参考資料

COSEL

TEST DATA OF LFA75F-48

Regulated DC Power Supply
August 10, 2009

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COSEL CO.,LTD.

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Model	LFA75F-48
Item	Input Current (by Load Current)
Object	———————

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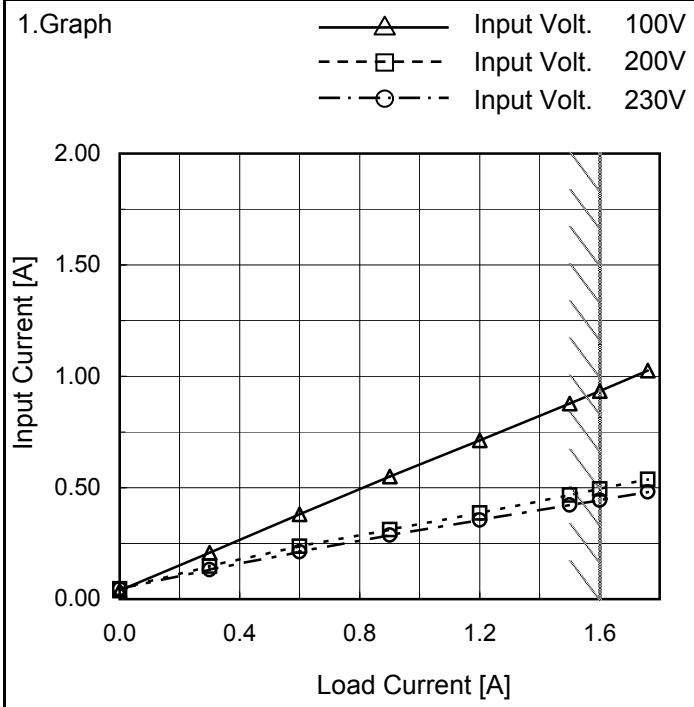
1.Graph



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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.039	0.047	0.046
0.30	0.208	0.148	0.132
0.60	0.381	0.237	0.213
0.90	0.550	0.312	0.288
1.20	0.713	0.387	0.355
1.50	0.878	0.467	0.422
1.60	0.934	0.494	0.445
1.76	1.026	0.538	0.482
--	-	-	-
--	-	-	-
--	-	-	-

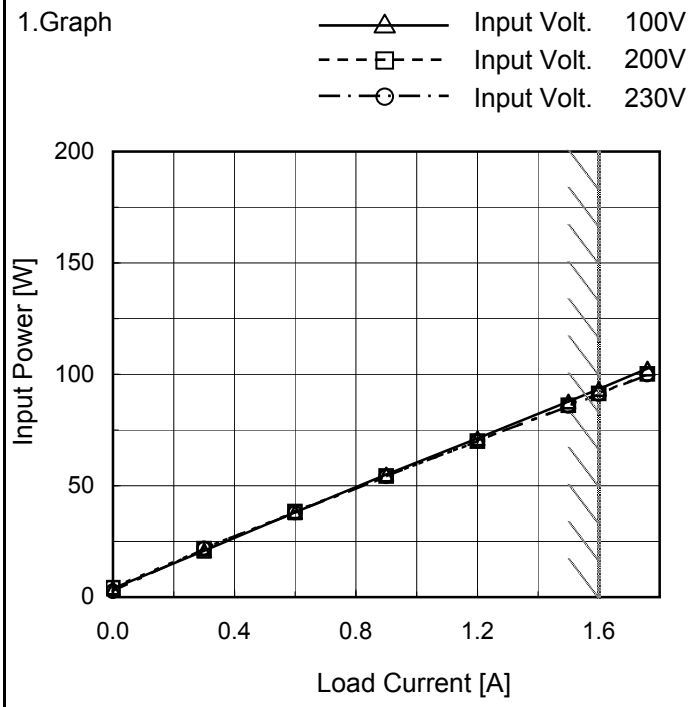
BC-10375

COSEL

Model	LFA75F-48
Item	Input Power (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

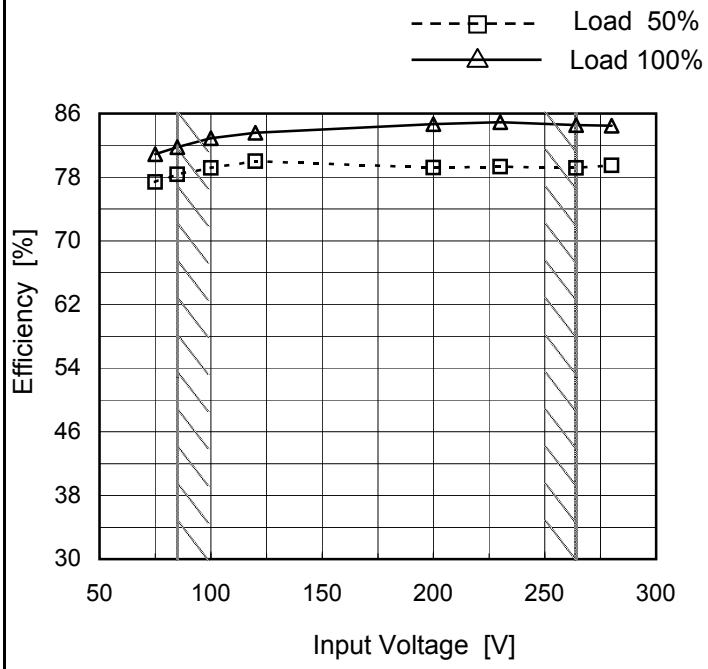
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	3.9	4.2	2.6
0.30	20.8	21.7	21.8
0.60	38.1	38.4	38.0
0.90	55.0	54.3	54.2
1.20	71.3	69.9	70.1
1.50	87.8	86.0	85.8
1.60	93.4	91.4	91.1
1.76	102.6	100.2	99.8
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LFA75F-48
Item	Efficiency (by Input Voltage)
Object	――――――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

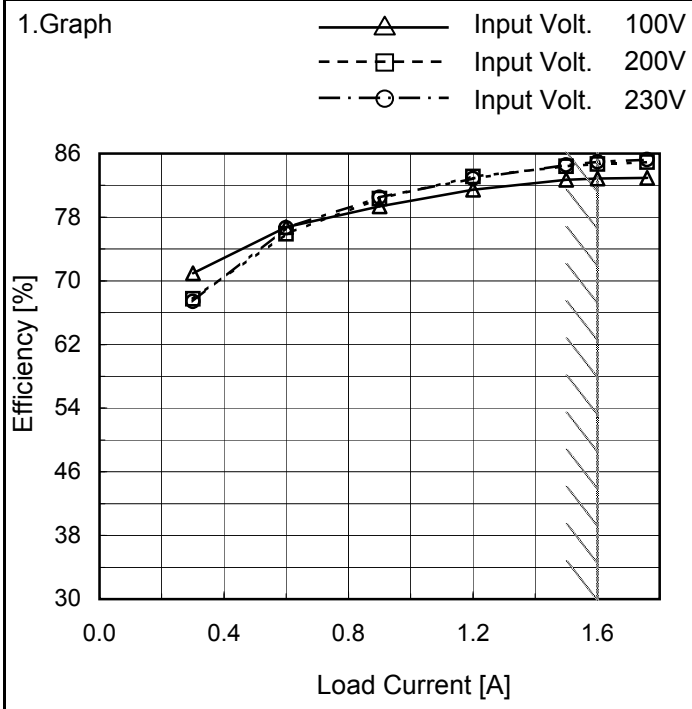
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	77.4	80.9
85	78.3	81.8
100	79.2	82.9
120	80.0	83.6
200	79.2	84.7
230	79.3	84.9
264	79.2	84.6
280	79.5	84.5
--	-	-

COSEL

Model	LFA75F-48
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.30	71.0	67.7	67.4
0.60	76.7	75.9	76.7
0.90	79.3	80.3	80.5
1.20	81.5	83.1	82.9
1.50	82.7	84.4	84.6
1.60	82.9	84.7	84.9
1.76	82.9	84.9	85.2
--	-	-	-
--	-	-	-
--	-	-	-

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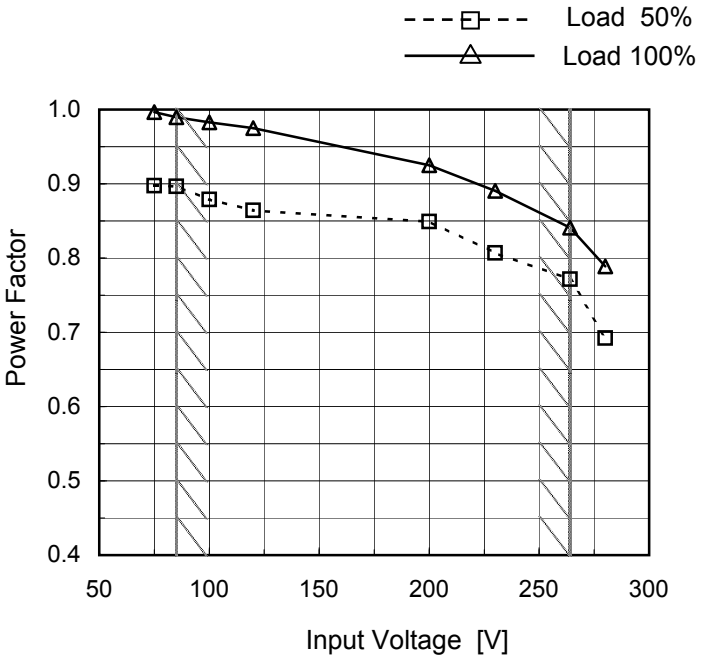
Model	LFA75F-48
Item	Power Factor (by Input Voltage)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.898	0.996
85	0.897	0.990
100	0.879	0.983
120	0.864	0.975
200	0.849	0.925
230	0.807	0.891
264	0.772	0.841
280	0.692	0.789
--	-	-

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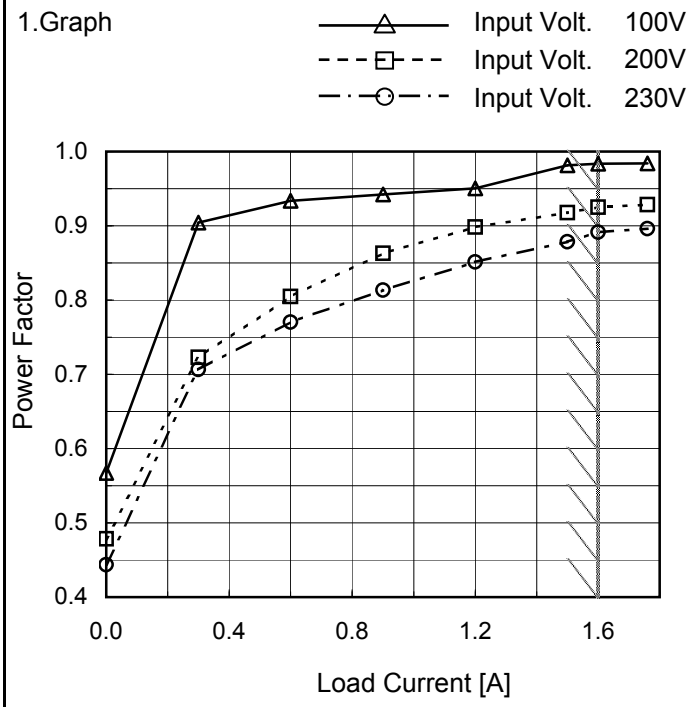
Model	LFA75F-48
Item	Power Factor (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.567	0.478	0.443
0.30	0.904	0.723	0.706
0.60	0.934	0.805	0.770
0.90	0.942	0.863	0.813
1.20	0.951	0.898	0.851
1.50	0.981	0.918	0.879
1.60	0.983	0.925	0.891
1.76	0.984	0.928	0.896
--	-	-	-
--	-	-	-
--	-	-	-

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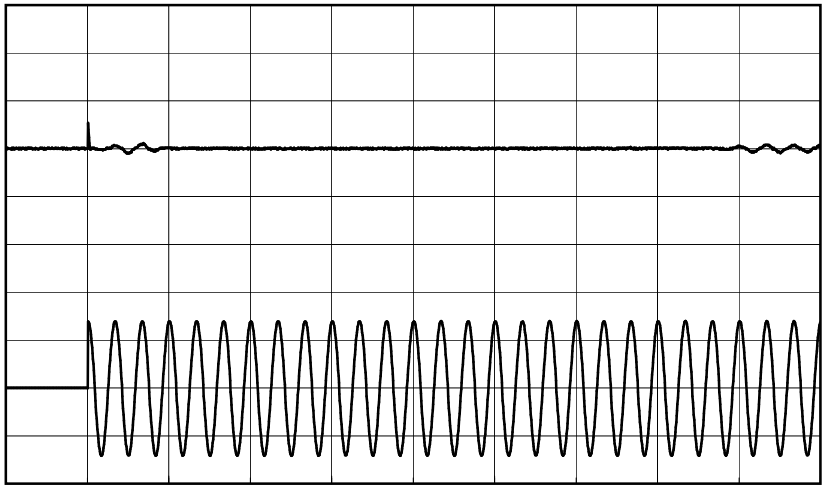
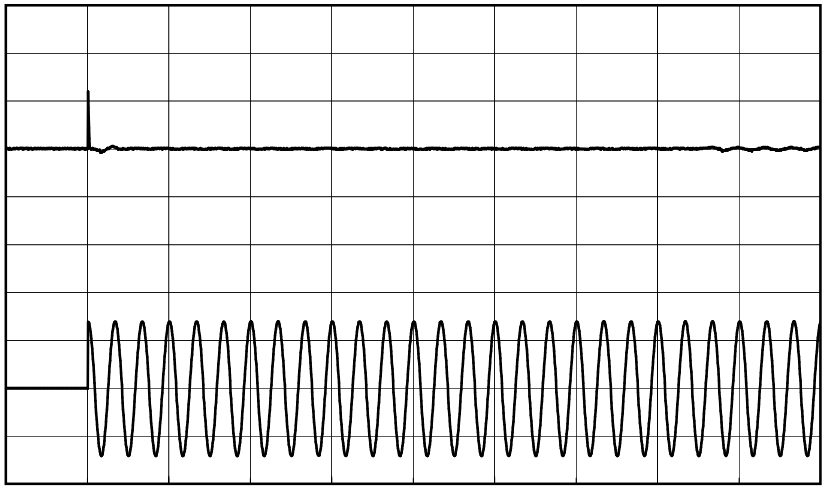
Model	LFA75F-48
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



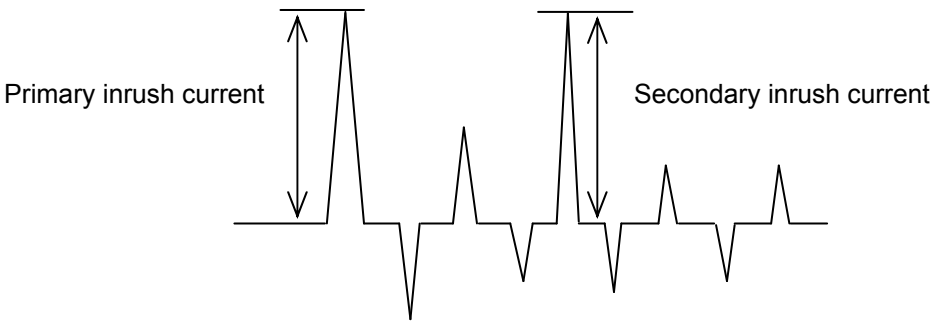
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
10.8 A
Secondary inrush current :
1.6 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
24.0 A
Secondary inrush current :
1.2 A



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Model	LFA75F-48	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	――――――――――――	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.13	0.26	0.32	Operation
	One of phases	0.22	0.45	0.57	Stand by
IEC60950	Both phases	0.14	0.30	0.38	Operation
	One of phases	0.22	0.44	0.54	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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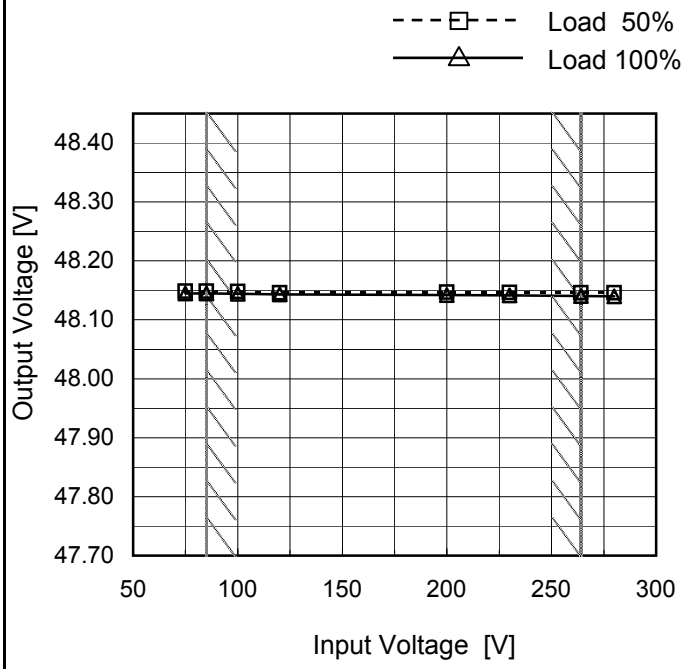
Model	LFA75F-48
Item	Line Regulation
Object	+48V1.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

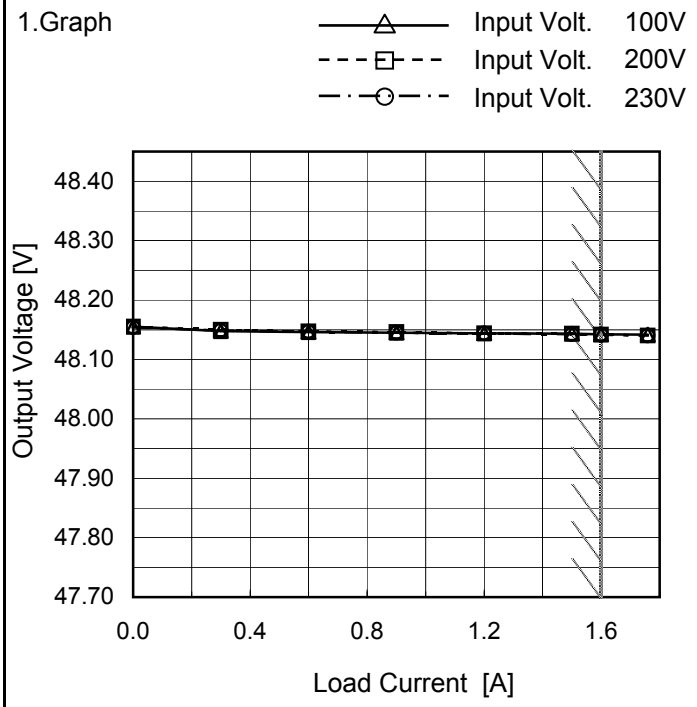
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	48.148	48.145
85	48.148	48.145
100	48.148	48.144
120	48.146	48.143
200	48.147	48.142
230	48.147	48.141
264	48.146	48.141
280	48.146	48.140
--	-	-

COSEL

Model	LFA75F-48
Item	Load Regulation
Object	+48V1.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	48.155	48.155	48.154
0.30	48.148	48.150	48.149
0.60	48.146	48.147	48.147
0.90	48.145	48.146	48.145
1.20	48.144	48.144	48.144
1.50	48.143	48.143	48.142
1.60	48.143	48.142	48.142
1.76	48.142	48.140	48.140
--	-	-	-
--	-	-	-
--	-	-	-

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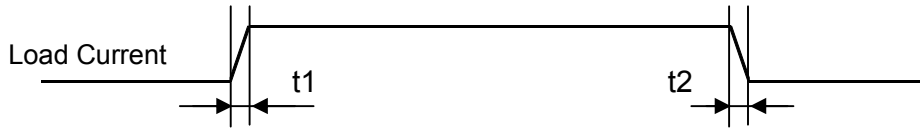
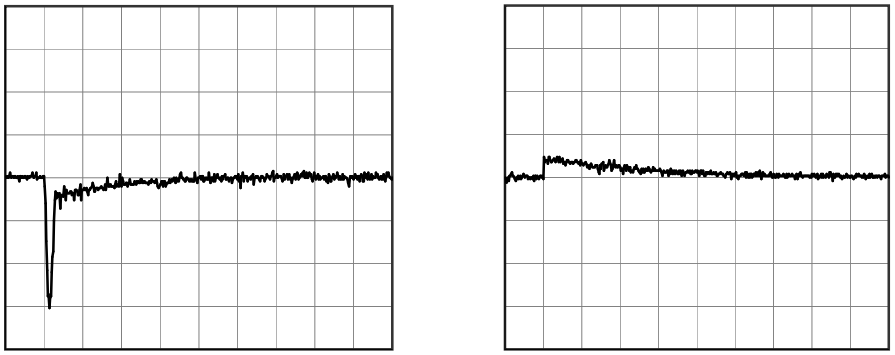
Model	LFA75F-48		
Item	Dynamic Load Response	Temperature Testing Circuitry	25℃ Figure A
Object	+48V1.6A		

Input Volt. 100 V
Cycle 1000 ms

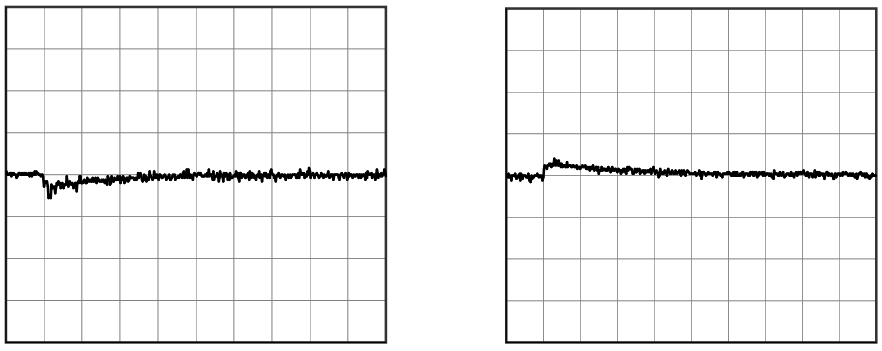
Response. t1=t2=50us. Typ



Min. Load (0A) ←→
Load 100% (1.6A)



Min. Load (0A) ←→
Load 50% (0.8A)



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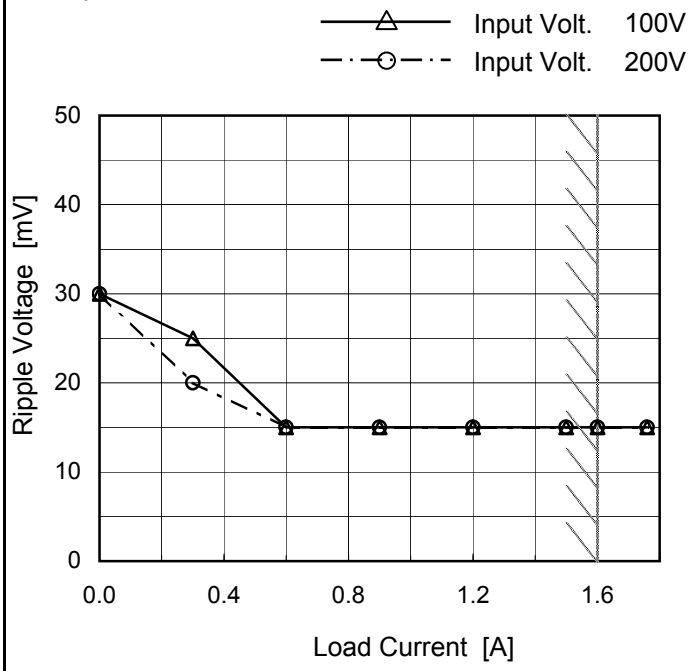
Model	LFA75F-48
Item	Ripple Voltage (by Load Current)
Object	+48V1.6A

Temperature 25°C
Testing Circuitry Figure C

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

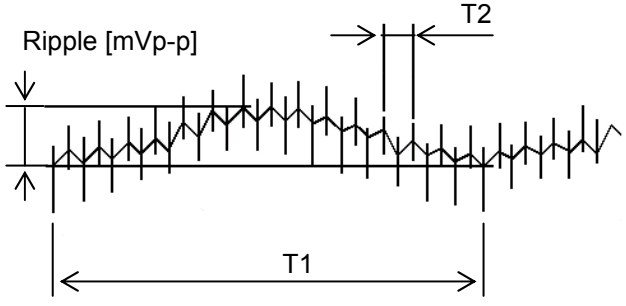


Fig. Complex Ripple Wave Form

2.Values

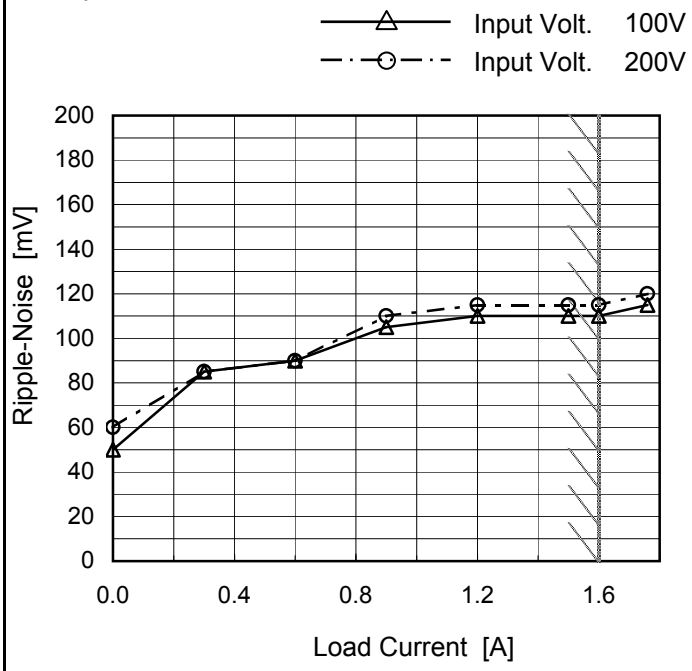
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	30	30
0.30	25	20
0.60	15	15
0.90	15	15
1.20	15	15
1.50	15	15
1.60	15	15
1.76	15	15
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA75F-48
Item	Ripple-Noise
Object	+48V1.6A

Temperature 25°C
Testing Circuitry Figure C

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

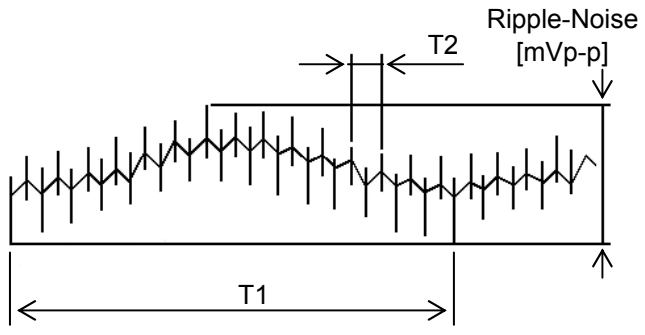


Fig. Complex Ripple Wave Form

2.Values

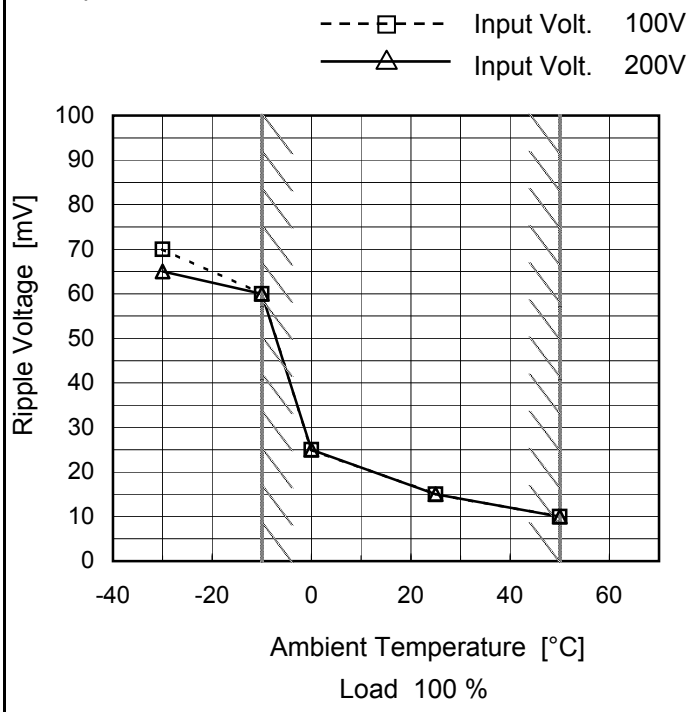
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	50	60
0.30	85	85
0.60	90	90
0.90	105	110
1.20	110	115
1.50	110	115
1.60	110	115
1.76	115	120
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA75F-48
Item	Ripple Voltage (by Ambient Temp.)
Object	+48V1.6A

Testing Circuitry Figure C

1.Graph



Load 100 %

Measured by 20 MHz Oscilloscope.

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

2.Values

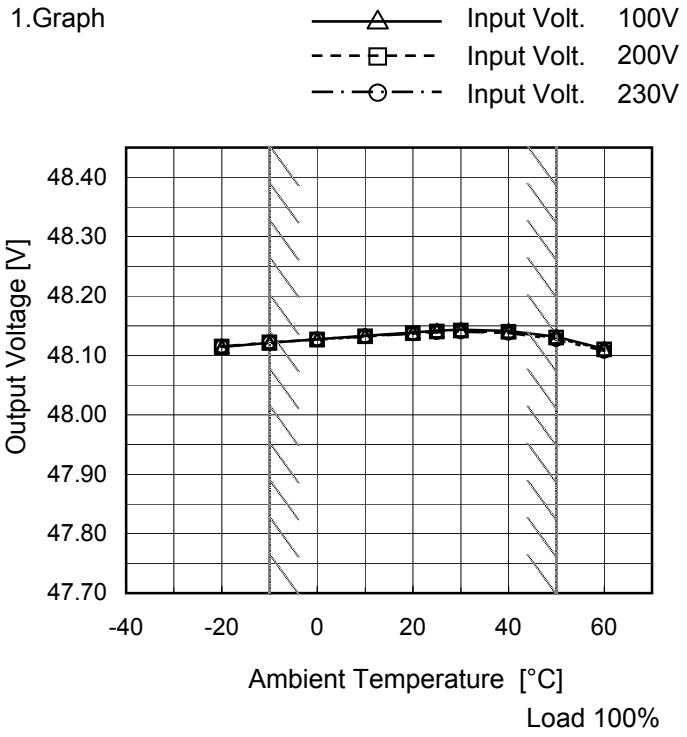
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	70	65
-10	60	60
0	25	25
25	15	15
50	10	10
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA75F-48
Item	Ambient Temperature Drift
Object	+48V1.6A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	48.114	48.115	48.115
-10	48.122	48.122	48.122
0	48.127	48.127	48.127
10	48.133	48.132	48.132
20	48.139	48.138	48.137
25	48.142	48.140	48.139
30	48.143	48.142	48.140
40	48.142	48.140	48.138
50	48.132	48.130	48.127
60	48.111	48.110	48.107
--	-	-	-

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COSEL

Model	LFA75F-48	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+48V1.6A	

1.Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -10 - 50°C
Input Voltage : 85 - 264V
Load Current : 0 - 1.6A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2.Values

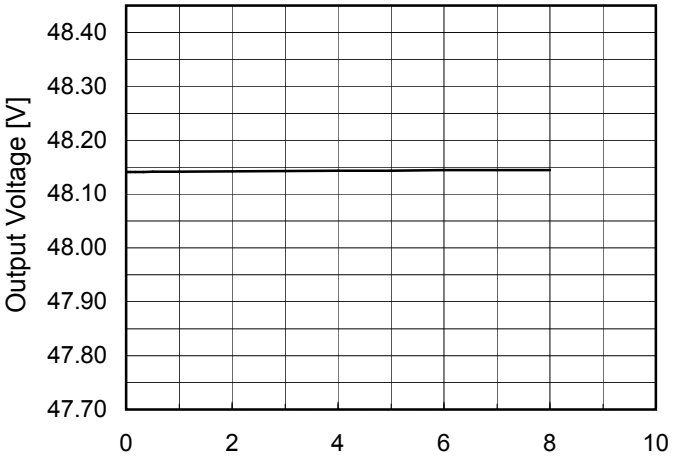
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	30	264	0	48.155	±17	±0.1
Minimum Voltage	-10	100	1.6	48.122		

COSEL

Model	LFA75F-48
Item	Time Lapse Drift
Object	+48V1.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

2.Values

Time since start [H]	Output Voltage [V]
0.0	48.141
0.5	48.142
1.0	48.142
2.0	48.142
3.0	48.143
4.0	48.143
5.0	48.144
6.0	48.144
7.0	48.144
8.0	48.144

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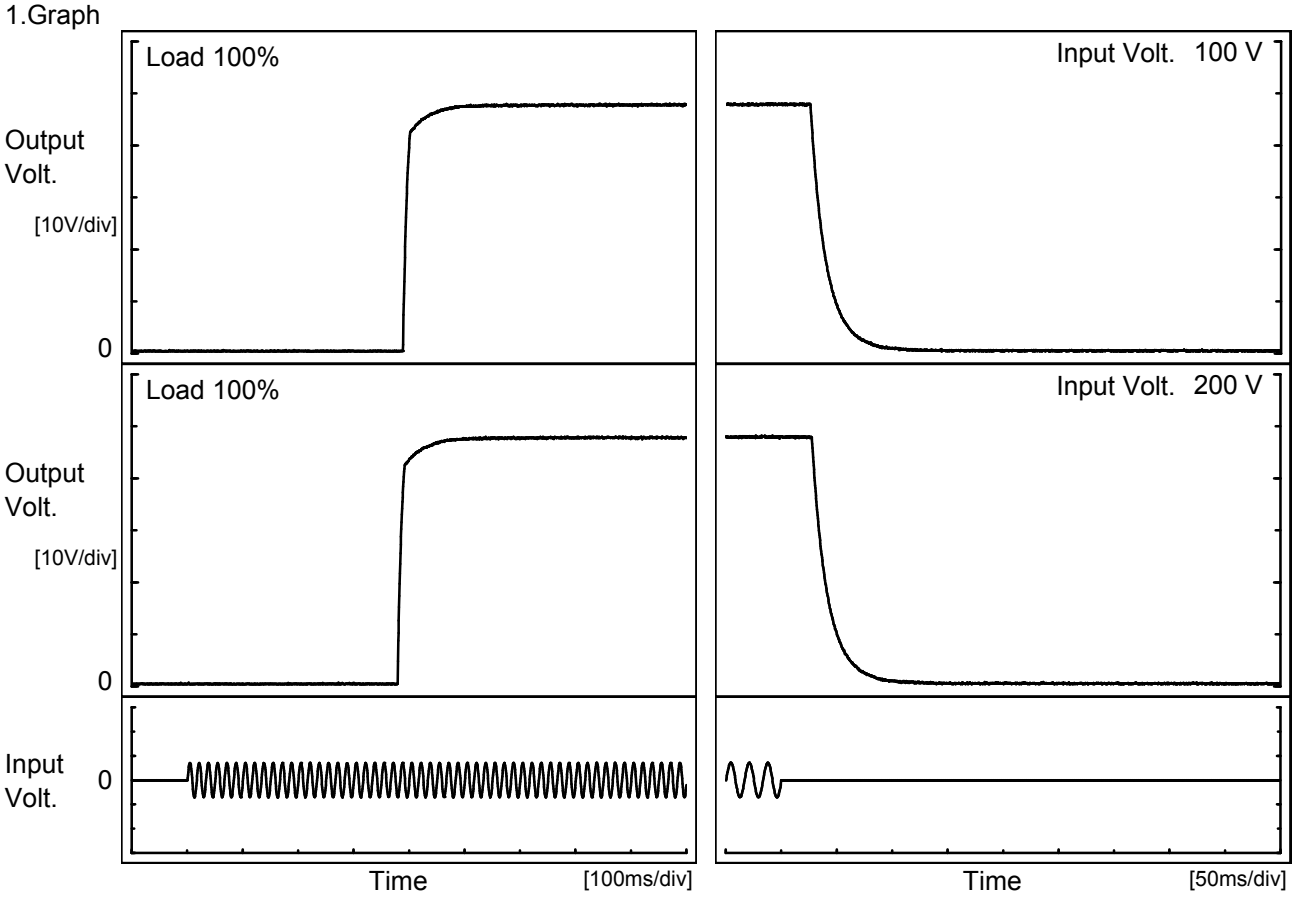
Model	LFA75F-48	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+48V1.6A	

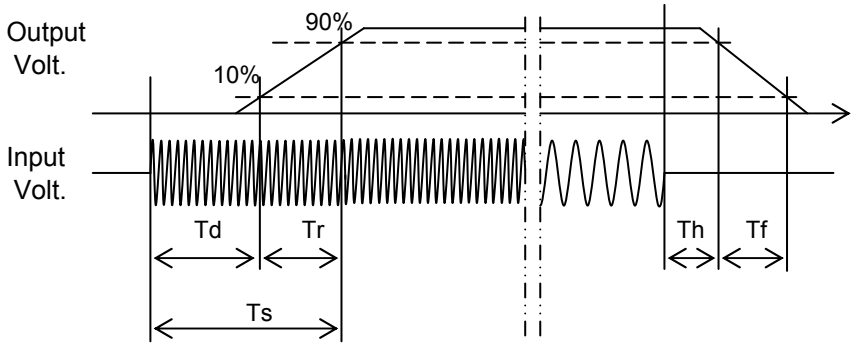
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	390.0	20.5	410.5	27.0	32.5
200 V	380.5	19.5	400.0	28.8	32.3

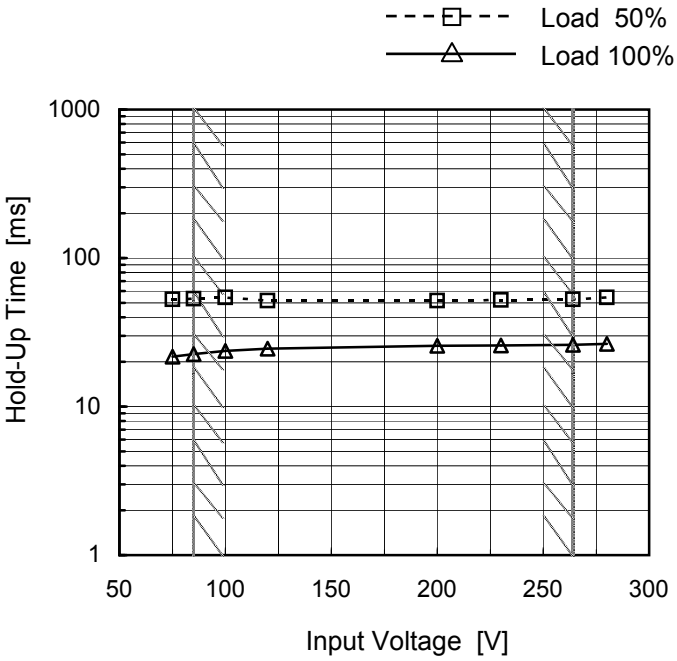


COSEL

Model	LFA75F-48
Item	Hold-Up Time
Object	+48V1.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.
Note: Slanted line shows the range of the rated input voltage.

2.Values

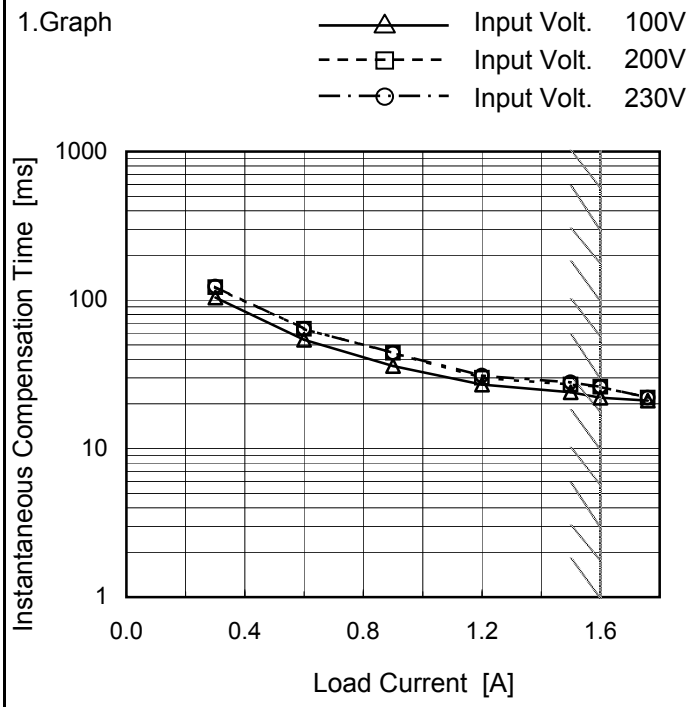
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	53	22
85	53	23
100	54	24
120	52	25
200	52	26
230	52	26
264	53	26
280	54	27
--	-	-

COSEL

Model	LFA75F-48
Item	Instantaneous Interruption Compensation
Object	+48V1.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

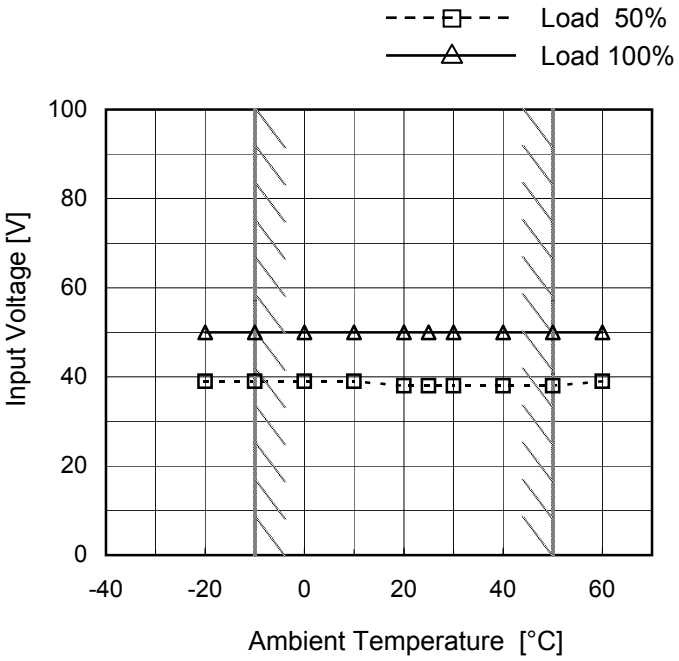
Load Current [A]	Time [ms] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.30	104	122	123
0.60	54	64	64
0.90	36	44	44
1.20	27	30	31
1.50	24	27	28
1.60	22	26	26
1.76	21	22	22
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LFA75F-48
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V1.6A

Testing Circuitry Figure A

1.Graph



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

2.Values

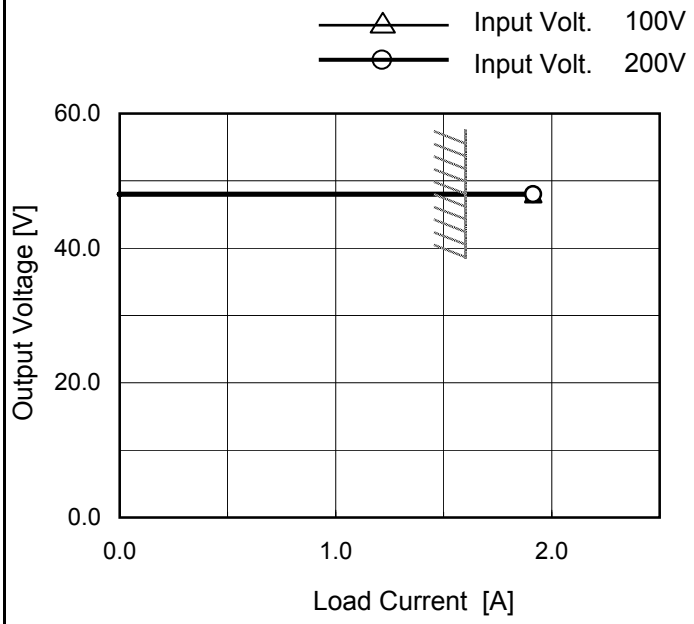
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	39	50
-10	39	50
0	39	50
10	39	50
20	38	50
25	38	50
30	38	50
40	38	50
50	38	50
60	39	50
--	-	-

COSEL

Model	LFA75F-48
Item	Overcurrent Protection
Object	+48V1.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Intermittent operation occurs when the output voltage is less than rated output voltage.

2.Values

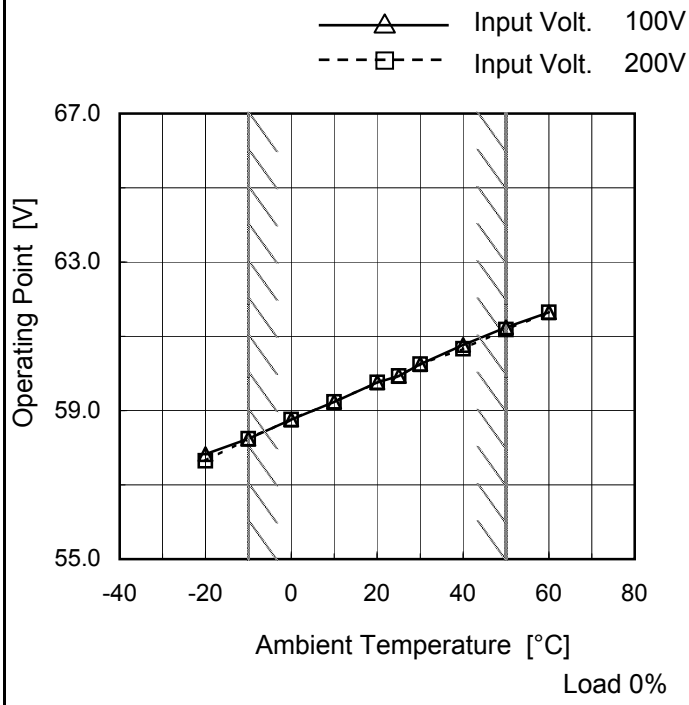
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
48.0	1.91	1.91
45.6	-	-
43.2	-	-
38.4	-	-
33.6	-	-
28.8	-	-
24.0	-	-
19.2	-	-
14.4	-	-
9.6	-	-
4.8	-	-
0.0	-	-

COSEL

Model	LFA75F-48
Item	Overvoltage Protection
Object	+48V1.6A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 200[V]
-20	57.83	57.65
-10	58.24	58.24
0	58.76	58.76
10	59.23	59.23
20	59.76	59.76
25	59.93	59.93
30	60.25	60.25
40	60.77	60.66
50	61.24	61.18
60	61.65	61.65
--	-	-

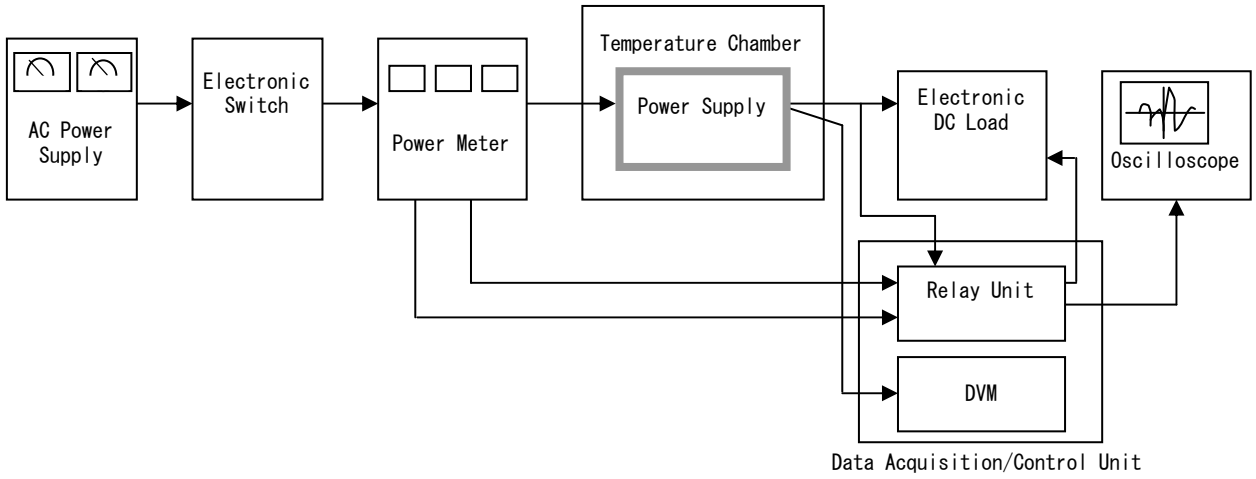


Figure A

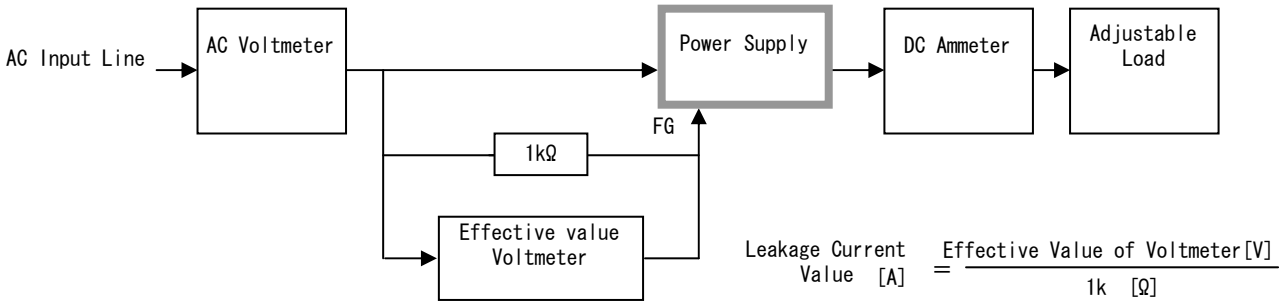


Figure B (DEN-AN)

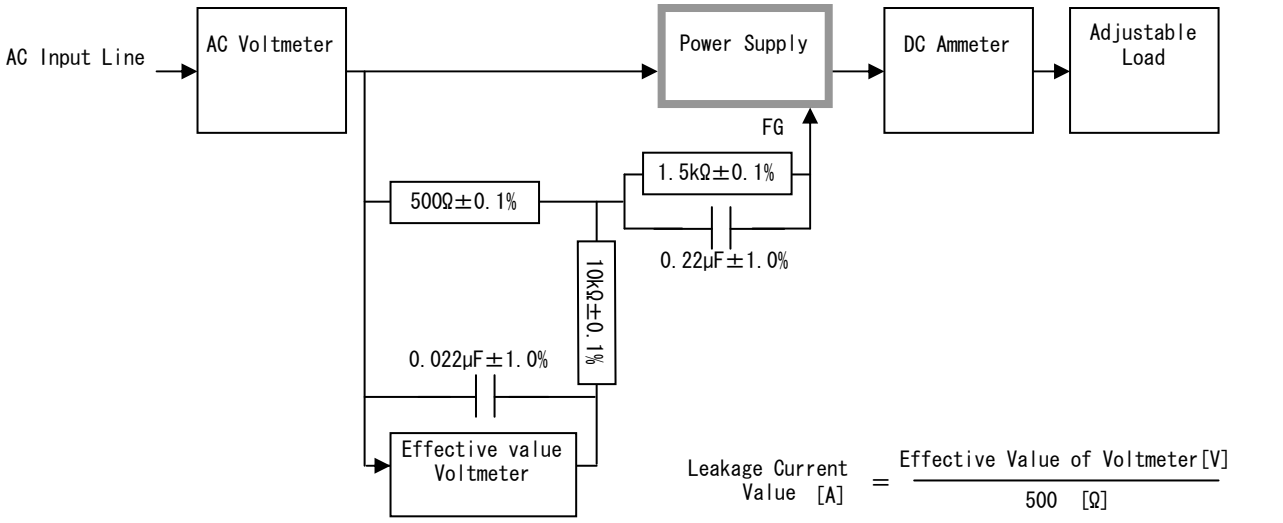


Figure B (IEC60950-1)

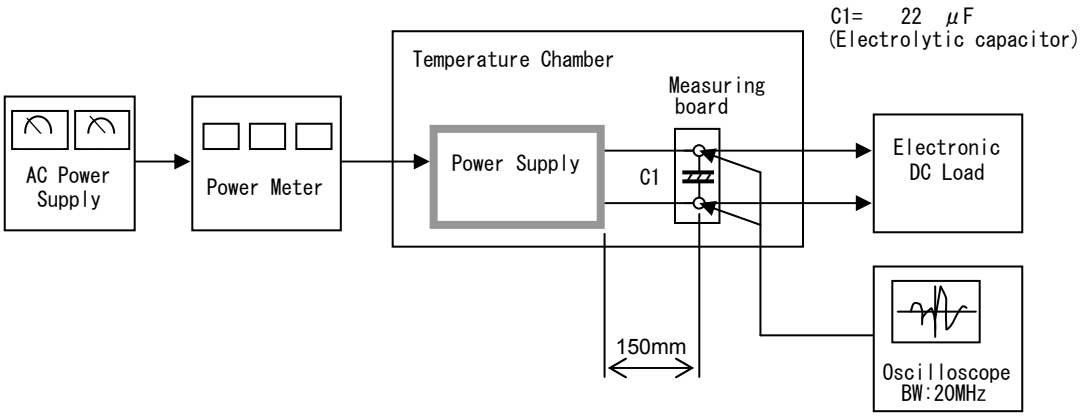

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope BW:20MHz

Figure C