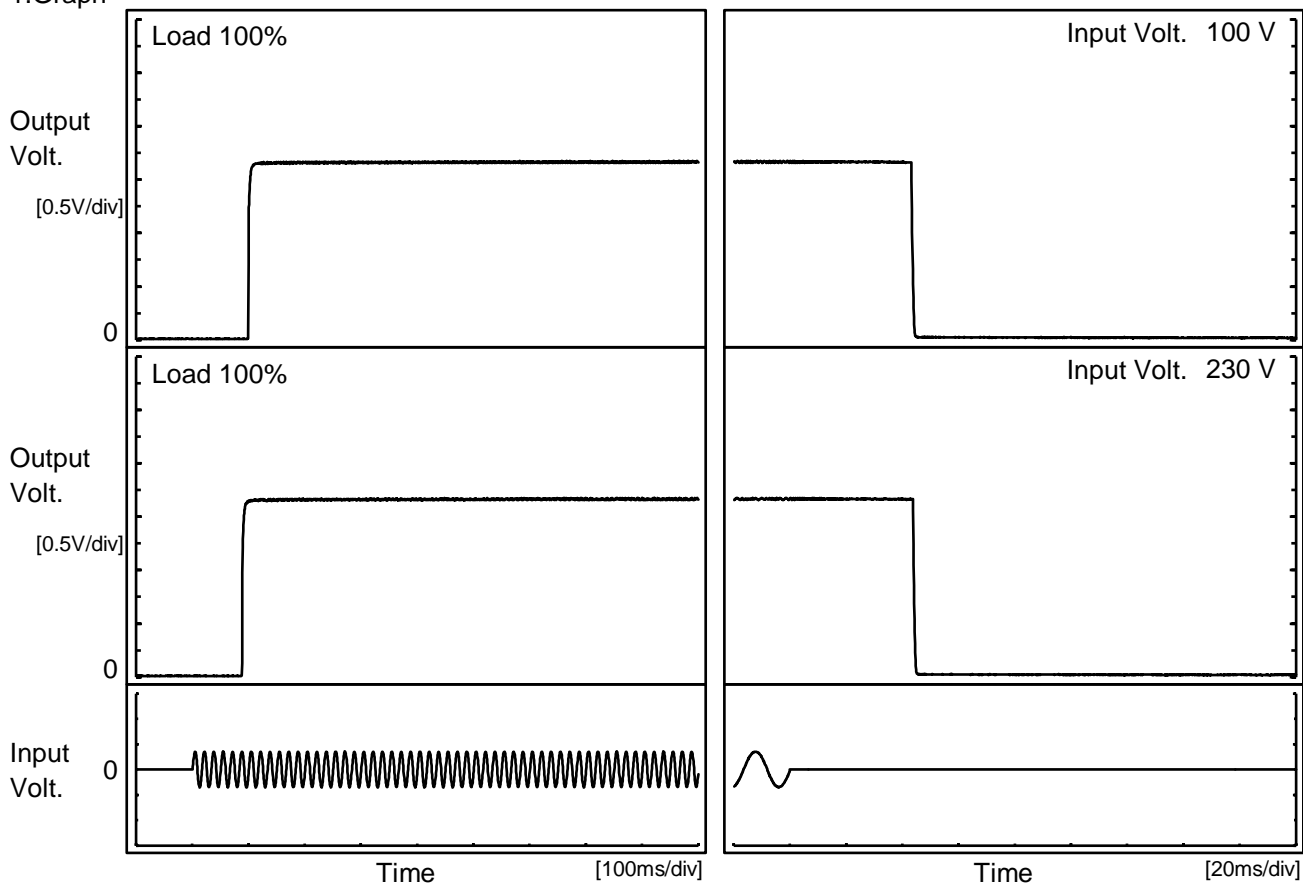
- 9 -

BC-11406

Model		LHA75F-3R3-Y																																																				
Item		Ambient Temperature Drift																																																				
Object		+3.3V12A																																																				
1.Graph		2.Values																																																				
<div><div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>200V</div></div><div><div>---○---</div><div>Input Volt.</div><div>230V</div></div></div><p>Output Voltage [V]</p><p>Ambient Temperature [°C]</p><p>Load 100%</p><p>Note: Slanted line shows the range of the rated ambient temperature.</p></div>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>-20</td><td>3.304</td><td>3.304</td><td>3.304</td></tr><tr><td>-15</td><td>3.306</td><td>3.306</td><td>3.306</td></tr><tr><td>-10</td><td>3.307</td><td>3.307</td><td>3.307</td></tr><tr><td>0</td><td>3.310</td><td>3.310</td><td>3.310</td></tr><tr><td>25</td><td>3.314</td><td>3.314</td><td>3.314</td></tr><tr><td>40</td><td>3.316</td><td>3.316</td><td>3.316</td></tr><tr><td>50</td><td>3.317</td><td>3.317</td><td>3.317</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	-20	3.304	3.304	3.304	-15	3.306	3.306	3.306	-10	3.307	3.307	3.307	0	3.310	3.310	3.310	25	3.314	3.314	3.314	40	3.316	3.316	3.316	50	3.317	3.317	3.317	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
-20	3.304	3.304	3.304																																																			
-15	3.306	3.306	3.306																																																			
-10	3.307	3.307	3.307																																																			
0	3.310	3.310	3.310																																																			
25	3.314	3.314	3.314																																																			
40	3.316	3.316	3.316																																																			
50	3.317	3.317	3.317																																																			
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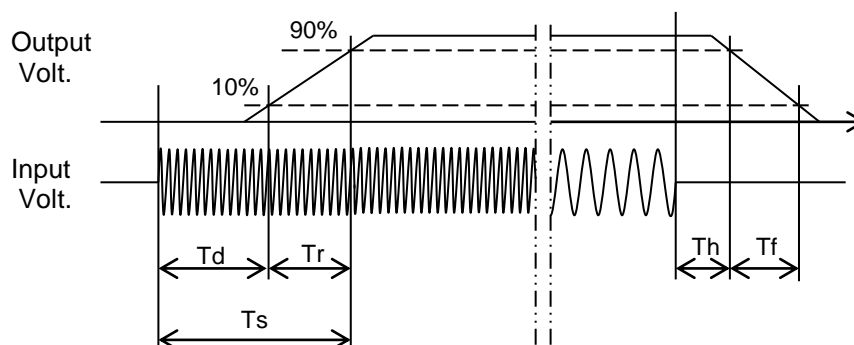
Model	LHA75F-3R3-Y		
Item	Rise and Fall Time	Temperature	25°C
Object	+3.3V12A	Testing Circuitry	Figure A

1.Graph



2.Values

		[ms]				
Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		100.0	3.0	103.0	43.2	0.9
230 V		89.0	3.0	92.0	43.8	0.8



COSEL

Model		LHA75F-3R3-Y	Temperature		25°C																																
Item		Hold-Up Time	Testing Circuitry		Figure A																																
Object		+3.3V12A																																			
1.Graph			2.Values																																		
<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div>Load 50%</div><div>Load 100%</div></div> <div><div><div>1000</div><div>100</div><div>10</div><div>1</div></div><div>50100150200250300</div><div>Hold-Up Time [ms]</div><div>Input Voltage [V]</div></div> <div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</div><div>Note: Slanted line shows the range of the rated input voltage.</div></div>			<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Hold-Up Time [ms]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>85</td><td>87</td><td>44</td></tr><tr><td>90</td><td>87</td><td>44</td></tr><tr><td>100</td><td>87</td><td>44</td></tr><tr><td>120</td><td>87</td><td>44</td></tr><tr><td>200</td><td>88</td><td>44</td></tr><tr><td>230</td><td>88</td><td>44</td></tr><tr><td>264</td><td>89</td><td>44</td></tr><tr><td>280</td><td>93</td><td>47</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>			Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	85	87	44	90	87	44	100	87	44	120	87	44	200	88	44	230	88	44	264	89	44	280	93	47	--	-	-
Input Voltage [V]	Hold-Up Time [ms]																																				
	Load 50%	Load 100%																																			
85	87	44																																			
90	87	44																																			
100	87	44																																			
120	87	44																																			
200	88	44																																			
230	88	44																																			
264	89	44																																			
280	93	47																																			
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Model

LHA75F-3R3-Y

Item

Instantaneous Interruption Compensation

Object

+3.3V12A

1.Graph

—△—

Input Volt. 100V

---□---

Input Volt. 200V

-·-○-·-

Input Volt. 230V

Instantaneous Compensation Time [ms]

Load Current [A]	100V [ms]	200V [ms]	230V [ms]
2.0	235	240	245
4.0	122	129	131
6.0	70	87	87
8.0	32	64	64
10.0	32	52	53
12.0	32	41	43
13.2	32	36	37

Load Current [A]


Note: Slanted line shows the range of the rated load current.

2.Values

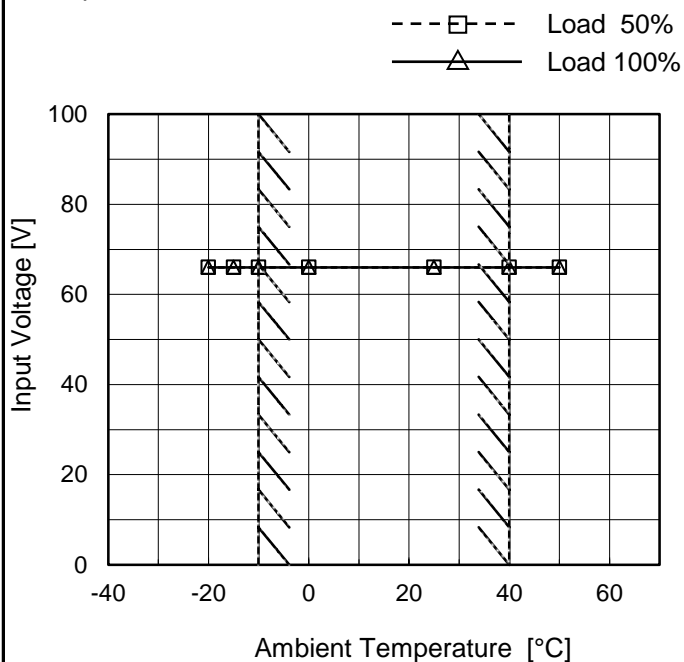
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
2.0	235	240	245
4.0	122	129	131
6.0	70	87	87
8.0	32	64	64
10.0	32	52	53
12.0	32	41	43
13.2	32	36	37
--	-	-	-
--	-	-	-
--	-	-	-

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Model	LHA75F-3R3-Y
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V12A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	66	-
-15	66	66
-10	66	66
0	66	66
25	66	66
40	66	66
50	66	66
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

<div>LOREL</div>			
Model	LHA75F-3R3-Y		
Item	Overcurrent Protection	Temperature	25°C
Object	+3.3V12A	Testing Circuitry	Figure A
1.Graph		2.Values	
<div><div><div></div><div>Input Volt. 100V</div></div><div><div></div><div>Input Volt. 230V</div></div></div> <div><div><div>Output Voltage 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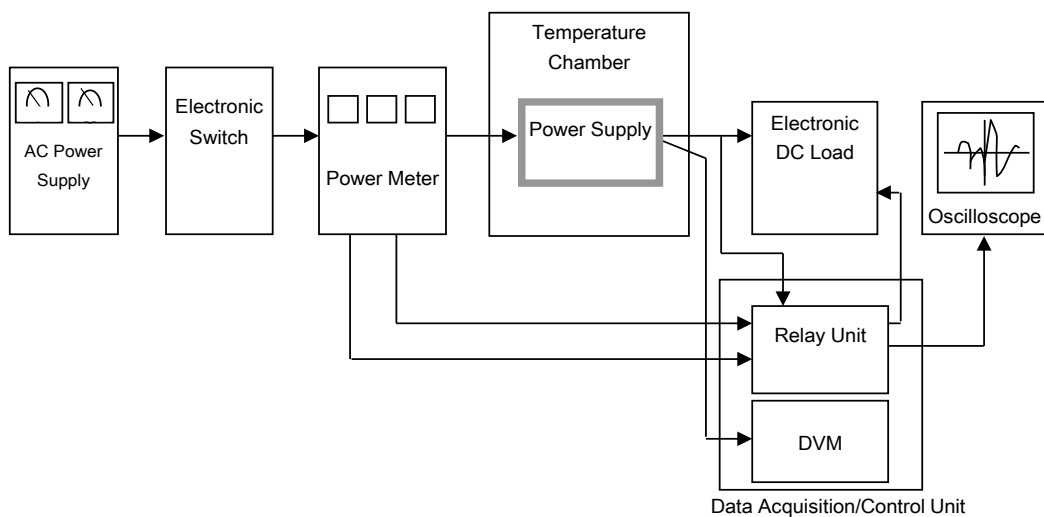


Figure A

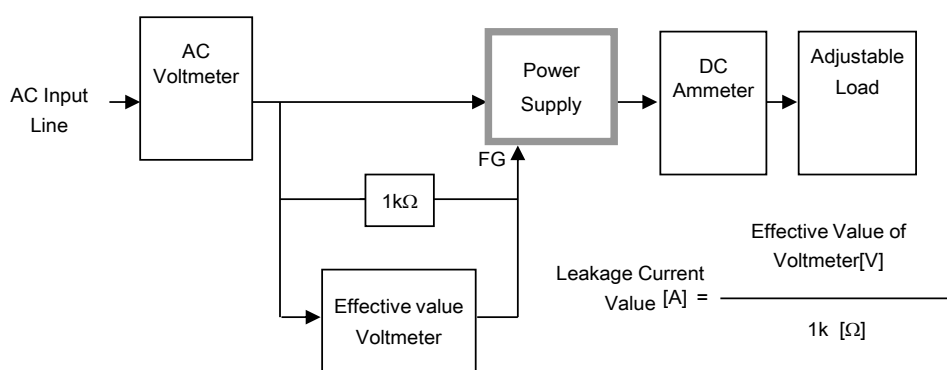


Figure B-1 (DEN-AN)

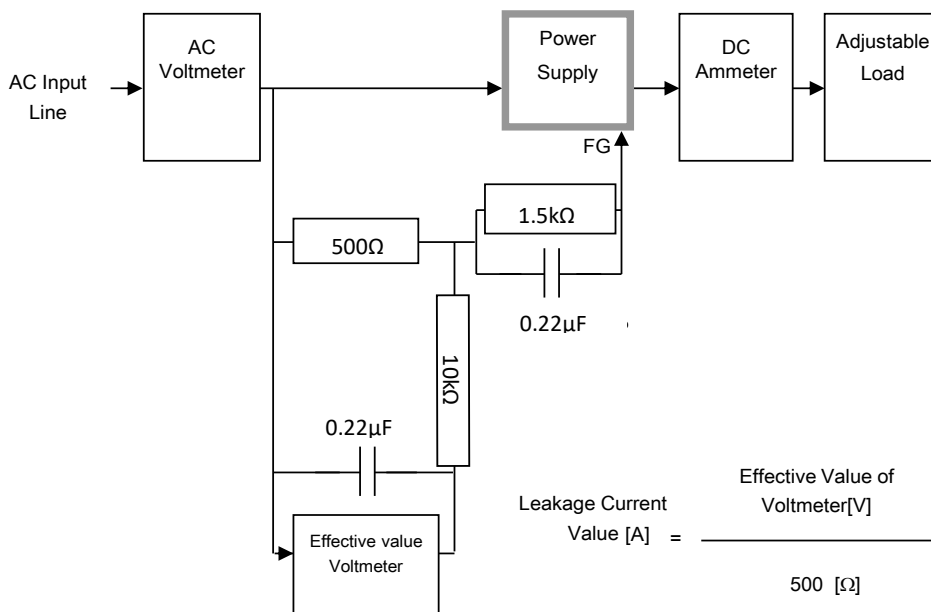


Figure B-2 (IEC62368-1 refer to IEC60990 Fig.4)

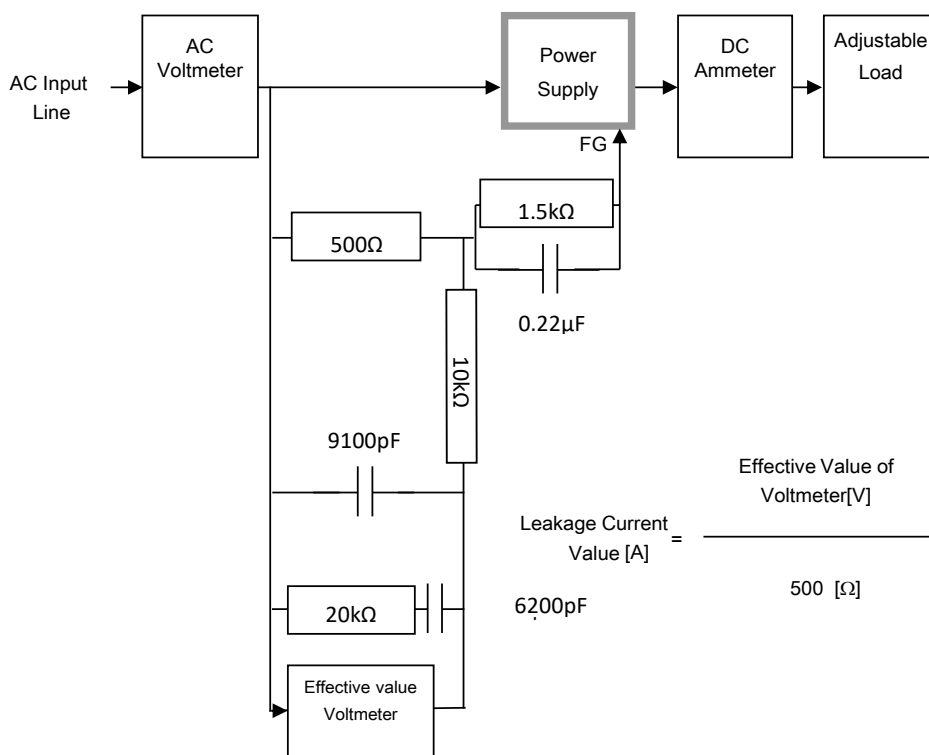


Figure B-3 (IEC62368-1 refer to IEC60990 Fig.5)

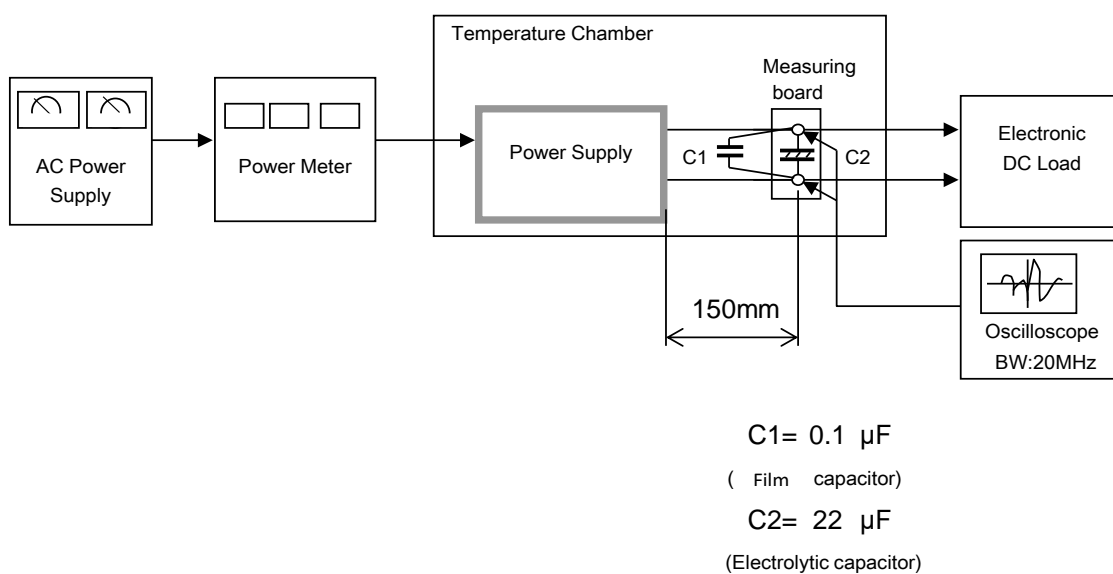


Figure C