GENESYS™ 5kW

EVALUATION

DATA

<table>
<thead>
<tr>
<th>APPD</th>
<th>CHK</th>
<th>DWG</th>
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<td>03/11/2017</td>
<td>9.10.17</td>
</tr>
<tr>
<td>16/10/17</td>
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TDK-LAMBDA
## INDEX

<table>
<thead>
<tr>
<th>EVALUATION METHOD</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Circuit used for determination</td>
<td>T-1</td>
</tr>
<tr>
<td>(1) Steady state data</td>
<td>T-1</td>
</tr>
<tr>
<td>(2) Over voltage protection (OVP) characteristics</td>
<td>T-1</td>
</tr>
<tr>
<td>(3) Output rise/fall characteristics</td>
<td>T-1</td>
</tr>
<tr>
<td>(4) Dynamic line response characteristic</td>
<td>T-2</td>
</tr>
<tr>
<td>(5) Dynamic load response characteristics</td>
<td>T-2</td>
</tr>
<tr>
<td>(6) Inrush current characteristics</td>
<td>T-3</td>
</tr>
<tr>
<td>(7) Leakage current characteristics</td>
<td>T-3</td>
</tr>
<tr>
<td>(8) Output ripple &amp; noise waveform 10V to 300V models</td>
<td>T-3</td>
</tr>
<tr>
<td>(9) Output ripple &amp; noise waveform for models higher than 300V</td>
<td>T-4</td>
</tr>
<tr>
<td>1.2 List of equipment used</td>
<td>T-5</td>
</tr>
</tbody>
</table>

## CHARACTERISTICS

<table>
<thead>
<tr>
<th>Steady state data</th>
<th>PAGE</th>
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</thead>
<tbody>
<tr>
<td>(1) Regulation - Line &amp; Load, Temperature drift</td>
<td>T-6~9</td>
</tr>
<tr>
<td>(2) Output voltage and ripple voltage VS input voltage</td>
<td>T-10~11</td>
</tr>
<tr>
<td>(3) Efficiency and Input current VS Output current</td>
<td>T-12~13</td>
</tr>
<tr>
<td>2.2 Warm up voltage drift &amp; temperature stability</td>
<td>T-14~15</td>
</tr>
<tr>
<td>2.3 Over voltage protection (OVP) characteristic</td>
<td>T-16</td>
</tr>
<tr>
<td>2.4 ON/OFF Output rise characteristics</td>
<td>T-17~20</td>
</tr>
<tr>
<td>2.5 ON/OFF Output fall characteristics</td>
<td>T-21~24</td>
</tr>
<tr>
<td>2.6 Hold up time characteristic</td>
<td>T-25~28</td>
</tr>
<tr>
<td>2.7 Dynamic line response</td>
<td>T-29~36</td>
</tr>
<tr>
<td>2.8 Dynamic load response</td>
<td>T-37~39</td>
</tr>
<tr>
<td>2.9 Response to brown-out characteristic</td>
<td>T-40~47</td>
</tr>
<tr>
<td>2.10 Inrush current characteristic</td>
<td>T-48~50</td>
</tr>
<tr>
<td>2.11 Inrush current waveform</td>
<td>T-51~53</td>
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<tr>
<td>2.12 Input current waveform</td>
<td>T-54~56</td>
</tr>
<tr>
<td>2.13 Leakage current characteristic</td>
<td>T-57</td>
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<tr>
<td>2.14 Output ripple &amp; noise waveform</td>
<td>T-58</td>
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## TERMINOLOGY USED

<table>
<thead>
<tr>
<th>Definition</th>
<th>Vin</th>
<th>Input voltage</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Vout</td>
<td>Output voltage</td>
</tr>
<tr>
<td></td>
<td>lin</td>
<td>Input current</td>
</tr>
<tr>
<td></td>
<td>lout</td>
<td>Output current</td>
</tr>
<tr>
<td></td>
<td>Ta</td>
<td>Ambient temperature</td>
</tr>
<tr>
<td></td>
<td>C.V</td>
<td>Constant voltage mode</td>
</tr>
<tr>
<td></td>
<td>C.C</td>
<td>Constant current mode</td>
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</table>
1. EVALUATION METHOD

1.1 Circuit used for determination

(1) Steady state data

![Circuit Diagram for Steady State Data]

(2) Over voltage protection (OVP) characteristics

![Circuit Diagram for OVP Characteristics]

(3) Output rise/fall characteristics

**Constant Voltage mode**

![Circuit Diagram for Constant Voltage Mode]

**Constant Current mode**

![Circuit Diagram for Constant Current Mode]
(4) Dynamic line response characteristics

Constant Voltage mode

Constant Current mode

(5) Dynamic load response characteristics

Output current waveform

Output current waveform
(6) Inrush current characteristics

Constant Voltage mode

(7) Leakage current characteristics

(8) Output ripple & noise waveform (10V to 300V models)

(a) Normal mode (JEITA Standard RC-9131A)

(b) Normal + Common mode
(9) Output ripple & noise waveform (400V to 600V models)

(a) Normal mode

(b) Normal + Common mode
1.2 List of equipment used

<table>
<thead>
<tr>
<th>EQUIPMENT USED</th>
<th>MANUFACTURER</th>
<th>MODEL No.</th>
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<tbody>
<tr>
<td>1 Storage oscilloscope</td>
<td>YOKOGAWA</td>
<td>DLM2034</td>
</tr>
<tr>
<td>2 Storage oscilloscope</td>
<td>YOKOGAWA</td>
<td>DL1740</td>
</tr>
<tr>
<td>3 Digital multimeter</td>
<td>AGILENT</td>
<td>34401A</td>
</tr>
<tr>
<td>4 Digital power meter</td>
<td>YOKOGAWA</td>
<td>WT230</td>
</tr>
<tr>
<td>5 Digital power meter</td>
<td>YOKOGAWA</td>
<td>WT330</td>
</tr>
<tr>
<td>6 Digital power meter</td>
<td>YOKOGAWA</td>
<td>WT333E</td>
</tr>
<tr>
<td>7 Digital power meter</td>
<td>CHROMA</td>
<td>66203</td>
</tr>
<tr>
<td>8 AC Source</td>
<td>CHROMA</td>
<td>6463</td>
</tr>
<tr>
<td>9 AC Source</td>
<td>CHROMA</td>
<td>6590</td>
</tr>
<tr>
<td>10 Electronic load</td>
<td>H&amp;H</td>
<td>ZS6060</td>
</tr>
<tr>
<td>11 Electronic load</td>
<td>H&amp;H</td>
<td>ZS7006</td>
</tr>
<tr>
<td>12 Electronic load</td>
<td>H&amp;H</td>
<td>ZS7060</td>
</tr>
<tr>
<td>13 Electronic load</td>
<td>H&amp;H</td>
<td>ZS8006</td>
</tr>
<tr>
<td>14 Electronic load</td>
<td>CHROMA</td>
<td>63203</td>
</tr>
<tr>
<td>15 Electronic load</td>
<td>CHROMA</td>
<td>63204</td>
</tr>
<tr>
<td>16 Electronic load</td>
<td>CHROMA</td>
<td>63206A</td>
</tr>
<tr>
<td>17 Controlled temp. chamber</td>
<td>THERMOTRON</td>
<td>SM-16-3800</td>
</tr>
<tr>
<td>18 Controlled temp. chamber</td>
<td>THERMOTRON</td>
<td>SE-600-5-5</td>
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<tr>
<td>19 Controlled temp. chamber</td>
<td>THERMOTRON</td>
<td>SE-600-6-6</td>
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<tr>
<td>20 Leakage current tester</td>
<td>KIKUSUI</td>
<td>TOS3200</td>
</tr>
<tr>
<td>21 Current probe</td>
<td>YOKOGAWA</td>
<td>701931</td>
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<tr>
<td>22 Transducer</td>
<td>LEM</td>
<td>IT700-SB</td>
</tr>
<tr>
<td>23 Transducer</td>
<td>LEM</td>
<td>IT60-S</td>
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</table>
(1). Regulation - Line & Load, Temperature drift

Conditions: $T_a = 25^\circ C$

### 1. Regulation - Line & Load, C.V mode 3Ф200

<table>
<thead>
<tr>
<th>Vin</th>
<th>170VAC</th>
<th>200VAC</th>
<th>208VAC</th>
<th>265VAC</th>
<th>Line Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10.0001</td>
<td>10.0001</td>
<td>10.0001</td>
<td>10.0001</td>
<td>0.0</td>
</tr>
<tr>
<td>25%</td>
<td>10.0001</td>
<td>10.0001</td>
<td>10.0001</td>
<td>10.0001</td>
<td>0.0</td>
</tr>
<tr>
<td>50%</td>
<td>9.9999</td>
<td>9.9999</td>
<td>10.0000</td>
<td>10.0000</td>
<td>0.0</td>
</tr>
<tr>
<td>75%</td>
<td>9.9997</td>
<td>9.9997</td>
<td>9.9997</td>
<td>9.9997</td>
<td>0.0</td>
</tr>
<tr>
<td>100%</td>
<td>9.9995</td>
<td>9.9995</td>
<td>9.9995</td>
<td>9.9995</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Load</strong></td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td><strong>ΔV(mV)</strong></td>
</tr>
<tr>
<td><strong>Regulation</strong></td>
<td>0.006%</td>
<td>0.006%</td>
<td>0.006%</td>
<td>0.006%</td>
<td></td>
</tr>
</tbody>
</table>

### 2. Regulation - Line & Load, C.V mode 3Ф400/3Ф480

<table>
<thead>
<tr>
<th>Vin</th>
<th>342VAC</th>
<th>380VAC</th>
<th>400VAC</th>
<th>460VAC</th>
<th>480VAC</th>
<th>520VAC</th>
<th>Line Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10.0002</td>
<td>10.0001</td>
<td>10.0001</td>
<td>10.0001</td>
<td>10.0001</td>
<td>10.0001</td>
<td>0.1</td>
</tr>
<tr>
<td>25%</td>
<td>10.0003</td>
<td>10.0003</td>
<td>10.0003</td>
<td>10.0003</td>
<td>10.0003</td>
<td>10.0003</td>
<td>0.0</td>
</tr>
<tr>
<td>50%</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>0.0</td>
</tr>
<tr>
<td>75%</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>0.0</td>
</tr>
<tr>
<td>100%</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>10.0004</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Load</strong></td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td><strong>ΔV(mV)</strong></td>
</tr>
<tr>
<td><strong>Regulation</strong></td>
<td>0.002%</td>
<td>0.003%</td>
<td>0.003%</td>
<td>0.003%</td>
<td>0.003%</td>
<td>0.003%</td>
<td></td>
</tr>
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</table>

### 3. Temperature drift, C.V mode

**Conditions:** Vin:200V 3Ф

<table>
<thead>
<tr>
<th>$T_a$</th>
<th>$0^\circ C$</th>
<th>$25^\circ C$</th>
<th>$50^\circ C$</th>
<th>Temp. Coefficient ($0^\circ C$~50°C)</th>
<th>Vout</th>
<th>mV</th>
<th>ppm/°C</th>
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<tbody>
<tr>
<td></td>
<td>9.9987</td>
<td>9.9995</td>
<td>9.9979</td>
<td>1.6</td>
<td>3</td>
<td></td>
<td></td>
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</table>

**Conditions:** Vin:200V 3Ф

**Io:**100%
### 1. Regulation - Line & Load, C.V mode 3Φ200

<table>
<thead>
<tr>
<th>Io</th>
<th>170VAC</th>
<th>200VAC</th>
<th>208VAC</th>
<th>265VAC</th>
<th>Line Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>599.9898</td>
<td>599.9882</td>
<td>599.9884</td>
<td>599.9861</td>
<td>3.8</td>
</tr>
<tr>
<td>25%</td>
<td>599.9839</td>
<td>599.9830</td>
<td>599.9820</td>
<td>599.9806</td>
<td>3.3</td>
</tr>
<tr>
<td>50%</td>
<td>599.9781</td>
<td>599.9786</td>
<td>599.9789</td>
<td>599.9769</td>
<td>2.0</td>
</tr>
<tr>
<td>75%</td>
<td>599.9758</td>
<td>599.9758</td>
<td>599.9750</td>
<td>599.9739</td>
<td>1.9</td>
</tr>
<tr>
<td>100%</td>
<td>599.9726</td>
<td>599.9733</td>
<td>599.9728</td>
<td>599.9712</td>
<td>2.1</td>
</tr>
<tr>
<td>Load</td>
<td>17.3</td>
<td>14.9</td>
<td>15.6</td>
<td>14.9</td>
<td>ΔV(mV)</td>
</tr>
<tr>
<td>Regulation</td>
<td>0.003%</td>
<td>0.002%</td>
<td>0.003%</td>
<td>0.002%</td>
<td></td>
</tr>
</tbody>
</table>

### 2. Regulation - Line & Load, C.V mode 3Φ400/3Φ480

<table>
<thead>
<tr>
<th>Io</th>
<th>342VAC</th>
<th>380VAC</th>
<th>400VAC</th>
<th>460VAC</th>
<th>480VAC</th>
<th>520VAC</th>
<th>Line Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>599.9952</td>
<td>599.9953</td>
<td>599.9938</td>
<td>599.9938</td>
<td>599.9931</td>
<td>599.9927</td>
<td>2.6</td>
</tr>
<tr>
<td>25%</td>
<td>599.9897</td>
<td>599.9890</td>
<td>599.9885</td>
<td>599.9880</td>
<td>599.9895</td>
<td>599.9893</td>
<td>1.7</td>
</tr>
<tr>
<td>50%</td>
<td>599.9836</td>
<td>599.9831</td>
<td>599.9833</td>
<td>599.9829</td>
<td>599.9867</td>
<td>599.9860</td>
<td>3.8</td>
</tr>
<tr>
<td>75%</td>
<td>599.9782</td>
<td>599.9771</td>
<td>599.9775</td>
<td>599.9778</td>
<td>599.9806</td>
<td>599.9813</td>
<td>4.2</td>
</tr>
<tr>
<td>100%</td>
<td>599.9727</td>
<td>599.9724</td>
<td>599.9728</td>
<td>599.9726</td>
<td>599.9756</td>
<td>599.9749</td>
<td>3.2</td>
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<tr>
<td>Load</td>
<td>22.5</td>
<td>22.9</td>
<td>21.0</td>
<td>21.2</td>
<td>17.5</td>
<td>17.8</td>
<td>ΔV(mV)</td>
</tr>
<tr>
<td>Regulation</td>
<td>0.004%</td>
<td>0.004%</td>
<td>0.003%</td>
<td>0.004%</td>
<td>0.003%</td>
<td>0.003%</td>
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</tr>
</tbody>
</table>

### 3. Temperature drift, C.V mode

**Conditions:** Vin:200V 3Φ  
Iout:100%

<table>
<thead>
<tr>
<th>Ta</th>
<th>0°C</th>
<th>25°C</th>
<th>50°C</th>
<th>Temp. Coefficient (0°C~50°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0°C</td>
<td>600.160</td>
<td>600.166</td>
<td>600.138</td>
<td>28 mV</td>
</tr>
<tr>
<td>25°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 1. Regulation - Line & Load, C.C mode 3Φ200 (*)

<table>
<thead>
<tr>
<th>Vo</th>
<th>Vin</th>
<th>Line Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>170VAC</td>
<td>500.553</td>
<td>5.3 0.001%</td>
</tr>
<tr>
<td>200VAC</td>
<td>500.550</td>
<td>5.2 0.001%</td>
</tr>
<tr>
<td>208VAC</td>
<td>500.548</td>
<td>3.1 0.001%</td>
</tr>
<tr>
<td>265VAC</td>
<td>500.552</td>
<td>2.8 0.000%</td>
</tr>
</tbody>
</table>

### Load Regulation

<table>
<thead>
<tr>
<th>Load</th>
<th>ΔI(mA)</th>
<th>Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.6</td>
<td>13.4</td>
<td>0.004%</td>
</tr>
<tr>
<td>15.9</td>
<td>12.6</td>
<td>0.003%</td>
</tr>
<tr>
<td>14.8</td>
<td>10.8</td>
<td>0.002%</td>
</tr>
<tr>
<td>18.5</td>
<td>10.2</td>
<td>0.002%</td>
</tr>
</tbody>
</table>

## 2. Regulation - Line & Load, C.C mode 3Φ400/3Φ480 (*)

<table>
<thead>
<tr>
<th>Io</th>
<th>Vin</th>
<th>Line Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>342VAC</td>
<td>500.020</td>
<td>13.4 0.003%</td>
</tr>
<tr>
<td>380VAC</td>
<td>500.031</td>
<td>12.6 0.003%</td>
</tr>
<tr>
<td>400VAC</td>
<td>500.023</td>
<td>10.8 0.002%</td>
</tr>
<tr>
<td>460VAC</td>
<td>500.021</td>
<td>10.2 0.002%</td>
</tr>
<tr>
<td>480VAC</td>
<td>500.014</td>
<td>13.1 0.003%</td>
</tr>
<tr>
<td>520VAC</td>
<td>500.022</td>
<td>37.9 ΔI(mA)</td>
</tr>
</tbody>
</table>

### Load Regulation

<table>
<thead>
<tr>
<th>Load</th>
<th>ΔI(mA)</th>
<th>Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>40.4</td>
<td>36.7</td>
<td>0.008%</td>
</tr>
<tr>
<td>36.1</td>
<td>38.3</td>
<td>0.008%</td>
</tr>
<tr>
<td>38.3</td>
<td>39.2</td>
<td>0.008%</td>
</tr>
</tbody>
</table>

## 3. Temperature drift, C.C mode

### Conditions: Vin:200V 3Φ

<table>
<thead>
<tr>
<th>Ta</th>
<th>0°C</th>
<th>25°C</th>
<th>50°C</th>
<th>Temp. Coefficient (0°C~50°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>lout</td>
<td>499.89</td>
<td>499.45</td>
<td>499.02</td>
<td>867 mA</td>
</tr>
</tbody>
</table>

### Notes:

(*) Not including load regulation thermal drift effect.
(1). Regulation - Line & Load, Temperature drift

**Conditions: Ta = 25°C**

### 1. Regulation - Line & Load, C.C mode 3Ф200 (*)

<table>
<thead>
<tr>
<th>Vin</th>
<th>170VAC</th>
<th>200VAC</th>
<th>208VAC</th>
<th>265VAC</th>
<th>Line Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>8.5004</td>
<td>8.5004</td>
<td>8.5004</td>
<td>8.5003</td>
<td>0.1 0.001%</td>
</tr>
<tr>
<td>25%</td>
<td>8.5000</td>
<td>8.5001</td>
<td>8.5001</td>
<td>8.4999</td>
<td>0.1 0.002%</td>
</tr>
<tr>
<td>50%</td>
<td>8.5000</td>
<td>8.5002</td>
<td>8.5002</td>
<td>8.5000</td>
<td>0.2 0.002%</td>
</tr>
<tr>
<td>75%</td>
<td>8.4999</td>
<td>8.5001</td>
<td>8.5001</td>
<td>8.4998</td>
<td>0.3 0.003%</td>
</tr>
<tr>
<td>100%</td>
<td>8.4998</td>
<td>8.5001</td>
<td>8.5001</td>
<td>8.4998</td>
<td>0.3 0.004%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Load</th>
<th>0.5</th>
<th>0.3</th>
<th>0.3</th>
<th>0.5</th>
<th>ΔI(mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation</td>
<td>0.006%</td>
<td>0.004%</td>
<td>0.004%</td>
<td>0.006%</td>
<td></td>
</tr>
</tbody>
</table>

### 2. Regulation - Line & Load, C.C mode 3Ф400/3Ф480 (*)

<table>
<thead>
<tr>
<th>Vin</th>
<th>342VAC</th>
<th>380VAC</th>
<th>400VAC</th>
<th>460VAC</th>
<th>480VAC</th>
<th>520VAC</th>
<th>Line Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>8.5016</td>
<td>8.5016</td>
<td>8.5014</td>
<td>8.5015</td>
<td>8.5015</td>
<td>8.5014</td>
<td>0.1 0.001%</td>
</tr>
<tr>
<td>25%</td>
<td>8.5012</td>
<td>8.5012</td>
<td>8.5011</td>
<td>8.5011</td>
<td>8.5010</td>
<td>8.5011</td>
<td>0.2 0.002%</td>
</tr>
<tr>
<td>50%</td>
<td>8.5016</td>
<td>8.5018</td>
<td>8.5016</td>
<td>8.5018</td>
<td>8.5017</td>
<td>8.5017</td>
<td>0.1 0.001%</td>
</tr>
<tr>
<td>75%</td>
<td>8.5019</td>
<td>8.5021</td>
<td>8.5019</td>
<td>8.5021</td>
<td>8.5019</td>
<td>8.5021</td>
<td>0.2 0.002%</td>
</tr>
<tr>
<td>100%</td>
<td>8.5013</td>
<td>8.5016</td>
<td>8.5013</td>
<td>8.5016</td>
<td>8.5013</td>
<td>8.5016</td>
<td>0.3 0.003%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Load</th>
<th>0.8</th>
<th>0.9</th>
<th>0.9</th>
<th>0.9</th>
<th>0.9</th>
<th>1.0</th>
<th>ΔI(mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation</td>
<td>0.009%</td>
<td>0.010%</td>
<td>0.010%</td>
<td>0.011%</td>
<td>0.010%</td>
<td>0.011%</td>
<td></td>
</tr>
</tbody>
</table>

### 3. Temperature drift, C.C mode

**Conditions: Vin:200V 3Ф, Iout:100%**

<table>
<thead>
<tr>
<th>Ta</th>
<th>0°C</th>
<th>25°C</th>
<th>50°C</th>
<th>Temp. Coefficient (0°C~50°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iout</td>
<td>8.4998</td>
<td>8.4997</td>
<td>8.5013</td>
<td>1.65 mA</td>
</tr>
</tbody>
</table>

Notes:

(*) Not including load regulation thermal drift effect.
(2). Output voltage and ripple voltage vs. input voltage
C.V mode

Conditions: Iout:100%
Ta:            0˚C            25˚C            50˚C

G10-500 3Ф200

<table>
<thead>
<tr>
<th>Input voltage (V)</th>
<th>Output voltage (V)</th>
<th>Output noise (Pkp-Pk) (mV)</th>
<th>Output noise (RMS) (mV)</th>
<th>Ripple &amp; noise (mV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>170VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>208VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>265VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

G10-500 3Ф400/3Ф480

<table>
<thead>
<tr>
<th>Input voltage (V)</th>
<th>Output voltage (V)</th>
<th>Output noise (Pkp-Pk) (mV)</th>
<th>Output noise (RMS) (mV)</th>
<th>Ripple &amp; noise (mV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>342VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>380VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>460VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>480VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>520VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(2). Output voltage and ripple voltage vs. input voltage
C.V mode

<table>
<thead>
<tr>
<th>Input Voltage (V)</th>
<th>Output Voltage (rms)</th>
<th>Output Voltage (pk-pk)</th>
<th>Output Voltage (RMS)</th>
<th>Ripple &amp; Noise (rms)</th>
<th>Ripple &amp; Noise (pk-pk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>170VAC</td>
<td>13.0</td>
<td>225.0</td>
<td>15.0</td>
<td>250.0</td>
<td>16.0</td>
</tr>
<tr>
<td>200VAC</td>
<td>14.0</td>
<td>215.0</td>
<td>15.0</td>
<td>250.0</td>
<td>15.0</td>
</tr>
<tr>
<td>208VAC</td>
<td>15.0</td>
<td>220.0</td>
<td>14.0</td>
<td>250.0</td>
<td>15.0</td>
</tr>
<tr>
<td>230VAC</td>
<td>15.0</td>
<td>220.0</td>
<td>13.0</td>
<td>250.0</td>
<td>16.0</td>
</tr>
<tr>
<td>265VAC</td>
<td>16.0</td>
<td>225.0</td>
<td>14.0</td>
<td>250.0</td>
<td>15.0</td>
</tr>
<tr>
<td>342VAC</td>
<td>11.0</td>
<td>270.0</td>
<td>23.0</td>
<td>345.0</td>
<td>18.0</td>
</tr>
<tr>
<td>380VAC</td>
<td>10.0</td>
<td>270.0</td>
<td>21.0</td>
<td>350.0</td>
<td>17.0</td>
</tr>
<tr>
<td>400VAC</td>
<td>9.0</td>
<td>280.0</td>
<td>23.0</td>
<td>345.0</td>
<td>17.0</td>
</tr>
<tr>
<td>460VAC</td>
<td>10.0</td>
<td>275.0</td>
<td>19.0</td>
<td>350.0</td>
<td>17.0</td>
</tr>
<tr>
<td>480VAC</td>
<td>9.0</td>
<td>270.0</td>
<td>21.0</td>
<td>350.0</td>
<td>17.0</td>
</tr>
<tr>
<td>520VAC</td>
<td>9.0</td>
<td>270.0</td>
<td>21.0</td>
<td>355.0</td>
<td>16.0</td>
</tr>
</tbody>
</table>

Conditions: Iout:100%
Ta: 0°C ———— 25°C ———— 50°C
(3). Efficiency and Input current vs. Output current

**G10-500 3Ф200**

**Conditions:**
Vin: 170~265 VAC
Vout: 100%
Ta: 25°C

**G10-500 3Ф400/3Ф480**

**Conditions:**
Vin: 342~520 VAC
Vout: 100%
Ta: 25°C
(3). Efficiency and Input current vs. Output current

G600-8.5 3Ф200

Conditions:
Vin: 170~265 VAC
Vout: 100%
Ta: 25˚C

<table>
<thead>
<tr>
<th>Vin (VAC)</th>
<th>Iin (A)</th>
<th>Pin (W)</th>
<th>Effi (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>170</td>
<td>19.37</td>
<td>5458</td>
<td>93.441</td>
</tr>
<tr>
<td>200</td>
<td>9.72</td>
<td>2733</td>
<td>93.304</td>
</tr>
<tr>
<td>208</td>
<td>4.98</td>
<td>1397</td>
<td>91.267</td>
</tr>
<tr>
<td>265</td>
<td>16.41</td>
<td>5437</td>
<td>93.802</td>
</tr>
<tr>
<td>200</td>
<td>8.24</td>
<td>2727</td>
<td>93.509</td>
</tr>
<tr>
<td>208</td>
<td>4.24</td>
<td>1397</td>
<td>91.267</td>
</tr>
<tr>
<td>265</td>
<td>12.35</td>
<td>5416</td>
<td>94.027</td>
</tr>
<tr>
<td>200</td>
<td>16.41</td>
<td>5437</td>
<td>93.802</td>
</tr>
<tr>
<td>208</td>
<td>4.24</td>
<td>1397</td>
<td>91.267</td>
</tr>
<tr>
<td>265</td>
<td>12.35</td>
<td>5416</td>
<td>94.165</td>
</tr>
</tbody>
</table>

G600-8.5 3Ф400/3Ф480

Conditions:
Vin: 342~520 VAC
Vout: 100%
Ta: 25˚C

<table>
<thead>
<tr>
<th>Vin (VAC)</th>
<th>Iin (A)</th>
<th>Pin (W)</th>
<th>Effi (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>342</td>
<td>9.81</td>
<td>5433</td>
<td>93.871</td>
</tr>
<tr>
<td>380</td>
<td>4.97</td>
<td>2726</td>
<td>93.544</td>
</tr>
<tr>
<td>400</td>
<td>2.6</td>
<td>1395</td>
<td>91.398</td>
</tr>
<tr>
<td>460</td>
<td>4.39</td>
<td>5432</td>
<td>93.888</td>
</tr>
<tr>
<td>480</td>
<td>4.17</td>
<td>2730</td>
<td>93.407</td>
</tr>
<tr>
<td>520</td>
<td>3.625</td>
<td>5434</td>
<td>93.270</td>
</tr>
<tr>
<td>520</td>
<td>3.48</td>
<td>5444</td>
<td>93.168</td>
</tr>
<tr>
<td>480</td>
<td>3.625</td>
<td>5445</td>
<td>93.032</td>
</tr>
<tr>
<td>520</td>
<td>3.24</td>
<td>5445</td>
<td>90.747</td>
</tr>
</tbody>
</table>

TDK-LAMBDA
2.2 Warm up drift & stability

G10-500 C.V mode

-0.100%  -0.080%  -0.060%  -0.040%  -0.020%  0.000%  0.020%  0.040%  0.060%  0.080%  0.100%
0.0  0.5  1.0  1.5  2.0  2.5  3.0  3.5  4.0  4.5  5.0  5.5  6.0  6.5  7.0  7.5  8.0

Drift (%)  Time(hour)

G10-500 C.C mode

-0.05%  -0.04%  -0.03%  -0.02%  -0.01%  0.00%  0.01%  0.02%  0.03%  0.04%  0.05%
0.0  0.5  1.0  1.5  2.0  2.5  3.0  3.5  4.0  4.5  5.0  5.5  6.0  6.5  7.0  7.5  8.0

Drift (%)  Time(hour)

Conditions: Vout: 100%
Iout: 100%
Ta = 25°C
2.2 Warm up drift & stability

Conditions: Vout: 100%
Vo: 100%
Ta = 25°C

**G600-8.5 C.V mode**

![Graph showing drift over time for G600-8.5 C.V mode]

**G600-8.5 C.C mode**

![Graph showing drift over time for G600-8.5 C.C mode]
2.3 Over voltage protection (OVP) characteristic

Conditions: Vset: 100%
lout: 0%
Ta = 25°C

G10-500

OVP setting: 10.5V

2V/DIV  200ms/DIV

G600-8.5

OVP setting: 630V

100V/DIV  1Sec/DIV
2.4 ON/OFF Output rise characteristics

C.V mode

G10-500

Conditions: Vin: Nominal
Vout: 100%
Iout: 0%
Iset=105%
Ta = 25°C

G600-8.5
2.4 ON/OFF Output rise characteristics
C.V mode

G10-500

Conditions: Vin: Nominal
Vout: 100%
Iout: 100%
Iset: 105%
Load: CR
Ta = 25°C

G600-8.5

100V/Div  20ms/Div
2.4 ON/OFF Output rise characteristics

C.C mode

Conditions:
Vin: Nominal
Vout: 100%
Iout: 100%
Vset = 105%
Load: CR
Ta = 25°C

G10-500

G600-8.5
2.4 ON/OFF Output rise characteristics
C.C mode

Conditions: Vin: Nominal
Iout: 100%
Vset=105%
shorted output
Ta = 25°C

**G10-500**

![Graph of G10-500 with conditions: 140A/Div, 20ms/Div](image)

**G600-8.5**

![Graph of G600-8.5 with conditions: 2A/Div, 20ms/Div](image)
### 2.5 ON/OFF Output Fall Characteristics

**C.V mode**

**G10-500**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2^V_{DIV}$</td>
<td>$100\text{ms}$/DIV</td>
</tr>
</tbody>
</table>

**G600-8.5**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>$100^V_{DIV}$</td>
<td>$1\text{Sec}$/DIV</td>
</tr>
</tbody>
</table>

**Conditions:**
- Vin: Nominal
- Vout: 100%
- Iout: 0%
- $T_a = 25^\circ\text{C}$
2.5 ON/OFF Output fall characteristics
C.V mode

Conditions:
Vin: Nominal
Vout: 100%
Iout: 100%
Load: CR
Ta = 25°C

G10-500

G600-8.5
2.5 ON/OFF Output fall characteristics
C.C mode

G10-500

Conditions: Vin: Nominal
Vout: 100%
Iout: 100%
Load: CR
Ta = 25°C

G600-8.5
2.5 ON/OFF Output fall characteristics
C.C mode

G10-500

Conditions: Vin:Nominal
Iout: 100%
shorted output
Ta = 25°C

G600-8.5
2.6 Holdup time characteristics

Conditions:  
Ta = 25°C  
Vout:100%

G10-500 3Φ200  
Vin:200VAC

![Graph for G10-500 3Φ200, Vin:200VAC]

G10-500 3Φ400  
Vin:400VAC

![Graph for G10-500 3Φ400, Vin:400VAC]
2.6 Holdup time characteristics

Conditions:  \( T_a = 25^\circ C \)
Vin:100%

G10-500 3Φ480  Vin:480VAC
2.6 Holdup time characteristics

Conditions: Ta = 25°C
Vout: 100%

G600-8.5 3Ф200
Vin: 200VAC

G600-8.5 3Ф400
Vin: 400VAC
2.6 Holdup time characteristics

Conditions:  $T_a = 25^\circ C$
Vout: 100%

G600-8.5 3Φ480  Vin: 480VAC
2.7 Dynamic line response characteristics
C.V mode

**G10-500 3Φ200**

Conditions: Vout: 100%
lout: 100%
Vin:170→265V

**G10-500 3Φ400**

Conditions: Vout: 100%
lout: 100%
Vin:342→460V
2.7 Dynamic line response characteristics
C.V mode

Conditions: Vout: 100%
Iout: 100%
Vin: 342 → 520V

Vout: 20 mV/DIV
500 ms/DIV

Vin: 1000 V/DIV
2.7 Dynamic line response characteristics
C.C mode

G10-500 3Φ200

Conditions: Vout: 100%
Iout: 100%
Vin: 170 – 265V

G10-500 3Φ400

Conditions: Vout: 100%
Iout: 100%
Vin: 342 – 460V

Conditions:

Vin: 100v/DIV
Iout: 1A/DIV
500 ms/DIV
Vin: 50v/DIV

Vin: 100v/DIV
Iout: 1A/DIV
500 ms/DIV
2.7 Dynamic line response characteristics
C.C mode

Conditions: Vout: 100%
Iout: 100%
Vin: 342 → 520V

G10-5003Φ480
2.7 Dynamic line response characteristics
C.V mode

\[ G_{600-8.5\,3\Phi200} \]

Conditions: Vout: 100%
Iout: 100%
Vin:170→265V

\[ G_{600-8.5\,3\Phi400} \]

Conditions: Vout: 100%
Iout: 100%
Vin:342→460V
2.7 Dynamic line response characteristics
C.V mode

Conditions: Vout: 100%
Iout: 100%
Vin: 342V→520V

Vin: 1000V/Div
Vout: 200mV/Div
500ms/Div
2.7 Dynamic line response characteristics
C.C mode

**G600-8.5 3Ф200**

Conditions: Vout: 100%
Iout: 100%
Vin:170→265V

**G600-8.5 3Ф400**

Conditions: Vout: 100%
Iout: 100%
Vin:342→460V
2.7 Dynamic line response characteristics
C.C mode

\[ \text{Conditions: } \]
\[ \text{Vout: } 100\% \]
\[ \text{Iout: } 100\% \]
\[ \text{Vin: } 342\text{V} \rightarrow 520\text{V} \]
2.8 Dynamic load response characteristics
C.V mode

Conditions:  
Vin: Nominal  
Vout: 100%  
Ta = 25°C

Load current:  tr=tf=100us

G10-500

<table>
<thead>
<tr>
<th>Iout:0%↔100%</th>
<th>f:100Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>1V/DIV</td>
<td>2ms/DIV</td>
</tr>
<tr>
<td>12.30%</td>
<td>-18.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Iout:50%↔100%</th>
<th>f:100Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5V/DIV</td>
<td>2ms/DIV</td>
</tr>
<tr>
<td>5.80%</td>
<td>5.80%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Iout:0%↔100%</th>
<th>f:1KHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>1V/DIV</td>
<td>200μs/DIV</td>
</tr>
<tr>
<td>14.80%</td>
<td>-14.40%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Iout:50%↔100%</th>
<th>f:1KHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5V/DIV</td>
<td>200μs/DIV</td>
</tr>
<tr>
<td>5.60%</td>
<td>-5.60%</td>
</tr>
</tbody>
</table>
2.8 Dynamic load response characteristics
C.V mode

Conditions: Vin: Nominal
Vout: 100%
Ta = 25°C

Load current: \( t_r = t_f = 100\mu s \)

**G600-8.5**

<table>
<thead>
<tr>
<th>f: 100Hz</th>
<th>f: 1KHz</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I_{out}: 0% \leftrightarrow 100%</strong></td>
<td><strong>I_{out}: 0% \leftrightarrow 100%</strong></td>
</tr>
<tr>
<td>0.63%</td>
<td>0.35%</td>
</tr>
<tr>
<td>-1.75%</td>
<td>-0.35%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>f: 100Hz</th>
<th>f: 1KHz</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I_{out}: 50% \leftrightarrow 100%</strong></td>
<td><strong>I_{out}: 50% \leftrightarrow 100%</strong></td>
</tr>
<tr>
<td>0.24%</td>
<td>0.16%</td>
</tr>
<tr>
<td>-0.25%</td>
<td>-0.15%</td>
</tr>
</tbody>
</table>

**TDK-LAMBDA**
2.8 Dynamic load response characteristics

C.C mode

Conditions:
Vin: Nominal
Ta = 25°C

**G10-500**

- **Io=500A**
  - Vout: 9↔7.5V
  - f: 10Hz
  - 70^A/DIV
  - 20^ms/DIV
  - 18.00%  -15.36%

- **Io=250A**
  - Vout: 9↔7.5V
  - f: 10Hz
  - 35^A/DIV
  - 20^ms/DIV
  - 9.24%  -7.80%

**G600-8.5**

- **Io=8.5A**
  - Vout: 540↔450V
  - f: 10Hz
  - 1^A/DIV
  - 20^ms/DIV
  - 22.35%  -17.76%

- **Io=4.25A**
  - Vout: 540↔450V
  - f: 10Hz
  - 1^A/DIV
  - 20^ms/DIV
  - 11.05%  -9.17%
2.9 Response to brown-out characteristics
C.V mode

Conditions: Vout: 100%
lout: 100%
Ta = 25°C

**G10-500 3ф200**

Vin: 200VAC

**Brown-out time**
- A - 8ms
- B - 9ms

**G10-500 3ф400**

Vin: 400VAC

**Brown-out time**
- A - 7ms
- B - 9ms
2.9 Response to brown-out characteristics
C.V mode

Conditions: Vout: 100%
Iout: 100%
Ta = 25°C

Vin: 480VAC

Brown-out time
A - 7ms
B - 10ms
2.9 Response to brown-out characteristics
C.C mode

Conditions: Vout: 100%
Iout: 100%
Ta = 25°C

G10-500 3ф200

Vin: 200VAC

Brown-out time
A - 8ms
B - 9ms

G10-500 3ф400

Vin: 400VAC

Brown-out time
A - 6ms
B - 9ms
2.9 Response to brown-out characteristics
C.C mode

Conditions: Vout: 100%
Iout: 100%
Ta = 25°C

G10-500 3φ480

Vin: 480VAC

Brown-out time
A - 6ms
B - 9ms

Vin: 1000V/Div
Iout: 140A/Div
100ms/Div
### 2.9 Response to brown-out characteristics

**C.V mode**

#### Conditions:
- Vout: 100%
- Iout: 100%
- Ta = 25°C

#### G600-8.5 3Φ200

| Vin: 200VAC |  
| Vout: 200V_{DIV} | 50ms_{DIV} |
| Vin: 500V_{DIV} |

- **Brown-out time**
  - A - 6ms
  - B - 9ms

#### G600-8.5 3Φ400

| Vin: 400VAC |  
| Vout: 200V_{DIV} | 50ms_{DIV} |
| Vin: 500V_{DIV} |

- **Brown-out time**
  - A - 5.5ms
  - B - 12ms

---

**TDK-LAMBDA**

T-44
2.9 Response to brown-out characteristics

C. V mode

Conditions: Vout: 100%
Iout: 100%
Ta = 25°C

Vin: 480VAC

Brown-out time
A - 13ms
B - 27ms

G10-500 3φ480
### 2.9 Response to brown-out characteristics

C.C mode

#### Conditions:
- \( V_{out}: 100\% \)
- \( I_{out}: 100\% \)
- \( T_a = 25^\circ C \)

<table>
<thead>
<tr>
<th>G600-8.5 3Ф200</th>
<th>Vin: 200VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{in}: 500, V_{DIV} )</td>
<td>Brown-out time</td>
</tr>
<tr>
<td>( I_{out}: 3, A_{DIV} )</td>
<td>A - 8ms</td>
</tr>
<tr>
<td>( 50, ms_{DIV} )</td>
<td>B - 9ms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>G600-8.5 3Ф400</th>
<th>Vin: 400VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{in}: 500, V_{DIV} )</td>
<td>Brown-out time</td>
</tr>
<tr>
<td>( I_{out}: 3, A_{DIV} )</td>
<td>A - 11ms</td>
</tr>
<tr>
<td>( 50, ms_{DIV} )</td>
<td>B - 12ms</td>
</tr>
</tbody>
</table>

![Diagram](image-url)
2.9 Response to brown-out characteristics
C.C mode

Conditions: Vout: 100%
Iout: 100%
Ta = 25°C

Vin: 480VAC

G10-500 3ф480

Brown-out time
A - 6ms
B - 12ms

Iout: 5A/Div
Vin: 500V/Div

50ms/Div
2.10 Inrush Current Characteristics

Conditions: Vout: 100%
        Iout: 0%
        Iout: 100%
Vin: 200VAC
Ta = 25°C
2.10 Inrush Current Characteristics

Conditions:
- Vout: 100%
- Iout: 0%
- Iout: 100%
- Vin: 400VAC
- Ta = 25°C

Chart showing inrush current characteristics with time and max inrush current.
2.10 Inrush Current Characteristics

Conditions:
- Vout: 100%
- Iout: 0%
- Iout: 100%
- Vin: 480VAC
- Ta = 25°C

3Ф480 Input

<table>
<thead>
<tr>
<th>TIME (s)</th>
<th>Max Inrush Current (A)</th>
<th>Brown out time (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>0.02</td>
<td>38</td>
<td>10</td>
</tr>
<tr>
<td>0.03</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>0.04</td>
<td>37</td>
<td>38</td>
</tr>
<tr>
<td>0.05</td>
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<td>38</td>
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<tr>
<td>0.06</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>0.07</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>0.08</td>
<td>37</td>
<td>36</td>
</tr>
<tr>
<td>0.09</td>
<td>37</td>
<td>36</td>
</tr>
<tr>
<td>0.1</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>0.2</td>
<td>34</td>
<td>38</td>
</tr>
<tr>
<td>0.3</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>0.4</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>0.5</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>0.6</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>0.7</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>0.8</td>
<td>34</td>
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</tr>
<tr>
<td>0.9</td>
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<tr>
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</tr>
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<td>36</td>
</tr>
<tr>
<td>3</td>
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<td>40</td>
</tr>
<tr>
<td>4</td>
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<td>36</td>
</tr>
<tr>
<td>5</td>
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<td>6</td>
<td>36</td>
<td>39</td>
</tr>
<tr>
<td>7</td>
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<td>40</td>
</tr>
<tr>
<td>8</td>
<td>26</td>
<td>35</td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

TDK-LAMBDA
2.11 Inrush current waveform

Conditions: Vin: 200V
Vout: 100%
Iout: 100%
Ta = 25°C

3Φ200 Input

Switch on phase angle of input AC voltage
Φ=0°

Switch on phase angle of input AC voltage
Φ=90°

Vin: 500v/DIV
Iin: 20A/DIV
200ms/DIV
2.11 Inrush current waveform

Conditions: Vin: 400V
Vout: 100%
lout: 100%
Ta = 25°C

3Ф400 Input

Switch on phase angle of input AC voltage
ϕ=0°

Switch on phase angle of input AC voltage
ϕ=90°

Vin:1000v/DIV
2.11 Inrush current waveform

Conditions: Vin: 480V
Vout: 100%
lout: 100%
Ta = 25°C

Switch on phase angle of input AC voltage
\[ \Phi = 0^\circ \]

Switch on phase angle of input AC voltage
\[ \Phi = 90^\circ \]

Vin: 1000V/Div

TDK-LAMBDA
2.12 Input current waveform

Conditions: Vin: 200VAC
Vout: 100%
Iout: 100%
Ta = 25°C
2.12 Input current waveform

Conditions: Vin: 400VAC
Vout: 100%
Iout: 100%
Ta = 25°C
2.12 Input current waveform

Conditions: Vin: 480VAC
Vout: 100%
Iout: 100%
Ta = 25°C
2.13 Leakage current characteristics

Conditions: $T_a = 25^\circ C$

$f=60Hz$

**3Ф 170-265V (*)**

![Graph](image1)

**3Ф 342-520V (*)**

![Graph](image2)

(*) TN & TT power system
2.14 Output ripple & noise waveform
C.V mode

Normal Mode

Conditions: Vout: 100%
Iout: 100%
Ta = 25°C