

TEST DATA OF KHNA480F-48

Regulated DC Power Supply
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COSEL CO.,LTD.

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| Model | | KHNA480F-48 | | Temperature | | 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------|---------------------------------|--------------------|--|--|----------|--|------------------|-------------------|--|--|--------------------|--------------------|--------------------|---|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|----|-------|-------|-------|----|-------|-------|-------|----|-------|-------|-------|----|-------|-------|-------|----|---|---|---|----|---|---|---|
| Item | | Input Current (by Load Current) | | Testing Circuitry | | Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | | | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>115V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>230V</div></div></div> <div><div><div>10</div><div>8</div><div>6</div><div>4</div><div>2</div><div>0</div></div><div><div>Input Current [A]</div><div></div><div></div><div></div><div></div><div></div></div><div><div>0</div><div>4</div><div>8</div><div>12</div><div>16</div></div><div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div>Load Current [A]</div></div></div> <div><div>Note: Slanted line shows the range of the rated load current.</div></div> | | | | <table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0</td><td>0.126</td><td>0.137</td><td>0.163</td></tr><tr><td>2</td><td>1.127</td><td>0.977</td><td>0.570</td></tr><tr><td>4</td><td>2.147</td><td>1.864</td><td>0.998</td></tr><tr><td>6</td><td>3.169</td><td>2.749</td><td>1.455</td></tr><tr><td>8</td><td>4.235</td><td>3.670</td><td>1.915</td></tr><tr><td>10</td><td>5.263</td><td>4.587</td><td>2.369</td></tr><tr><td>11</td><td>5.801</td><td>5.040</td><td>2.595</td></tr><tr><td>13</td><td>6.881</td><td>5.951</td><td>3.045</td></tr><tr><td>15</td><td>8.020</td><td>6.891</td><td>3.498</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table> | | | | Load Current [A] | Input Current [A] | | | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | 0 | 0.126 | 0.137 | 0.163 | 2 | 1.127 | 0.977 | 0.570 | 4 | 2.147 | 1.864 | 0.998 | 6 | 3.169 | 2.749 | 1.455 | 8 | 4.235 | 3.670 | 1.915 | 10 | 5.263 | 4.587 | 2.369 | 11 | 5.801 | 5.040 | 2.595 | 13 | 6.881 | 5.951 | 3.045 | 15 | 8.020 | 6.891 | 3.498 | -- | - | - | - | -- | - | - | - |
| Load Current [A] | Input Current [A] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0.126 | 0.137 | 0.163 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 1.127 | 0.977 | 0.570 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 2.147 | 1.864 | 0.998 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 3.169 | 2.749 | 1.455 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 4.235 | 3.670 | 1.915 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 5.263 | 4.587 | 2.369 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 5.801 | 5.040 | 2.595 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 6.881 | 5.951 | 3.045 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 8.020 | 6.891 | 3.498 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Model | | KHNA480F-48 | | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|-------------------------------|--------------------|--|------------------|-----------------|----------|----------|--------------------|--------------------|--------------------|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|----|---|---|----|---|---|---|
| Item | | Input Power (by Load Current) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <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>Input Volt. 100V</div><div>Input Volt. 115V</div><div>Input Volt. 230V</div></div></div> <div><table><thead><tr><th>Load Current [A]</th><th>100V [W]</th><th>115V [W]</th><th>230V [W]</th></tr></thead><tbody><tr><td>0</td><td>6.6</td><td>7.6</td><td>2.4</td></tr><tr><td>2</td><td>109.4</td><td>108.9</td><td>110.3</td></tr><tr><td>4</td><td>209.8</td><td>210.1</td><td>209.3</td></tr><tr><td>6</td><td>312.1</td><td>310.6</td><td>309.6</td></tr><tr><td>8</td><td>415.5</td><td>414.0</td><td>410.1</td></tr><tr><td>10</td><td>520.8</td><td>517.8</td><td>512.0</td></tr><tr><td>11</td><td>574.9</td><td>570.8</td><td>563.0</td></tr><tr><td>13</td><td>683.2</td><td>677.8</td><td>666.0</td></tr><tr><td>15</td><td>797.0</td><td>787.0</td><td>771.0</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></tbody></table></div> <div>Note: Slanted line shows the range of the rated load current.</div> | | | | | Load Current [A] | 100V [W] | 115V [W] | 230V [W] | 0 | 6.6 | 7.6 | 2.4 | 2 | 109.4 | 108.9 | 110.3 | 4 | 209.8 | 210.1 | 209.3 | 6 | 312.1 | 310.6 | 309.6 | 8 | 415.5 | 414.0 | 410.1 | 10 | 520.8 | 517.8 | 512.0 | 11 | 574.9 | 570.8 | 563.0 | 13 | 683.2 | 677.8 | 666.0 | 15 | 797.0 | 787.0 | 771.0 | -- | - | - | - | -- | - | - | - | | | |
| Load Current [A] | 100V [W] | 115V [W] | 230V [W] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 6.6 | 7.6 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 109.4 | 108.9 | 110.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 209.8 | 210.1 | 209.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 312.1 | 310.6 | 309.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 415.5 | 414.0 | 410.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 520.8 | 517.8 | 512.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 574.9 | 570.8 | 563.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 683.2 | 677.8 | 666.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 797.0 | 787.0 | 771.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table><thead><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Power [W]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr></thead><tbody><tr><td>0</td><td>6.6</td><td>7.6</td><td>2.4</td></tr><tr><td>2</td><td>109.4</td><td>108.9</td><td>110.3</td></tr><tr><td>4</td><td>209.8</td><td>210.1</td><td>209.3</td></tr><tr><td>6</td><td>312.1</td><td>310.6</td><td>309.6</td></tr><tr><td>8</td><td>415.5</td><td>414.0</td><td>410.1</td></tr><tr><td>10</td><td>520.8</td><td>517.8</td><td>512.0</td></tr><tr><td>11</td><td>574.9</td><td>570.8</td><td>563.0</td></tr><tr><td>13</td><td>683.2</td><td>677.8</td><td>666.0</td></tr><tr><td>15</td><td>797.0</td><td>787.0</td><td>771.0</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></tbody></table> | | | | | Load Current [A] | Input Power [W] | | | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | 0 | 6.6 | 7.6 | 2.4 | 2 | 109.4 | 108.9 | 110.3 | 4 | 209.8 | 210.1 | 209.3 | 6 | 312.1 | 310.6 | 309.6 | 8 | 415.5 | 414.0 | 410.1 | 10 | 520.8 | 517.8 | 512.0 | 11 | 574.9 | 570.8 | 563.0 | 13 | 683.2 | 677.8 | 666.0 | 15 | 797.0 | 787.0 | 771.0 | -- | - | - | - | -- | - | - | - |
| Load Current [A] | Input Power [W] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 6.6 | 7.6 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 109.4 | 108.9 | 110.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | |
|--|--|-------------------------------|--|----------------------------------|------------------|
| Model | | KHNA480F-48 | | Temperature Testing Circuitry | 25°C Figure A |
| Item | | Efficiency (by Input Voltage) | | | |
| Object | | | | | |
| 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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><div></div><div></div><div></div><div></div><div></d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| | | | | |



| Model | | KHNA480F-48 | | Temperature 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------|---|--------------------|----------------------------|--|------------------|----------------|--|--|--------------------|--------------------|--------------------|---|---|---|---|---|------|------|------|---|------|------|------|---|------|------|------|---|------|------|------|----|------|------|------|----|------|------|------|----|------|------|------|----|------|------|------|----|---|---|---|----|---|---|---|
| Item | | Efficiency (by Load Current) | | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | <div><div><div>—△—</div><div>Input Volt. 100V</div></div><div><div>---□---</div><div>Input Volt. 115V</div></div><div><div>-○-</div><div>Input Volt. 230V</div></div></div> <div><div>Efficiency [%]</div><div>Load Current [A]</div></div> | | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2</td><td>88.5</td><td>89.1</td><td>87.9</td></tr><tr><td>4</td><td>91.9</td><td>91.9</td><td>92.3</td></tr><tr><td>6</td><td>92.5</td><td>93.1</td><td>93.4</td></tr><tr><td>8</td><td>92.7</td><td>93.2</td><td>94.1</td></tr><tr><td>10</td><td>92.4</td><td>93.1</td><td>94.1</td></tr><tr><td>11</td><td>92.1</td><td>92.9</td><td>94.2</td></tr><tr><td>13</td><td>91.5</td><td>92.4</td><td>94.1</td></tr><tr><td>15</td><td>90.7</td><td>91.8</td><td>93.7</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table> | | | | Load Current [A] | Efficiency [%] | | | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | 0 | - | - | - | 2 | 88.5 | 89.1 | 87.9 | 4 | 91.9 | 91.9 | 92.3 | 6 | 92.5 | 93.1 | 93.4 | 8 | 92.7 | 93.2 | 94.1 | 10 | 92.4 | 93.1 | 94.1 | 11 | 92.1 | 92.9 | 94.2 | 13 | 91.5 | 92.4 | 94.1 | 15 | 90.7 | 91.8 | 93.7 | -- | - | - | - | -- | - | - | - |
| Load Current [A] | Efficiency [%] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 88.5 | 89.1 | 87.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 91.9 | 91.9 | 92.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 92.5 | 93.1 | 93.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 92.7 | 93.2 | 94.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 92.4 | 93.1 | 94.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 92.1 | 92.9 | 94.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 91.5 | 92.4 | 94.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 90.7 | 91.8 | 93.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: Slanted line shows the range of the rated load current. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



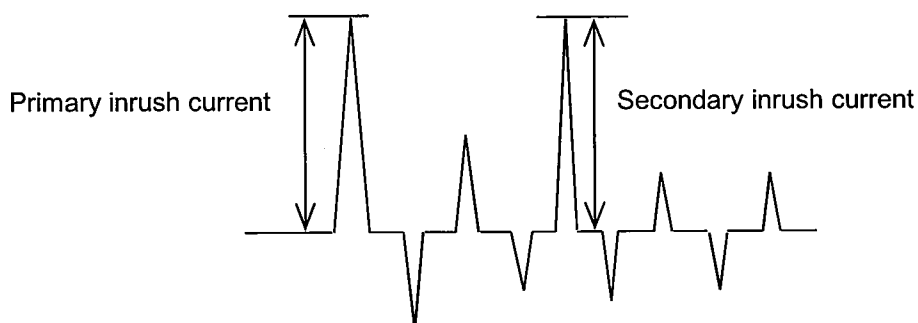
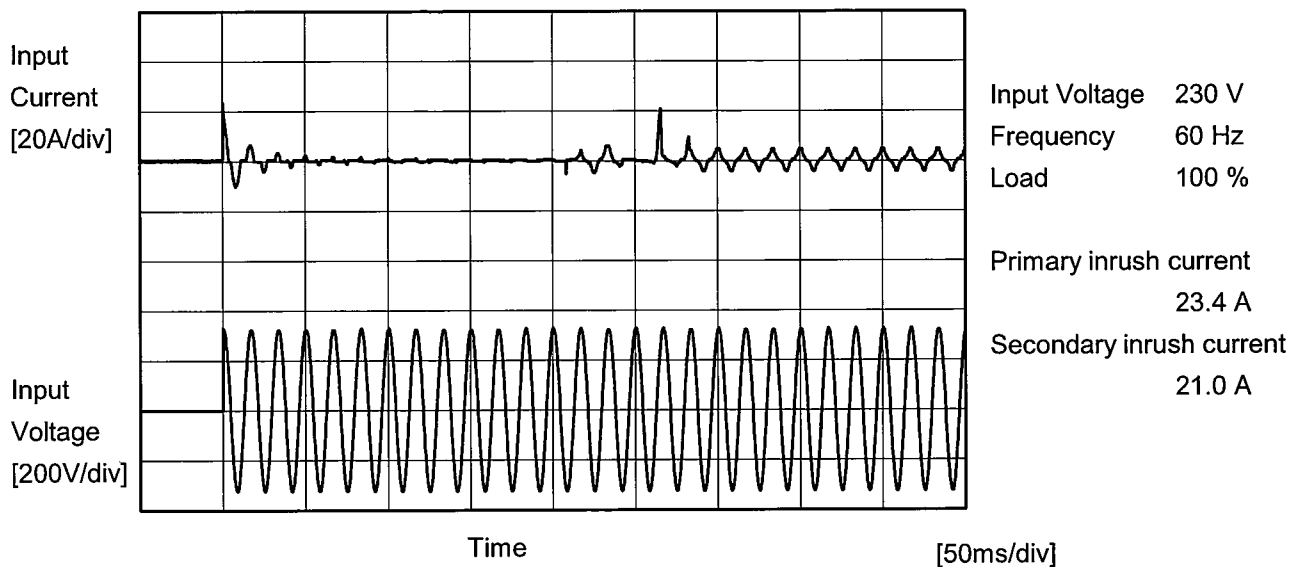
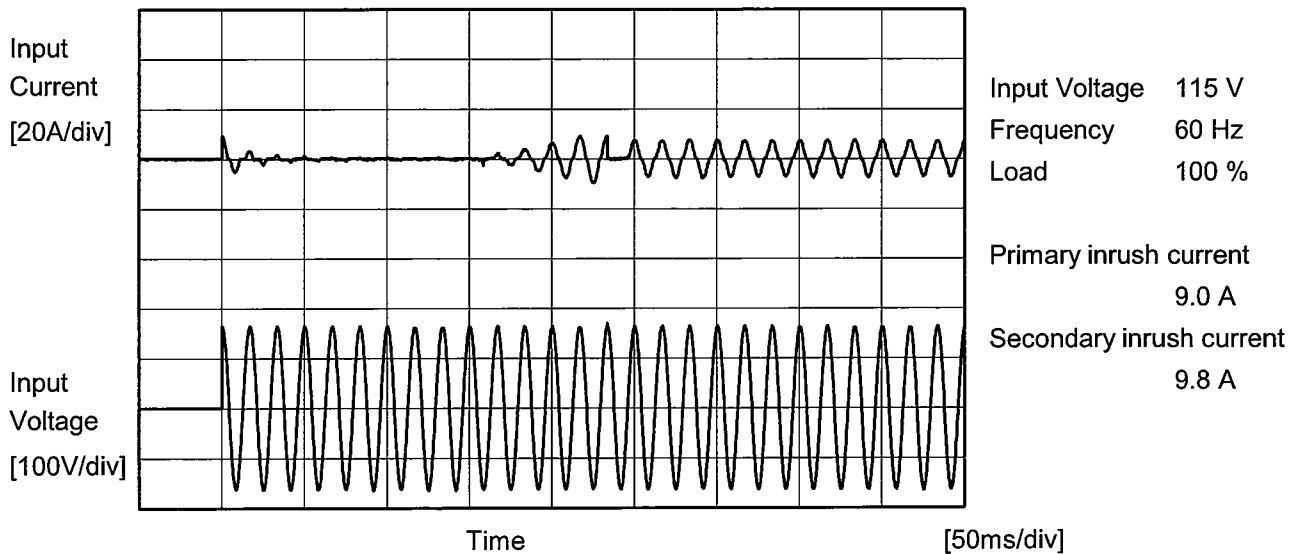
| Model KHNA480F-48 | | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------------------------|---|-------------------|--------------|--|----------|-----------|----|-------|-------|----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|----|---|---|
| Item | Power Factor (by Input Voltage) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1.Graph</p> <p>---□--- Load 50% —△— Load 100%</p> <p>Power Factor</p> <p>Input Voltage [V]</p> <p>Note: Slanted line shows the range of the rated input voltage.</p> | | <p>2.Values</p> <table> <tr> <th rowspan="2">Input Voltage [V]</th><th colspan="2">Power Factor</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> <tr><td>83</td><td>0.977</td><td>0.994</td></tr> <tr><td>85</td><td>0.977</td><td>0.993</td></tr> <tr><td>100</td><td>0.985</td><td>0.992</td></tr> <tr><td>115</td><td>0.972</td><td>0.983</td></tr> <tr><td>200</td><td>0.954</td><td>0.962</td></tr> <tr><td>230</td><td>0.916</td><td>0.939</td></tr> <tr><td>264</td><td>0.861</td><td>0.917</td></tr> <tr><td>280</td><td>0.794</td><td>0.853</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </table> | Input Voltage [V] | Power Factor | | Load 50% | Load 100% | 83 | 0.977 | 0.994 | 85 | 0.977 | 0.993 | 100 | 0.985 | 0.992 | 115 | 0.972 | 0.983 | 200 | 0.954 | 0.962 | 230 | 0.916 | 0.939 | 264 | 0.861 | 0.917 | 280 | 0.794 | 0.853 | -- | - | - |
| Input Voltage [V] | Power Factor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 83 | 0.977 | 0.994 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 0.977 | 0.993 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 0.985 | 0.992 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 115 | 0.972 | 0.983 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 0.954 | 0.962 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 230 | 0.916 | 0.939 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264 | 0.861 | 0.917 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 280 | 0.794 | 0.853 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| Model | | KHNA480F-48 | | Temperature 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|--------------------------------|--------------------|---|--|------------------|--------------|--|--|--------------------|--------------------|--------------------|---|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|----|-------|-------|-------|----|-------|-------|-------|----|-------|-------|-------|----|-------|-------|-------|----|---|---|---|----|---|---|---|
| Item | | Power Factor (by Load Current) | | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | | | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div><div>—△—</div><div>—□—</div><div>—○—</div></div><div><div>Input Volt.</div><div>Input Volt.</div><div>Input Volt.</div></div><div><div>100V</div><div>115V</div><div>230V</div></div></div> <p>Power Factor</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p> | | | | <table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Power Factor</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0</td><td>0.498</td><td>0.483</td><td>0.063</td></tr><tr><td>2</td><td>0.970</td><td>0.968</td><td>0.841</td></tr><tr><td>4</td><td>0.975</td><td>0.979</td><td>0.911</td></tr><tr><td>6</td><td>0.986</td><td>0.982</td><td>0.924</td></tr><tr><td>8</td><td>0.983</td><td>0.981</td><td>0.930</td></tr><tr><td>10</td><td>0.992</td><td>0.983</td><td>0.939</td></tr><tr><td>11</td><td>0.993</td><td>0.986</td><td>0.943</td></tr><tr><td>13</td><td>0.994</td><td>0.992</td><td>0.950</td></tr><tr><td>15</td><td>0.996</td><td>0.994</td><td>0.958</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table> | | Load Current [A] | Power Factor | | | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | 0 | 0.498 | 0.483 | 0.063 | 2 | 0.970 | 0.968 | 0.841 | 4 | 0.975 | 0.979 | 0.911 | 6 | 0.986 | 0.982 | 0.924 | 8 | 0.983 | 0.981 | 0.930 | 10 | 0.992 | 0.983 | 0.939 | 11 | 0.993 | 0.986 | 0.943 | 13 | 0.994 | 0.992 | 0.950 | 15 | 0.996 | 0.994 | 0.958 | -- | - | - | - | -- | - | - | - |
| Load Current [A] | Power Factor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0.498 | 0.483 | 0.063 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 0.970 | 0.968 | 0.841 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 0.975 | 0.979 | 0.911 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 0.986 | 0.982 | 0.924 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 0.983 | 0.981 | 0.930 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 0.992 | 0.983 | 0.939 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 0.993 | 0.986 | 0.943 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 0.994 | 0.992 | 0.950 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 0.996 | 0.994 | 0.958 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| | | | |
|--------|----------------|-------------------|----------|
| | | | |
| Model | KHNA480F-48 | | |
| Item | Inrush Current | Temperature | 25°C |
| Object | | Testing Circuitry | Figure A |



COSEL

| | | |
|--------|-----------------|--|
| | | Temperature 25°C Testing Circuitry Figure B |
| Model | KHNA480F-48 | |
| Item | Leakage Current | |
| Object | _____ | |

1.Results

[mA]

| Standards | | Input Volt. | | | Note |
|------------|---------------|-------------|---------|---------|-----------|
| | | 100 [V] | 115 [V] | 240 [V] | |
| DEN-AN | Both phases | 0.31 | 0.35 | 0.76 | Operation |
| | One of phases | 0.45 | 0.52 | 1.20 | Stand by |
| IEC60950-1 | Both phases | 0.30 | 0.34 | 0.72 | Operation |
| | One of phases | 0.43 | 0.50 | 1.09 | 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.



| Model KHNA480F-48 | | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------|---|-------------------|--------------------|--|----------|-----------|----|--------|--------|----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|----|---|---|
| Item | Line Regulation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +48V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1.Graph</p> <div> <div> <div>---</div> <div>□</div> <div>---</div> </div> <div>Load 50%</div> <div>—</div> <div>△</div> <div>—</div> </div> <div>Load 100%</div> <p>Note: Slanted line shows the range of the rated input voltage.</p> | | <p>2.Values</p> <table> <tr> <th rowspan="2">Input Voltage [V]</th><th colspan="2">Output Voltage [V]</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> <tr><td>83</td><td>48.088</td><td>48.098</td></tr> <tr><td>85</td><td>48.089</td><td>48.100</td></tr> <tr><td>100</td><td>48.089</td><td>48.100</td></tr> <tr><td>115</td><td>48.090</td><td>48.099</td></tr> <tr><td>200</td><td>48.089</td><td>48.098</td></tr> <tr><td>230</td><td>48.091</td><td>48.099</td></tr> <tr><td>264</td><td>48.086</td><td>48.100</td></tr> <tr><td>280</td><td>48.087</td><td>48.101</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </table> | Input Voltage [V] | Output Voltage [V] | | Load 50% | Load 100% | 83 | 48.088 | 48.098 | 85 | 48.089 | 48.100 | 100 | 48.089 | 48.100 | 115 | 48.090 | 48.099 | 200 | 48.089 | 48.098 | 230 | 48.091 | 48.099 | 264 | 48.086 | 48.100 | 280 | 48.087 | 48.101 | -- | - | - |
| Input Voltage [V] | Output Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 83 | 48.088 | 48.098 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 48.089 | 48.100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 48.089 | 48.100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 115 | 48.090 | 48.099 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 48.089 | 48.098 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 230 | 48.091 | 48.099 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264 | 48.086 | 48.100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 280 | 48.087 | 48.101 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

BC-10928

COSEL

| | | | |
|--------|-----------------------|----------------------------------|-------------------|
| Model | KHNA480F-48 | Temperature Testing Circuitry | 25° C Figure A |
| Item | Dynamic Load Response | | |
| Object | +48V10A | | |

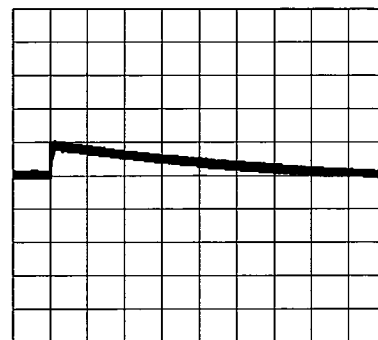
Input Volt. 230 V
Cycle 1000 ms

Response. $t_1=t_2=50\mu s$. Typ



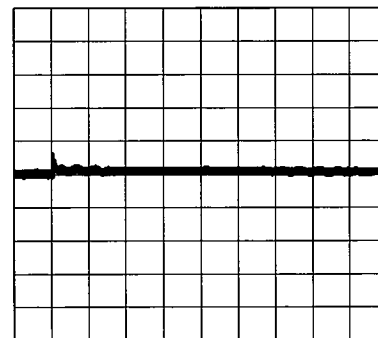
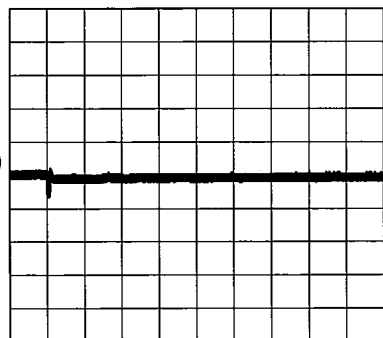
Min. Load (0A) \longleftrightarrow
Load 100% (10A)

1V/div



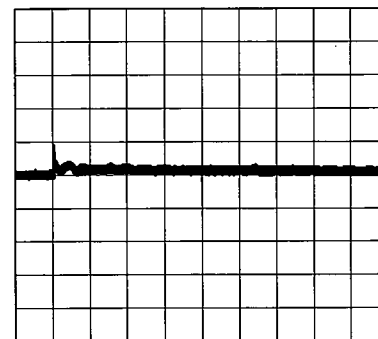
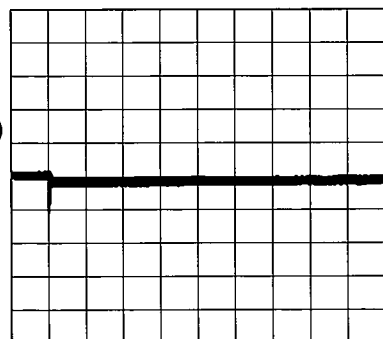
Load 30%(3A) \longleftrightarrow
Load 100% (10A)

1V/div



Load 30%(3A) \longleftrightarrow
Load 150% (15A)

1V/div



* The characteristic of AC115V is equal.

COSEL

| Model | | KHNA480F-48 | | Temperature25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------------------|----------------------------------|--|---------------------------|---------------------|---------------------|-----|-----|-----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|------|----|----|------|----|----|------|----|----|------|----|----|----|---|---|----|---|---|--|--|
| Item | | Ripple Voltage (by Load Current) | | Testing CircuitryFigure C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +48V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | | | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div><div>—△— Input Volt. 115V</div><div>---○--- Input Volt. 230V</div></div><table><thead><tr><th>Load Current [A]</th><th>Input Volt. 115 [V]</th><th>Input Volt. 230 [V]</th></tr></thead><tbody><tr><td>0.0</td><td>270</td><td>270</td></tr><tr><td>2.0</td><td>55</td><td>55</td></tr><tr><td>4.0</td><td>35</td><td>35</td></tr><tr><td>6.0</td><td>40</td><td>40</td></tr><tr><td>8.0</td><td>45</td><td>45</td></tr><tr><td>10.0</td><td>45</td><td>45</td></tr><tr><td>11.0</td><td>50</td><td>50</td></tr><tr><td>13.0</td><td>55</td><td>55</td></tr><tr><td>15.0</td><td>60</td><td>60</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table></div> | | | | Load Current [A] | Input Volt. 115 [V] | Input Volt. 230 [V] | 0.0 | 270 | 270 | 2.0 | 55 | 55 | 4.0 | 35 | 35 | 6.0 | 40 | 40 | 8.0 | 45 | 45 | 10.0 | 45 | 45 | 11.0 | 50 | 50 | 13.0 | 55 | 55 | 15.0 | 60 | 60 | -- | - | - | -- | - | - | | |
| Load Current [A] | Input Volt. 115 [V] | Input Volt. 230 [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 270 | 270 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 55 | 55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 35 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 40 | 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11.0 | 50 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.0 | 55 | 55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15.0 | 60 | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div>Measured by 20 MHz Oscilloscope.</div> <div>Ripple Voltage is shown as p-p in the figure below.</div> <div>Note: Slanted line shows the range of the rated load current.</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div><p>Fig. Complex Ripple Wave Form</p></div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| Model | | KHNA480F-48 | | Temperature 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------------------|---------------------|--|---|--|------------------|-------------------|--|---------------------|---------------------|-----|-----|-----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|------|----|----|------|----|----|------|----|----|------|----|----|----|---|---|----|---|---|
| Item | | Ripple-Noise | | Testing Circuitry Figure C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +48V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | | | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div><div><div><div></div><div>—△—</div><div>Input Volt. 115V</div></div><div><div>-·-○-·-</div><div>Input Volt. 230V</div></div></div><div><p>Ripple-Noise [mV]</p><p>Load Current [A]</p></div></div></div> | | | | <table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 115 [V]</th><th>Input Volt. 230 [V]</th></tr><tr><td>0.0</td><td>290</td><td>290</td></tr><tr><td>2.0</td><td>70</td><td>70</td></tr><tr><td>4.0</td><td>45</td><td>45</td></tr><tr><td>6.0</td><td>50</td><td>50</td></tr><tr><td>8.0</td><td>60</td><td>60</td></tr><tr><td>10.0</td><td>60</td><td>60</td></tr><tr><td>11.0</td><td>70</td><td>70</td></tr><tr><td>13.0</td><td>85</td><td>85</td></tr><tr><td>15.0</td><td>95</td><td>95</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table> | | Load Current [A] | Ripple-Noise [mV] | | Input Volt. 115 [V] | Input Volt. 230 [V] | 0.0 | 290 | 290 | 2.0 | 70 | 70 | 4.0 | 45 | 45 | 6.0 | 50 | 50 | 8.0 | 60 | 60 | 10.0 | 60 | 60 | 11.0 | 70 | 70 | 13.0 | 85 | 85 | 15.0 | 95 | 95 | -- | - | - | -- | - | - |
| Load Current [A] | Ripple-Noise [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 115 [V] | Input Volt. 230 [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 290 | 290 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 70 | 70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 50 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 60 | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 60 | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11.0 | 70 | 70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.0 | 85 | 85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15.0 | 95 | 95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <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>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></div></div></div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fig. Complex Ripple Wave Form | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Model | KHNA480F-48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------------------------|--|--|--------------------------|---------------------|--|---------------------|---------------------|-----|-----|-----|-----|-----|-----|-----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|---|
| Item | Ripple Voltage (by Ambient Temp.) | Testing Circuitry Figure C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +48V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div><div>---□---</div><div>Input Volt. 115V</div></div><div><div>—△—</div><div>Input Volt. 230V</div></div></div> <p>Load 100 %</p> | | <table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 115 [V]</th><th>Input Volt. 230 [V]</th></tr><tr><td>-30</td><td>170</td><td>170</td></tr><tr><td>-25</td><td>105</td><td>105</td></tr><tr><td>-10</td><td>70</td><td>70</td></tr><tr><td>0</td><td>50</td><td>50</td></tr><tr><td>10</td><td>45</td><td>45</td></tr><tr><td>25</td><td>45</td><td>45</td></tr><tr><td>40</td><td>45</td><td>45</td></tr><tr><td>50</td><td>45</td><td>45</td></tr><tr><td>60</td><td>50</td><td>50</td></tr><tr><td>70</td><td>50</td><td>50</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table> | | Ambient Temperature [°C] | Ripple Voltage [mV] | | Input Volt. 115 [V] | Input Volt. 230 [V] | -30 | 170 | 170 | -25 | 105 | 105 | -10 | 70 | 70 | 0 | 50 | 50 | 10 | 45 | 45 | 25 | 45 | 45 | 40 | 45 | 45 | 50 | 45 | 45 | 60 | 50 | 50 | 70 | 50 | 50 | -- | - | - |
| Ambient Temperature [°C] | Ripple Voltage [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 115 [V] | Input Volt. 230 [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -30 | 170 | 170 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -25 | 105 | 105 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 70 | 70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 50 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 50 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 50 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured by 20 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| | | | |
|---------|--|---------------------------|--|
| Model | | KHNA480F-48 | |
| Item | | Ambient Temperature Drift | |
| Object | | +48V10A | |
| 1.Graph | | 2.Values | |

—△—

Input Volt.

85V

---□---

Input Volt.

115V

---○---

Input Volt.

230V

Output Voltage [V]

Ambient Temperature [°C]

Load 100%

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

| Ambient Temperature [°C] | Output Voltage [V] | | |
|--------------------------|--------------------|--------------------|--------------------|
| | Input Volt. 85[V] | Input Volt. 115[V] | Input Volt. 230[V] |
| -30 | 47.998 | 47.997 | 47.999 |
| -25 | 48.003 | 48.002 | 48.003 |
| -10 | 48.028 | 48.027 | 48.029 |
| 0 | 48.052 | 48.050 | 48.052 |
| 10 | 48.065 | 48.065 | 48.066 |
| 25 | 48.087 | 48.085 | 48.086 |
| 40 | 48.106 | 48.106 | 48.106 |
| 50 | 48.115 | 48.115 | 48.116 |
| 60 | 48.112 | 48.112 | 48.113 |
| 70 | 48.085 | 48.085 | 48.086 |
| -- | - | - | - |

COSEL

| | | |
|-------------|-------------------------|-------------------------------|
| Model | | Testing Circuitry Figure A |
| KHNA480F-48 | | |
| Item | Output Voltage Accuracy | |
| Object | +48V10A | |

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 : -25 - 60°C

Input Voltage : 85 - 230V

Load Current : 0 - 10A

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* 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 | 60 | 100 | 0 | 48.342 | ±170 | ±0.4 |
| Minimum Voltage | -25 | 115 | 10 | 48.002 | | |

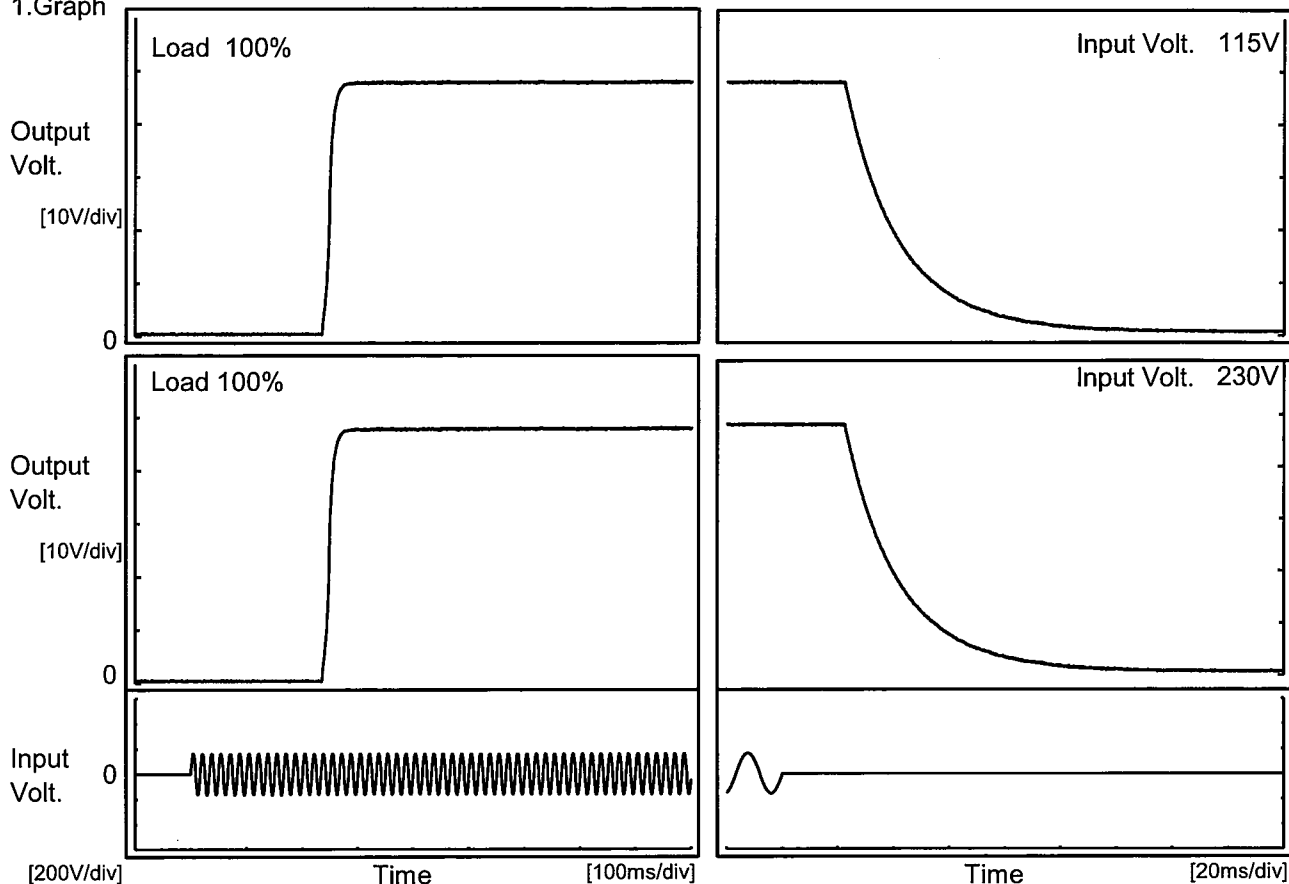


| | | | |
|--|------------------|-------------------|----------|
| | | | |
| Model | KHNA480F-48 | | |
| Item | Time Lapse Drift | Temperature | 25°C |
| Object | +48V10A | Testing Circuitry | Figure A |
| 1.Graph | | 2.Values | |
| <div><div><div>Output Voltage [V]</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><div></div><div></div><div></div><div></div><di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COSEL

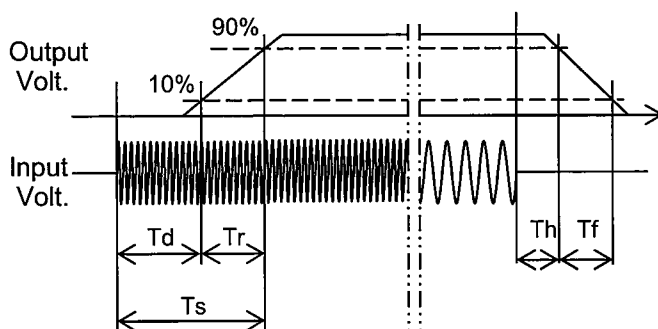
| | | |
|--------|--------------------|--|
| Model | KHNA480F-48 | |
| Item | Rise and Fall Time | Temperature 25°C Testing Circuitry Figure A |
| Object | +48V10A | |

1. Graph



2. Values

| | | [ms] | | | | |
|-------|------|-------|------|-------|------|------|
| Input | Time | Td | Tr | Ts | Th | Tf |
| 115V | | 240.0 | 19.5 | 261.4 | 25.2 | 45.2 |
| 230V | | 240.0 | 20.0 | 260.0 | 24.4 | 45.1 |



BC-10928

COSEL

| Model | | KHNA480F-48 | | Temperature25°C Testing CircuitryFigure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------|---|--------------------|--|------------------|-----------|-----------|-----------|--------------------|--------------------|--------------------|---|---|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|---|----|---|---|---|
| Item | | Instantaneous Interruption Compensation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +48V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div><div><div><div></div><div>△</div><div></div></div><div>Input Volt.</div><div>100V</div></div><div><div><div></div><div>□</div><div></div></div><div>Input Volt.</div><div>115V</div></div><div><div><div></div><div>○</div><div></div></div><div>Input Volt.</div><div>230V</div></div></div><div><table><thead><tr><th>Load Current [A]</th><th>100V [ms]</th><th>115V [ms]</th><th>230V [ms]</th></tr></thead><tbody><tr><td>0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2</td><td>110</td><td>111</td><td>110</td></tr><tr><td>4</td><td>56</td><td>56</td><td>55</td></tr><tr><td>6</td><td>37</td><td>37</td><td>37</td></tr><tr><td>8</td><td>28</td><td>28</td><td>28</td></tr><tr><td>10</td><td>22</td><td>22</td><td>22</td></tr><tr><td>11</td><td>20</td><td>20</td><td>20</td></tr><tr><td>13</td><td>15</td><td>15</td><td>16</td></tr><tr><td>15</td><td>14</td><td>14</td><td>14</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></tbody></table></div></div> <div><div>Note: Slanted line shows the range of the rated load current.</div></div> | | | | | Load Current [A] | 100V [ms] | 115V [ms] | 230V [ms] | 0 | - | - | - | 2 | 110 | 111 | 110 | 4 | 56 | 56 | 55 | 6 | 37 | 37 | 37 | 8 | 28 | 28 | 28 | 10 | 22 | 22 | 22 | 11 | 20 | 20 | 20 | 13 | 15 | 15 | 16 | 15 | 14 | 14 | 14 | -- | - | - | - | -- | - | - | - | | | |
| Load Current [A] | 100V [ms] | 115V [ms] | 230V [ms] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 110 | 111 | 110 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 56 | 56 | 55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 37 | 37 | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 28 | 28 | 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 22 | 22 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 20 | 20 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 15 | 15 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 14 | 14 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table><thead><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr></thead><tbody><tr><td>0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2</td><td>110</td><td>111</td><td>110</td></tr><tr><td>4</td><td>56</td><td>56</td><td>55</td></tr><tr><td>6</td><td>37</td><td>37</td><td>37</td></tr><tr><td>8</td><td>28</td><td>28</td><td>28</td></tr><tr><td>10</td><td>22</td><td>22</td><td>22</td></tr><tr><td>11</td><td>20</td><td>20</td><td>20</td></tr><tr><td>13</td><td>15</td><td>15</td><td>16</td></tr><tr><td>15</td><td>14</td><td>14</td><td>14</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></tbody></table> | | | | | Load Current [A] | Time [ms] | | | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | 0 | - | - | - | 2 | 110 | 111 | 110 | 4 | 56 | 56 | 55 | 6 | 37 | 37 | 37 | 8 | 28 | 28 | 28 | 10 | 22 | 22 | 22 | 11 | 20 | 20 | 20 | 13 | 15 | 15 | 16 | 15 | 14 | 14 | 14 | -- | - | - | - | -- | - | - | - |
| Load Current [A] | Time [ms] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 110 | 111 | 110 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 56 | 56 | 55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 37 | 37 | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 28 | 28 | 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 22 | 22 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 20 | 20 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 15 | 15 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 14 | 14 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| Model | | KHNA480F-48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------|---|----------|--------------------------|-------------------|----|----------|-----------|-----|----|-----|-----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----------|----|---|---|
| Item | | Minimum Input Voltage for Regulated Output Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +48V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Ambient Temperature [°C]</th><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>-30</td><td>70</td><td>71</td></tr><tr><td>-25</td><td>70</td><td>71</td></tr><tr><td>-10</td><td>70</td><td>71</td></tr><tr><td>0</td><td>70</td><td>71</td></tr><tr><td>10</td><td>70</td><td>71</td></tr><tr><td>25</td><td>70</td><td>71</td></tr><tr><td>40</td><td>70</td><td>71</td></tr><tr><td>50</td><td>70</td><td>71</td></tr><tr><td>60</td><td>70</td><td>71</td></tr><tr><td>70</td><td>70</td><td>71</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table> | | Ambient Temperature [°C] | Load 50% | Load 100% | -30 | 70 | 71 | -25 | 70 | 71 | -10 | 70 | 71 | 0 | 70 | 71 | 10 | 70 | 71 | 25 | 70 | 71 | 40 | 70 | 71 | 50 | 70 | 71 | 60 | 70 | 71 | 70 | 70 | 71 | -- | - | - | 2.Values | | | |
| Ambient Temperature [°C] | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -30 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -25 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table><thead><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Input Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>-30</td><td>70</td><td>71</td></tr><tr><td>-25</td><td>70</td><td>71</td></tr><tr><td>-10</td><td>70</td><td>71</td></tr><tr><td>0</td><td>70</td><td>71</td></tr><tr><td>10</td><td>70</td><td>71</td></tr><tr><td>25</td><td>70</td><td>71</td></tr><tr><td>40</td><td>70</td><td>71</td></tr><tr><td>50</td><td>70</td><td>71</td></tr><tr><td>60</td><td>70</td><td>71</td></tr><tr><td>70</td><td>70</td><td>71</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table> | | Ambient Temperature [°C] | Input Voltage [V] | | Load 50% | Load 100% | -30 | 70 | 71 | -25 | 70 | 71 | -10 | 70 | 71 | 0 | 70 | 71 | 10 | 70 | 71 | 25 | 70 | 71 | 40 | 70 | 71 | 50 | 70 | 71 | 60 | 70 | 71 | 70 | 70 | 71 | -- | - | - |
| Ambient Temperature [°C] | Input Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -30 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -25 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 70 | 71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: Slanted line shows the range of the rated ambient temperature. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| Model | | KHNA480F-48 | | Temperature25°C Testing CircuitryFigure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------|------------------------|--------------------|--|--------------------|------------------|--|--|--------------------|--------------------|--------------------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|
| Item | | Overcurrent Protection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +48V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph <div><div><div></div><div>Input Volt.100V</div></div><div><div></div><div>Input Volt.115V</div></div><div><div></div><div>Input Volt.230V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when the output voltage is from 24V to 0V.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.Values <table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>45.6</td><td>17.06</td><td>17.10</td><td>17.11</td></tr><tr><td>43.2</td><td>17.21</td><td>17.25</td><td>17.27</td></tr><tr><td>38.4</td><td>17.41</td><td>17.44</td><td>17.45</td></tr><tr><td>33.6</td><td>17.67</td><td>17.70</td><td>17.70</td></tr><tr><td>28.8</td><td>17.96</td><td>17.99</td><td>17.99</td></tr><tr><td>24.0</td><td>18.20</td><td>18.22</td><td>18.22</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><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table> | | | | | Output Voltage [V] | Load Current [A] | | | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | 45.6 | 17.06 | 17.10 | 17.11 | 43.2 | 17.21 | 17.25 | 17.27 | 38.4 | 17.41 | 17.44 | 17.45 | 33.6 | 17.67 | 17.70 | 17.70 | 28.8 | 17.96 | 17.99 | 17.99 | 24.0 | 18.20 | 18.22 | 18.22 | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - |
| Output Voltage [V] | Load Current [A] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100[V] | Input Volt. 115[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45.6 | 17.06 | 17.10 | 17.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 43.2 | 17.21 | 17.25 | 17.27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38.4 | 17.41 | 17.44 | 17.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33.6 | 17.67 | 17.70 | 17.70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28.8 | 17.96 | 17.99 | 17.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24.0 | 18.20 | 18.22 | 18.22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Model | | KHNA480F-48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------------------|--|--|--------------------------|---------------------|--|--------------------|--------------------|-----|-------|-------|-----|-------|-------|-----|-------|-------|---|-------|-------|----|-------|-------|----|-------|-------|----|-------|-------|----|-------|-------|----|-------|-------|----|-------|-------|----|---|---|
| Item | | Overvoltage Protection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +48V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div><div><div><div></div><div>—△—</div><div>Input Volt. 115V</div></div><div><div>---□---</div><div>Input Volt. 230V</div></div></div><div><p>Operating Point [V]</p><p>Ambient Temperature [°C]</p><p>Load 0%</p></div></div></div> | | <table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Operating Point [V]</th></tr><tr><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>-30</td><td>58.74</td><td>58.74</td></tr><tr><td>-25</td><td>58.74</td><td>58.74</td></tr><tr><td>-10</td><td>58.74</td><td>58.74</td></tr><tr><td>0</td><td>58.74</td><td>58.74</td></tr><tr><td>10</td><td>58.74</td><td>58.74</td></tr><tr><td>25</td><td>58.74</td><td>58.74</td></tr><tr><td>40</td><td>58.74</td><td>58.74</td></tr><tr><td>50</td><td>58.74</td><td>58.74</td></tr><tr><td>60</td><td>58.74</td><td>58.74</td></tr><tr><td>70</td><td>58.74</td><td>58.74</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table> | | Ambient Temperature [°C] | Operating Point [V] | | Input Volt. 115[V] | Input Volt. 230[V] | -30 | 58.74 | 58.74 | -25 | 58.74 | 58.74 | -10 | 58.74 | 58.74 | 0 | 58.74 | 58.74 | 10 | 58.74 | 58.74 | 25 | 58.74 | 58.74 | 40 | 58.74 | 58.74 | 50 | 58.74 | 58.74 | 60 | 58.74 | 58.74 | 70 | 58.74 | 58.74 | -- | - | - |
| Ambient Temperature [°C] | Operating Point [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 115[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -30 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -25 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 58.74 | 58.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: Slanted line shows the range of the rated ambient temperature. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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BC-10928

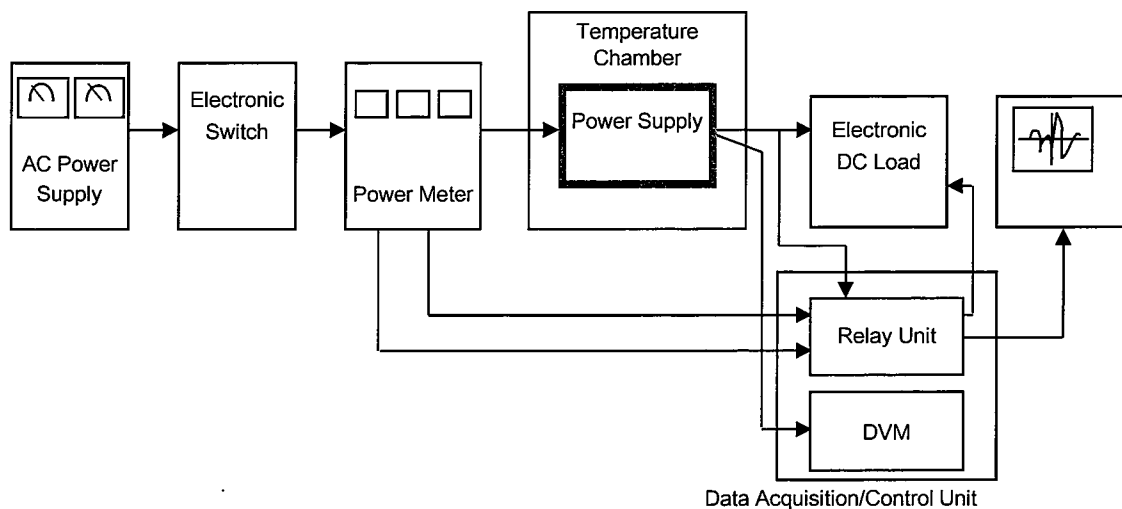


Figure A

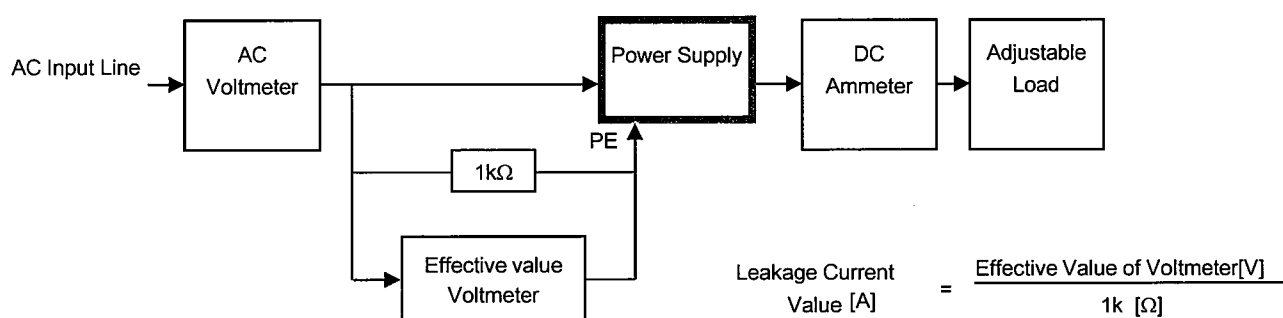


Figure B (DEN-AN)

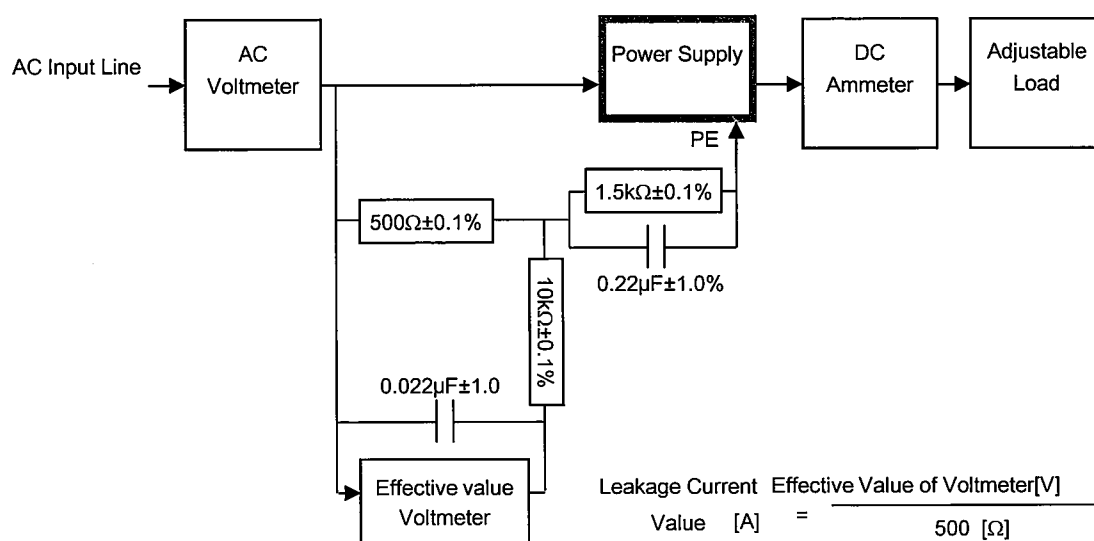


Figure B (IEC60950-1)

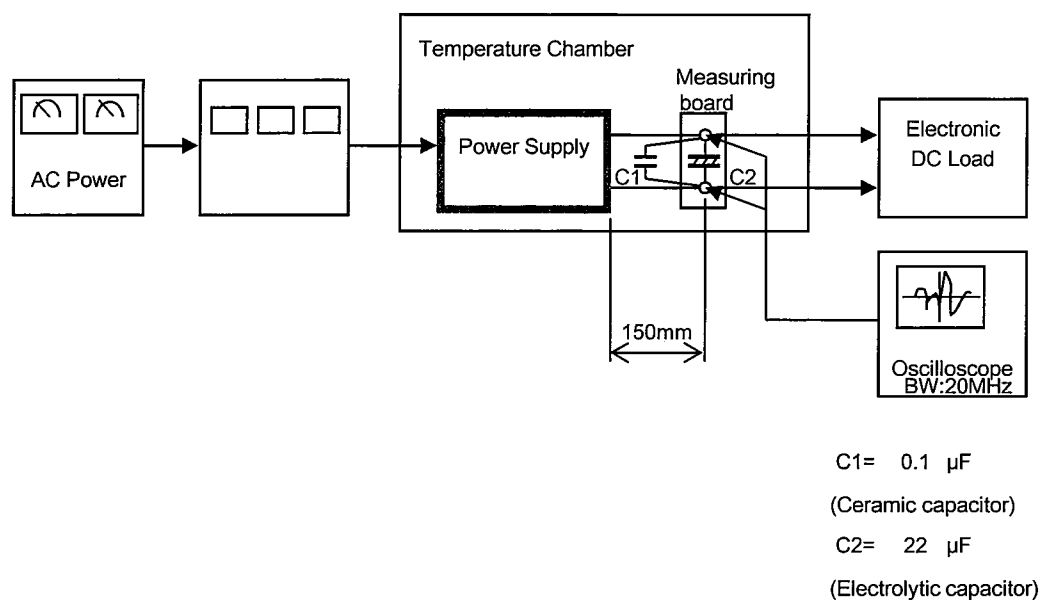


Figure C