参考資料

# TEST DATA OF LHP300F-24-Y

Regulated DC Power Supply
April 5, 2021

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Design Manager

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Design Engineer

COSEL CO.,LTD.

COSEL

# CONTENTS

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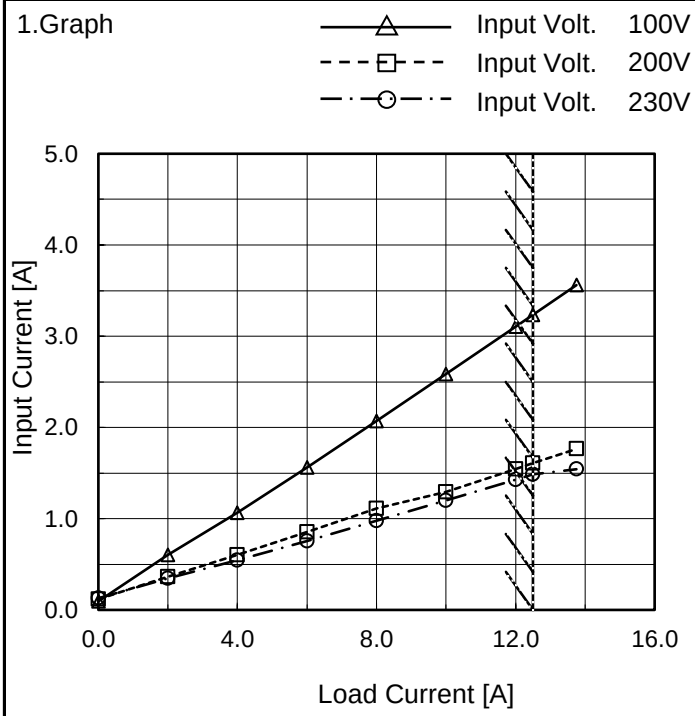
| | |
|---|---|
| Model | LHP300F-24-Y |
| Item | Input Current (by Load Current) |
| Object | ——————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

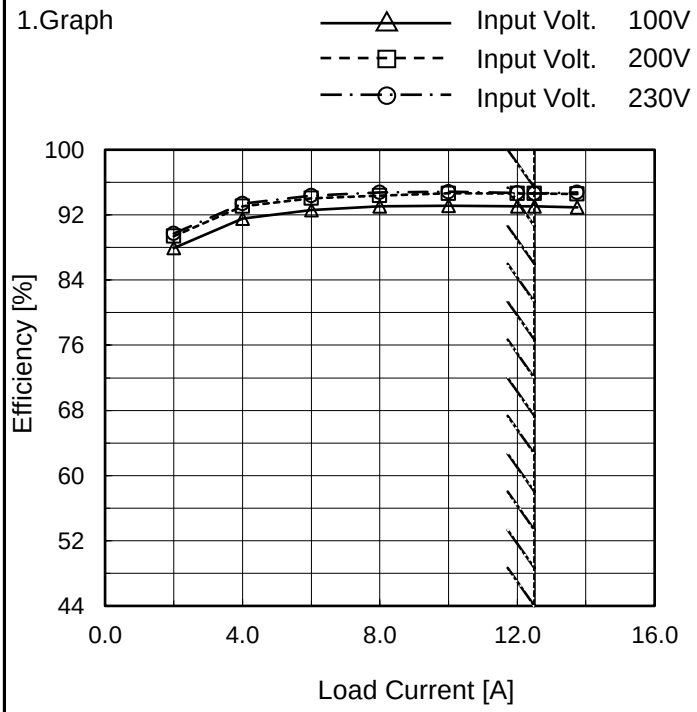
| Load Current [A] | Input Current [A] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0.00 | 0.095 | 0.118 | 0.128 |
| 2.00 | 0.603 | 0.362 | 0.344 |
| 4.00 | 1.068 | 0.602 | 0.545 |
| 6.00 | 1.565 | 0.854 | 0.757 |
| 8.00 | 2.073 | 1.110 | 0.977 |
| 10.00 | 2.587 | 1.293 | 1.200 |
| 12.00 | 3.105 | 1.544 | 1.428 |
| 12.50 | 3.232 | 1.607 | 1.486 |
| 13.75 | 3.560 | 1.764 | 1.542 |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | LHP300F-24-Y |
| 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

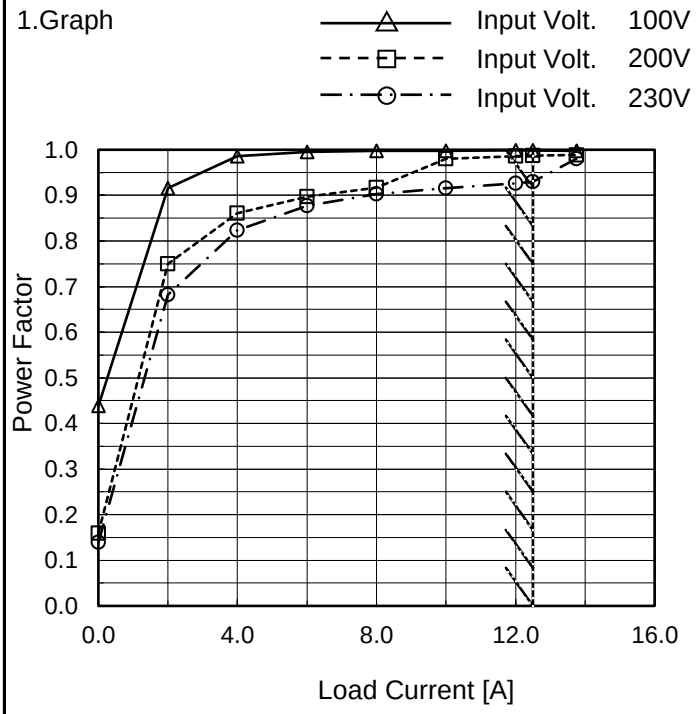
| Load Current [A] | Efficiency [%] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0.00 | - | - | - |
| 2.00 | 87.9 | 89.4 | 89.7 |
| 4.00 | 91.5 | 93.0 | 93.4 |
| 6.00 | 92.6 | 94.1 | 94.4 |
| 8.00 | 93.0 | 94.4 | 94.7 |
| 10.00 | 93.1 | 94.7 | 94.9 |
| 12.00 | 93.0 | 94.6 | 94.7 |
| 12.50 | 93.0 | 94.6 | 94.6 |
| 13.75 | 92.9 | 94.6 | 94.8 |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | LHP300F-24-Y |
| Item | Power Factor (by Load Current) |
| Object | ———————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph



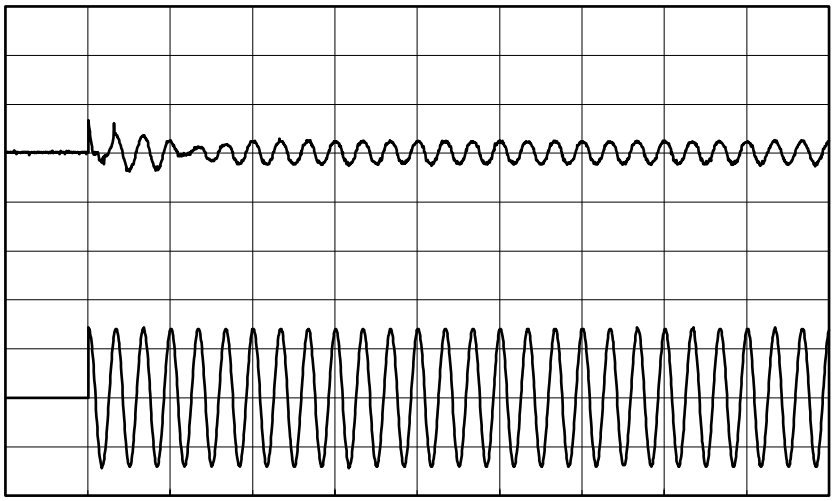

Note: Slanted line shows the range of the rated load current.

2.Values

| Load Current [A] | Power Factor | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0.00 | 0.438 | 0.160 | 0.139 |
| 2.00 | 0.915 | 0.750 | 0.682 |
| 4.00 | 0.986 | 0.860 | 0.824 |
| 6.00 | 0.996 | 0.897 | 0.877 |
| 8.00 | 0.997 | 0.917 | 0.903 |
| 10.00 | 0.998 | 0.980 | 0.916 |
| 12.00 | 0.998 | 0.986 | 0.927 |
| 12.50 | 0.998 | 0.987 | 0.930 |
| 13.75 | 0.997 | 0.989 | 0.980 |
| -- | - | - | - |
| -- | - | - | - |

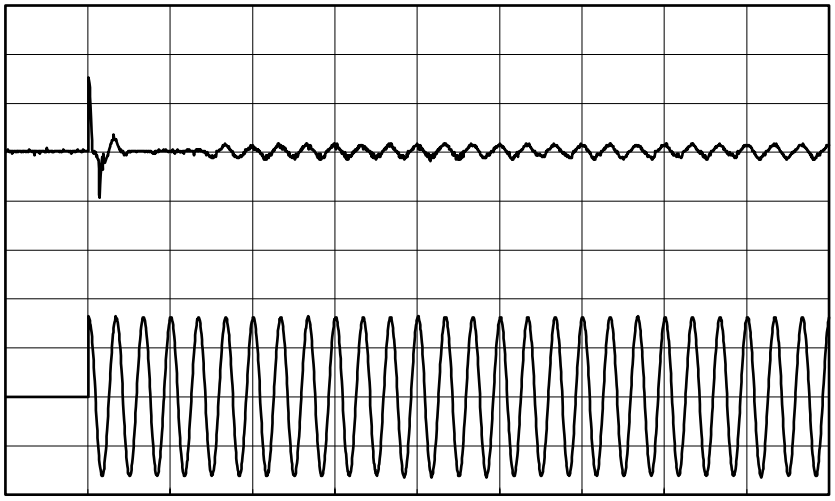
COSEL

| | | | |
|---|---|---|---|
| Model | LHP300F-24-Y | | |
| Item | Inrush Current | Temperature | 25°C |
| | | Testing Circuitry | Figure A |
| Object | ——————— | | |



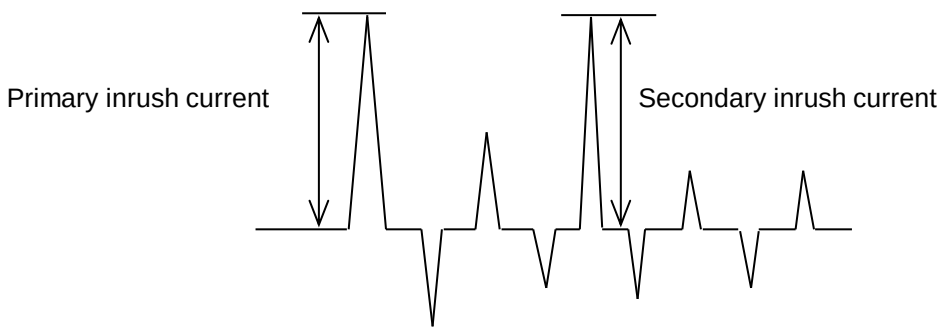

Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
13.4 A
Secondary inrush current :
5.9 A




Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
30.4 A
Secondary inrush current :
3.8 A



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| | | | |
|---|---|---|---|
| Model | LHP300F-24-Y | | |
| Item | Leakage Current | Temperature | 25°C |
| | | Testing Circuitry | Figure C |
| Object | ——————————— | | |

1.Results

[mA]

| Standards | Testing Circuitry | Measuring Method | Input Volt. | | | Note |
|---|---|---|---|---|---|---|
| | | | 100 [V] | 230 [V] | 240 [V] | |
| DEN-AN | Figure C-1 | Both phases | 0.14 | 0.35 | 0.37 | Operation |
| | | One of phases | 0.27 | 0.65 | 0.69 | Stand by |
| IEC62368-1 | Figure C-2 | Both phases | 0.14 | 0.35 | 0.36 | Operation |
| | | One of phases | 0.27 | 0.65 | 0.68 | Stand by |
| | Figure C-3 | Both phases | 0.14 | 0.35 | 0.37 | Operation |
| | | One of phases | 0.26 | 0.65 | 0.69 | 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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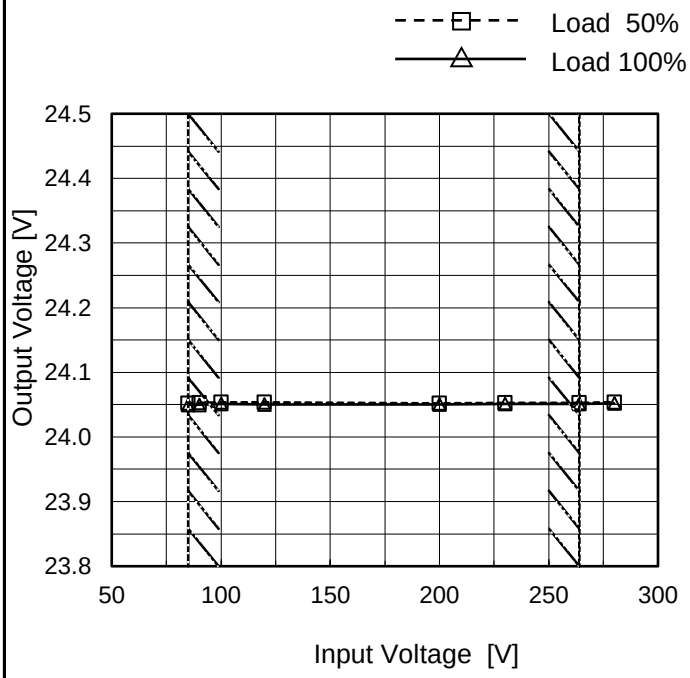
| | |
|---|---|
| Model | LHP300F-24-Y |
| Item | Line Regulation |
| Object | +24V12.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

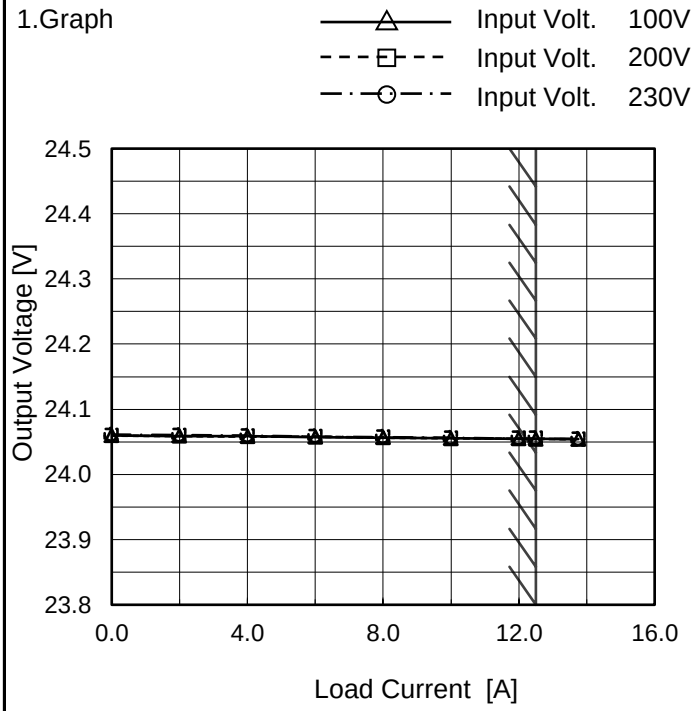
| Input Voltage [V] | Output Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| 85 | 24.052 | 24.050 |
| 90 | 24.053 | 24.050 |
| 100 | 24.053 | 24.051 |
| 120 | 24.053 | 24.051 |
| 200 | 24.052 | 24.050 |
| 230 | 24.053 | 24.051 |
| 264 | 24.053 | 24.051 |
| 280 | 24.054 | 24.052 |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | LHP300F-24-Y |
| Item | Load Regulation |
| Object | +24V12.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

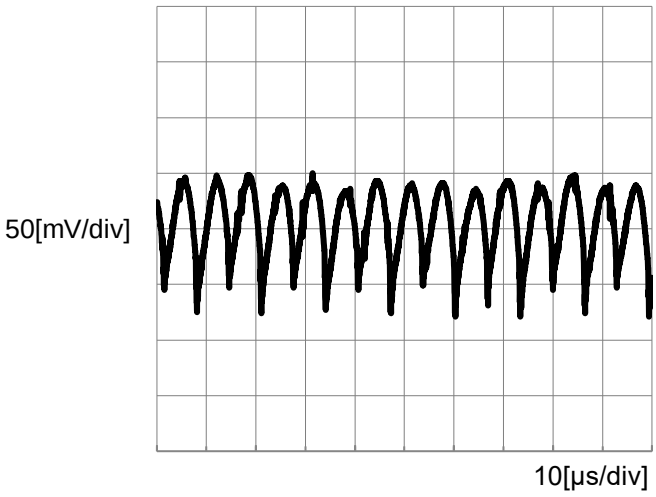
| Load Current [A] | Output Voltage [V] Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
|---|---|---|---|
| 0.00 | 24.060 | 24.060 | 24.061 |
| 2.00 | 24.059 | 24.059 | 24.060 |
| 4.00 | 24.059 | 24.058 | 24.059 |
| 6.00 | 24.057 | 24.058 | 24.058 |
| 8.00 | 24.057 | 24.057 | 24.057 |
| 10.00 | 24.056 | 24.056 | 24.056 |
| 12.00 | 24.055 | 24.055 | 24.055 |
| 12.50 | 24.055 | 24.055 | 24.055 |
| 13.75 | 24.054 | 24.054 | 24.054 |
| -- | -- | -- | -- |
| -- | -- | -- | -- |

| | |
|---|---|
| Item | Ripple-Noise |
| Object | +24V12.5A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph

Input Voltage 230V
Load 100%



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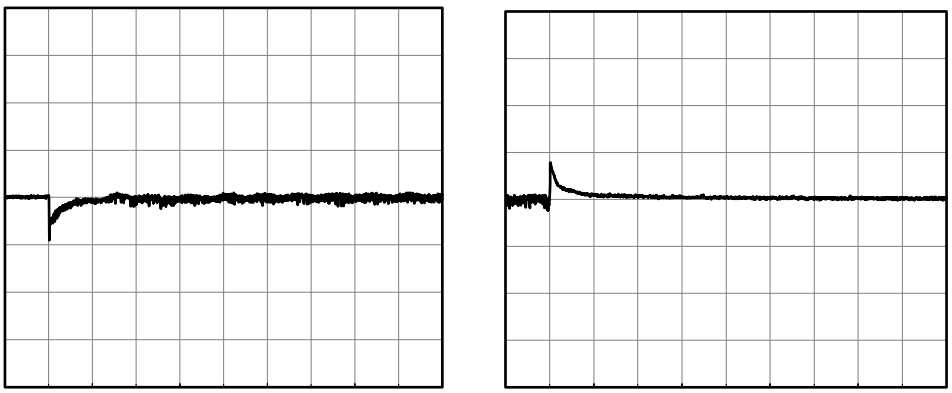
| | | |
|---|---|---|
| Model | LHP300F-24-Y | |
| Item | Dynamic Load Response | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | +24V12.5A | |

Input Volt. 230 V

Cycle 1000 ms

Response. t1=t2=50μs. Typ

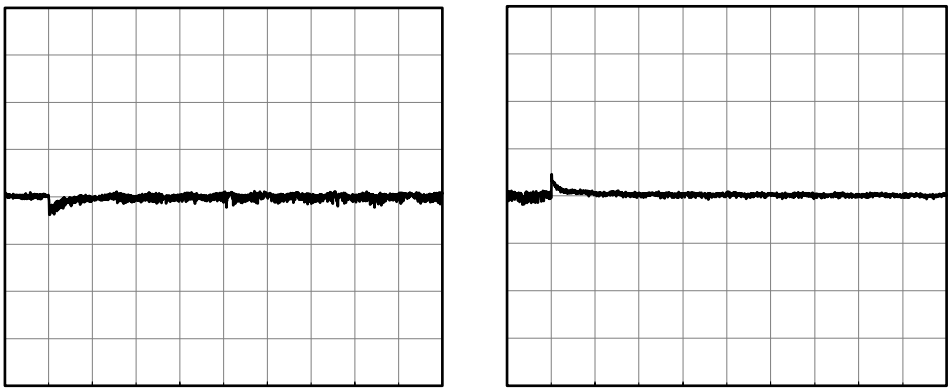

Load 0%(0A) ←→
Load 100%(12.5A)



200[mV/div]

10[ms/div] 10[ms/div]

Load 50%(6.25A) ←→
Load 100%(12.5A)



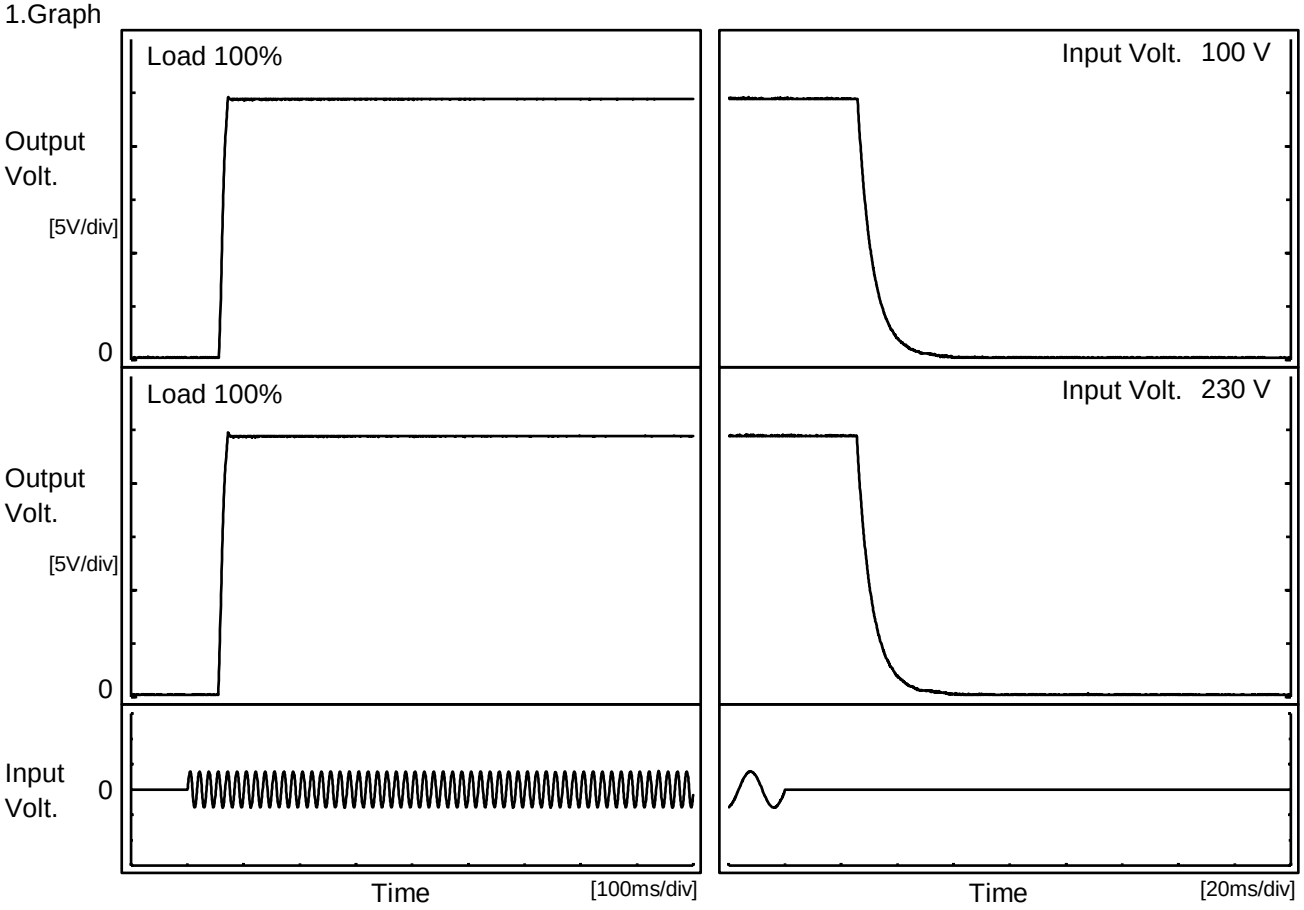
200[mV/div]

10[ms/div] 10[ms/div]

COSEL

| | | |
|---|---|---|
| Model | LHP300F-24-Y | |
| Item | Rise and Fall Time | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | +24V12.5A | |

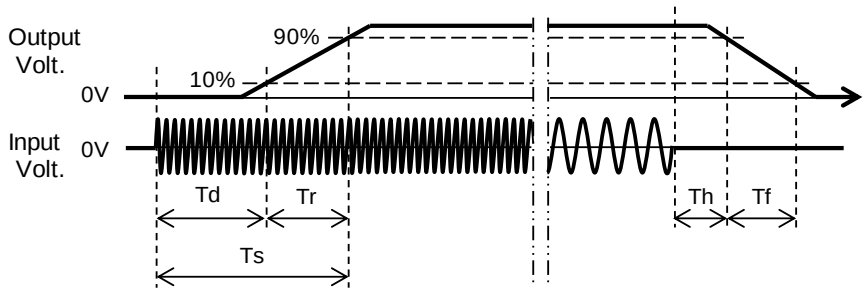
1.Graph




2.Values

[ms]

| Input Volt. \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 100 V | 58.0 | 11.0 | 69.0 | 26.4 | 12.1 |
| 230 V | 57.0 | 11.5 | 68.5 | 26.1 | 12.3 |

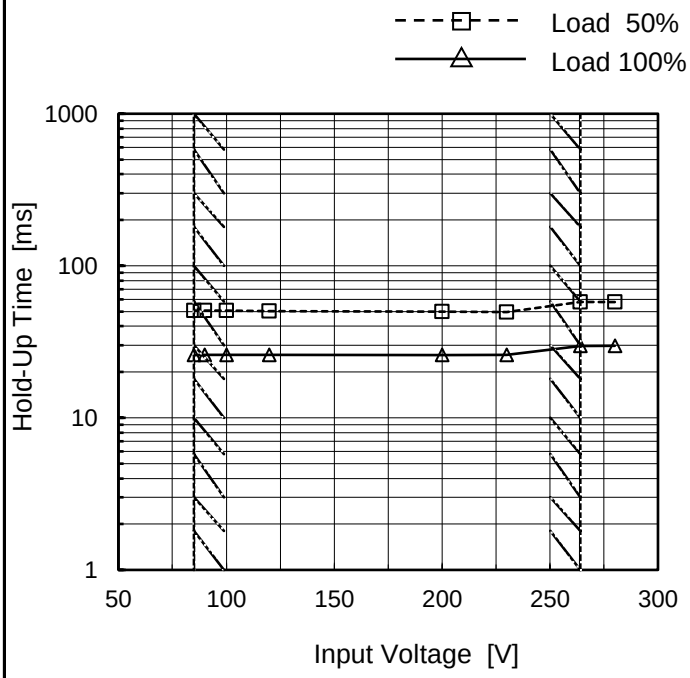


COSEL

| | |
|---|---|
| Model | LHP300F-24-Y |
| Item | Hold-Up Time |
| Object | +24V12.5A |

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

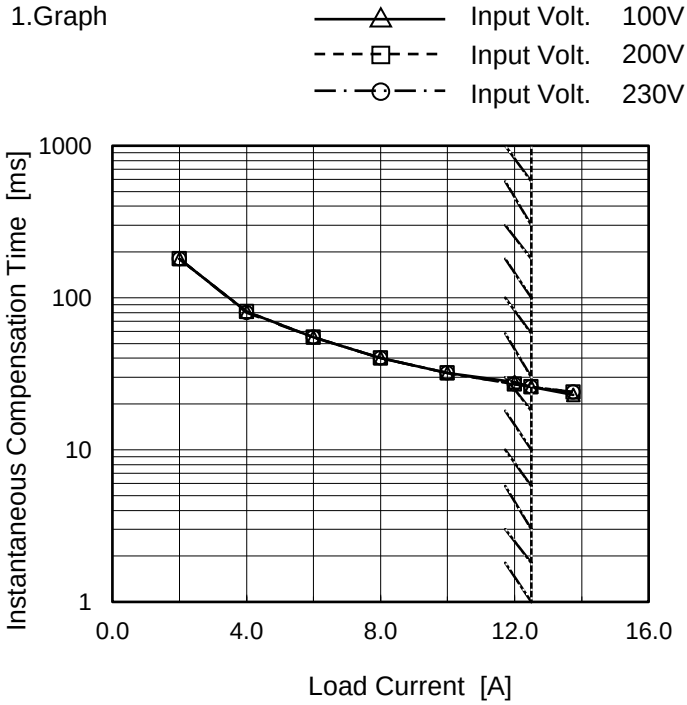
| Input Voltage [V] | Hold-Up Time [ms] | |
|---|---|---|
| | Load 50% | Load 100% |
| 85 | 51 | 26 |
| 90 | 51 | 26 |
| 100 | 51 | 26 |
| 120 | 50 | 26 |
| 200 | 50 | 26 |
| 230 | 50 | 26 |
| 264 | 58 | 30 |
| 280 | 58 | 30 |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | LHP300F-24-Y |
| Item | Instantaneous Interruption Compensation |
| Object | +24V12.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

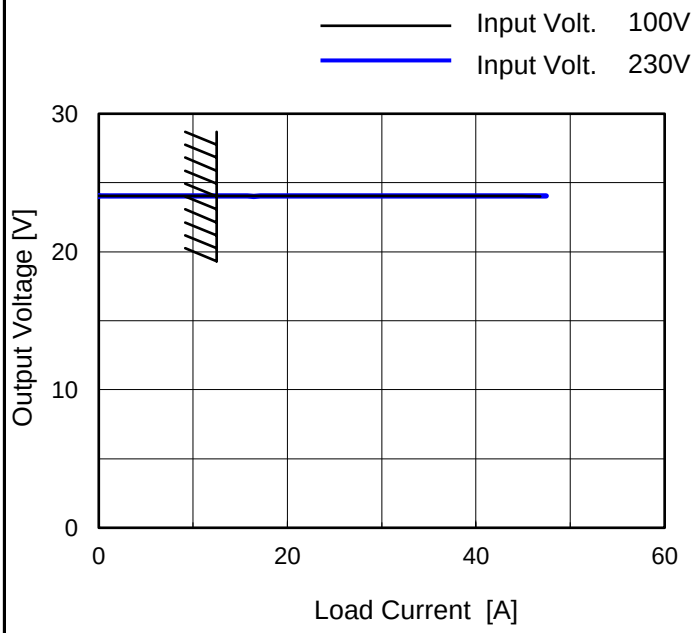
| Load Current [A] | Time [ms] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0.00 | - | - | - |
| 2.00 | 180 | 180 | 181 |
| 4.00 | 81 | 81 | 80 |
| 6.00 | 55 | 55 | 55 |
| 8.00 | 40 | 40 | 40 |
| 10.00 | 32 | 32 | 32 |
| 12.00 | 28 | 27 | 27 |
| 12.50 | 26 | 26 | 26 |
| 13.75 | 23 | 24 | 24 |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | LHP300F-24-Y |
| Item | Overcurrent Protection |
| Object | +24V12.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

Overcurrent protection is Hiccup mode.

2.Values

| Output Voltage [V] | Load Current [A] | |
|---|---|---|
| | Input Volt. 100[V] | Input Volt. 230[V] |
| 24 | 46.81 | 47.44 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | LHP300F-24-Y |
| Item | Ambient Temperature Drift |
| Object | +24V12.5A |

Testing Circuitry Figure A

1.Values

Load 100%

| Ambient Temperature[℃] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 100V | Input Volt. 200V | Input Volt. 230V |
| -10 | 23.980 | 23.981 | 23.981 |
| 25 | 24.044 | 24.045 | 24.044 |
| 50 | 24.072 | 24.072 | 24.072 |

| | |
|---|---|
| Item | Minimum Input Voltage for Regulated Output Voltage |
| Object | +24V12.5A |

Testing Circuitry Figure A

1.Values

| Ambient Temperature[℃] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -10 | 74 | 75 |
| 25 | 74 | 75 |
| 50 | 75 | 75 |

| | |
|---|---|
| Item | Overvoltage Protection |
| Object | +24V12.5A |

Testing Circuitry Figure A

1.Values

Load 0%

| Ambient Temperature[℃] | Operating Point [V] | |
|---|---|---|
| | Input Volt. 100V | Input Volt. 230V |
| -10 | 29.86 | 29.75 |
| 25 | 30.58 | 30.59 |
| 50 | 31.05 | 31.06 |

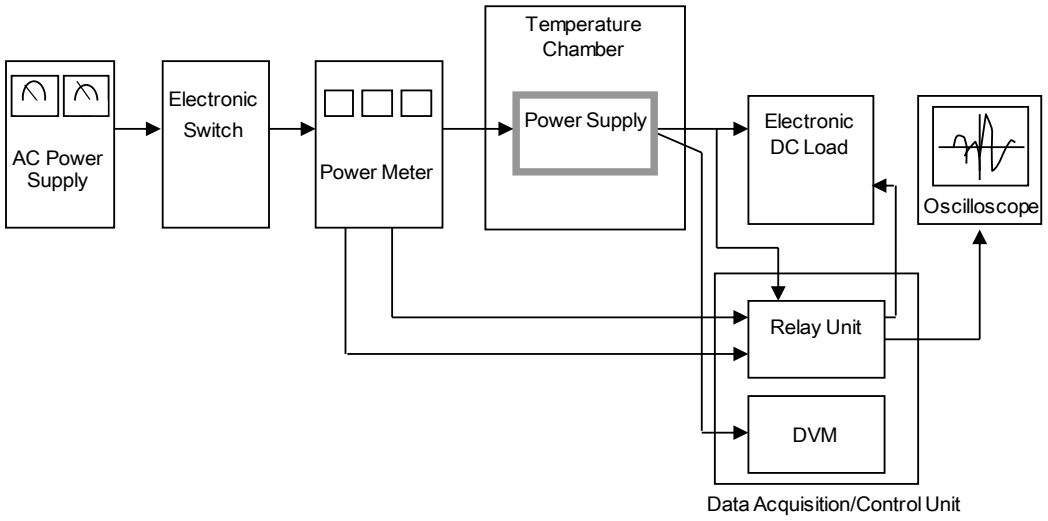
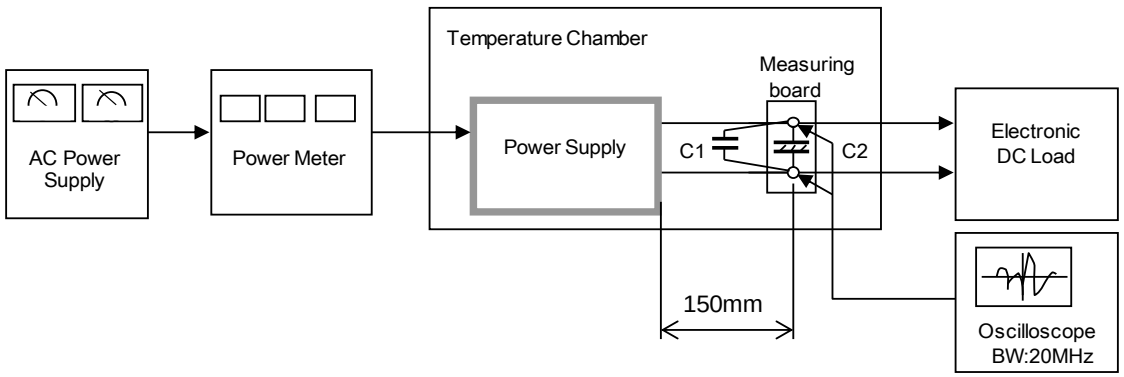



Figure A




C1= 0.1 μF
(Ceramic capacitor)

C2= 22 μF
(Electrolytic capacitor)

Figure B

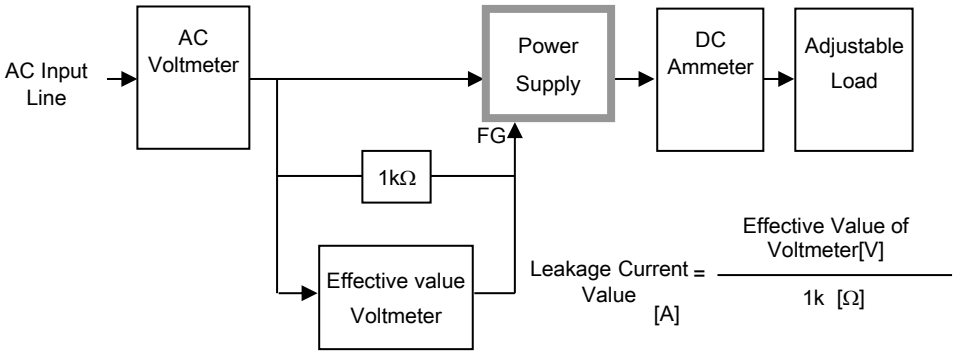



Figure C-1 ( DEN-AN )

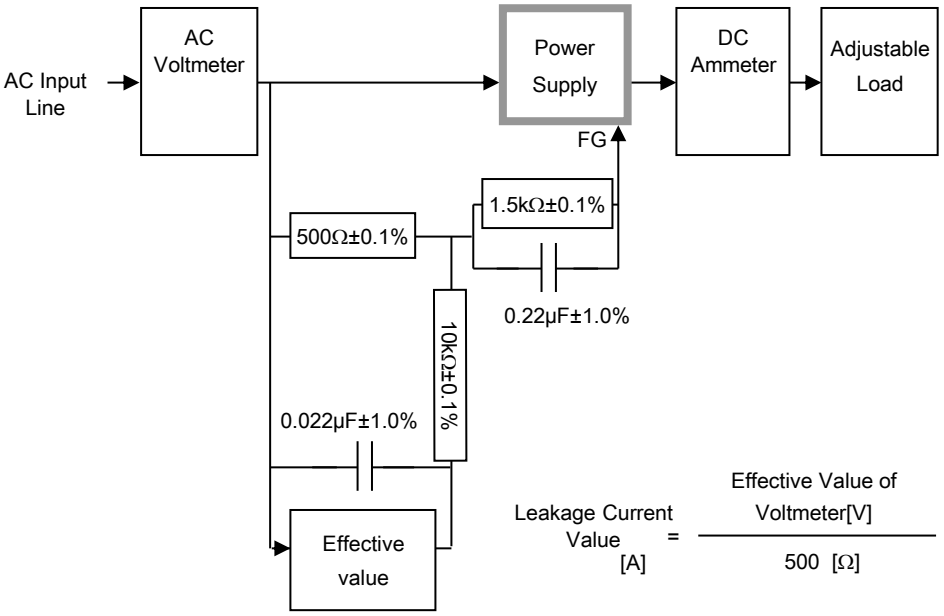



Figure C-2 ( IEC62368-1 refer to IEC60990 Fig.4 )

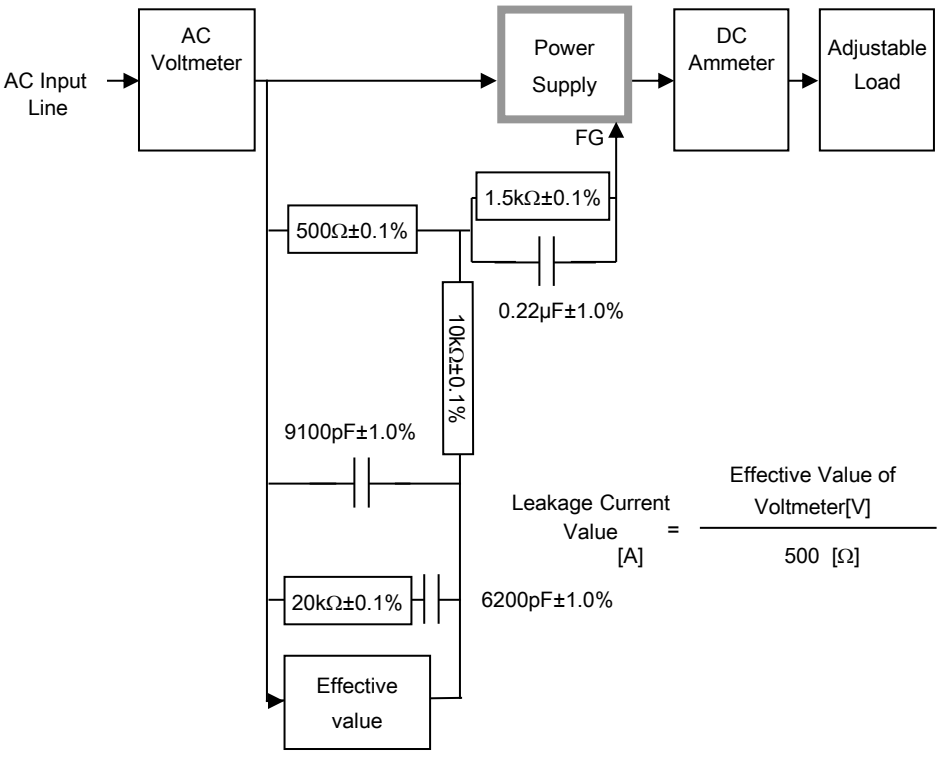



Figure C-3 ( IEC62368-1 refer to IEC60990 Fig.5 )