Z200 Series

IEC 61000

DATA

<table>
<thead>
<tr>
<th>APPD</th>
<th>CHK</th>
<th>DWG</th>
</tr>
</thead>
<tbody>
<tr>
<td>15/5/12</td>
<td>14/5/12</td>
<td>08/01/2012</td>
</tr>
</tbody>
</table>

TDK-Lambda
<table>
<thead>
<tr>
<th>INDEX</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Electrostatic Discharge Immunity Test (IEC61000-4-2)</td>
<td>R-1</td>
</tr>
<tr>
<td>2. Radiated Radio-Frequency Electromagnetic Field Immunity Test (IEC61000-4-3)</td>
<td>R-2</td>
</tr>
<tr>
<td>3. Electrical Fast Transient / Burst Immunity Test (IEC61000-4-4)</td>
<td>R-3</td>
</tr>
<tr>
<td>4. Surge Immunity Test (IEC61000-4-5)</td>
<td>R-4</td>
</tr>
<tr>
<td>5. Conducted Disturbances Induced by Radio-Frequency Field Immunity Test (IEC61000-4-6)</td>
<td>R-5</td>
</tr>
<tr>
<td>6. Power Frequency Magnetic Field Immunity Test (IEC61000-4-8)</td>
<td>R-6</td>
</tr>
<tr>
<td>7. Voltage Dips, Short Interruptions Immunity Test (IEC61000-4-11)</td>
<td>R-7</td>
</tr>
<tr>
<td>8. Input Current Harmonics Test (IEC61000-3-2)</td>
<td>R-8</td>
</tr>
</tbody>
</table>

Terminology used

* Test results are typical data. Nevertheless the following results are considered to be actual capability data because all units have nearly the same characteristics.
1. Electrostatic Discharge Immunity Test (IEC61000-4-2)

(1) Equipment used

Electrostatic discharge simulator: ESS-2000 (NOISEKEN)
Discharge resistance: 330Ω Capacitor: 150pF

(2) Test conditions

Input voltage: 115,230Vac Output voltage: 100%
Output current: 100% Polarity: +
Number of tests: 10 times Ta: 25°C
Discharge interval: >1 Second

(3) Test method and Device test point

Contact discharge: FG, Case screw
Air discharge: Input and Output terminal

(4) Acceptable conditions

1. Output voltage regulation not to exceed ±5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Result

<table>
<thead>
<tr>
<th>Contact Discharge (KV)</th>
<th>Z36-6</th>
<th>Air Discharge (KV)</th>
<th>Z36-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>PASS</td>
<td>8</td>
<td>PASS</td>
</tr>
</tbody>
</table>
2. Radiated Radio-Frequency Electromagnetic Field Immunity Test
(IEC61000-4-3)

(1) Equipment used

Test Laboratory: Hermon Laboratories Ltd.

(2) Test conditions

Input voltage: 115,230Vac
Output current: 100%
Electromagnetic Frequency: 80~1000MHz
Distance: 2.4m
Sweep condition: 1.0% Step Up, 2.8 second Hold
Test Angle: Top/Bottom, Both Sides, Front/Back

Output voltage: 100%
Amplitude Modulated: 80%,1kHz
Ambient temperature: 25°C
Wave Angel: Horizontal and Vertical

(3) Test Method:

(4) Acceptable conditions

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Result

<table>
<thead>
<tr>
<th>Radiated Field Strength (V/m)</th>
<th>Z36-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>PASS</td>
</tr>
</tbody>
</table>

TDK-Lambda
3. Electrical Fast Transient / Burst Immunity Test (IEC61000-4-4)

(1) Equipment used

EFT/B Generator: SCHAFFNER NSG2025

(2) Test conditions

- Input voltage: 115,230Vac
- Output current: 100%
- Polarity: +,−
- Output voltage: 100%
- Test time: 1 minute
- Ambient temperature: 25°C
- Number of tests: 3 times

(3) Test method and Device test point

Neutral (N), Line (L), Ground (FG) apply pulses from EFT/B Generator to N, L, FG separately, as well as, all at the same time.

(5) Acceptable conditions

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.

2. Output voltage to be within regulation specification after the test.

3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Result

<table>
<thead>
<tr>
<th>Test Voltage (kV)</th>
<th>Repetition Rate (kHz)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5</td>
<td>PASS</td>
</tr>
</tbody>
</table>

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4. Surge Immunity Test (IEC61000-4-5)

(1) Equipment used

Surge Generator: NSG651 (SCHAFFNER)
Coupling impedance: Common - 12Ω   Normal - 2Ω
Coupling capacitance: Common - 9 uF   Normal - 18 uF
Coupling network: CDN110 (SCHAFFNER)

(2) Test method and devise test point

Input voltage: 115,230Vac   Output voltage: 100%
Output current: 100%   Number of tests: 5 times
Polarity: -,+   Ambient temperature: 25°C
Phase: 0°, 90°

(3) Acceptable conditions

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(4) Test Result

<table>
<thead>
<tr>
<th>Test Voltage (kV) Common</th>
<th>Z36-6</th>
<th>Test Voltage (kV) Normal</th>
<th>Z36-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>PASS</td>
<td>1.0</td>
<td>PASS</td>
</tr>
<tr>
<td>2.0</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Conducted Disturbances Induced by Radio-Frequency Field Immunity Test (IEC61000-4-6)

(1) Equipment used

- RF Signal Generator 10kHz-1050MHz: Fluke, 6061A
- RF Amplifier 10kHz-220MHz, 150W: Amplifier Research, 150L
- Coupling/Decoupling Network: HL CDN 801-M3

(2) Test Condition:

Output voltage: 100%
Input voltage: 115,230Vac
Output current: 100%

Electromagnetic Frequency: 150kHz~80MHz
Type of modulation: AM 80% @ 1khz
Test Voltage: 3Vrms prior to modulation
Dwell Time: 3s
Frequency Step: 1.0% of current frequency

Ambient temperature: 25°C

(3) Test Method:

![Test Method Diagram]

(4) Acceptable conditions

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Result

<table>
<thead>
<tr>
<th>Test Voltage Level (V)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>PASS</td>
</tr>
</tbody>
</table>
6. Power Frequency Magnetic Field Immunity Test (IEC61000-4-8)

(1) Equipment used
Test Laboratory: Hermon Laboratories Ltd.

(2) Test Condition:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>115,230 Vac</td>
</tr>
<tr>
<td>Output voltage</td>
<td>100%</td>
</tr>
<tr>
<td>Output current</td>
<td>100%</td>
</tr>
<tr>
<td>Frequency</td>
<td>50Hz</td>
</tr>
<tr>
<td>Magnetic Field Strength</td>
<td>30A/m</td>
</tr>
<tr>
<td>Duration Time</td>
<td>10min.</td>
</tr>
<tr>
<td>Direction</td>
<td>X, Y, Z</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>25°C</td>
</tr>
</tbody>
</table>

(3) Test Method:

(4) Acceptable conditions

1. Output voltage regulation not to exceed ±5% of initial (before test) value during test.

2. Output voltage to be within regulation specification after the test.

3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Result

<table>
<thead>
<tr>
<th>EUT positions</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>PASS</td>
</tr>
<tr>
<td>Y</td>
<td>PASS</td>
</tr>
<tr>
<td>Z</td>
<td>PASS</td>
</tr>
</tbody>
</table>
7. Voltage Dips, Short Interruptions Immunity Test (IEC61000-4-11)

(1) Equipment used

AC Source: 6590 (CHROMA)
Oscilloscope: DL1740EL (Yokogawa)

(2) Test Condition:

- Input voltage: 115,230Vac
- Output voltage: 100%
- Output current: 100%
- Frequency: 50Hz
- Repetition: 0.1Hz
- Ambient temperature: 25°C
- Number of tests: 3 times

(3) Test Method:

(4) Acceptable conditions

1. Output voltage to be within output voltage regulation specification after the test.
2. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Result

<table>
<thead>
<tr>
<th>Test level</th>
<th>Dip rate</th>
<th>Continue time ts</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>70%</td>
<td>30%</td>
<td>500ms</td>
<td>PASS</td>
</tr>
<tr>
<td>40%</td>
<td>60%</td>
<td>200ms</td>
<td>PASS</td>
</tr>
<tr>
<td>0%</td>
<td>100%</td>
<td>5000ms</td>
<td>PASS</td>
</tr>
</tbody>
</table>

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8. Input Current Harmonics Test (IEC61000-3-2)

(1) Equipment used

AC Power Analyzer: WT110 (Yokogawa)
AC Source: 6590 (CHROMA)

(2) Test conditions:

Input voltage: 115, 230Vac  Output current: 100%

Output Voltage: 100%

(3) Test Method:

Vin: 115Vac

Vin: 230Vac

IEC61000-3-2 Limit (Class A)

Harmonic Number

Harmonic Current (A)