



Test Report: XLN-60-H

60W Multiple-Stage Constant Power LED Driver

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Control Function Test
Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test
E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

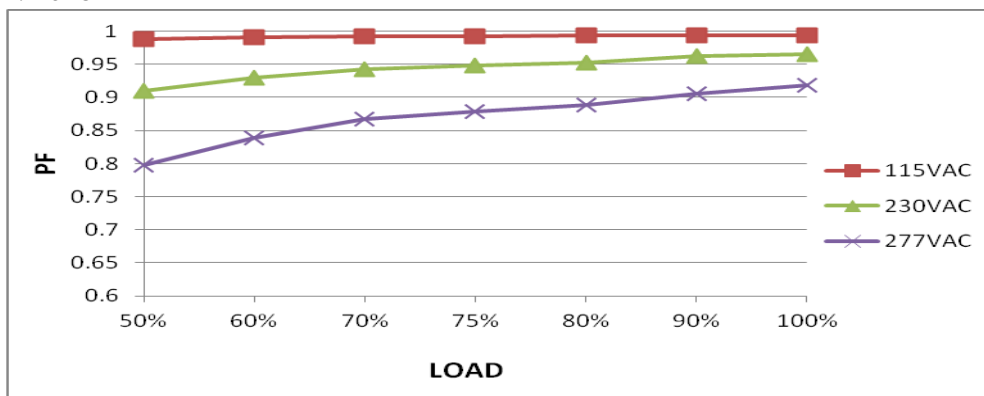
| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|---------------------------------------|--|---|--|
| 1 | CURRENT ACCURACY | ± 5% | I/P: 230 VAC I/P:115VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST | 1.032A /230VAC@CV MAX-1V 1.054A /230VAC@CV MIN 1.033A/115VAC@CV MAX-1V 1.055A/115VAC@CV MIN -1.71%~0.38% |
| 2 | CURRENT ADJ. RANGE (BY DIP SWITCH) | CH1:900mA/1050mA/1200mA/1300mA/1400mA/1500mA/1600mA,1700mA | I/P: 230VAC O/P:CVmin& CVmax-1V CP: 09A ~1.7A Ta:25°C | 888mA/230VAC@CV MAX-1V 888mA /230VAC@CV MIN 1040mA/230VAC@CV MAX-1V 1039mA/230VAC@CV MIN 1187mA/230VAC@CV MAX-1V 1185mA/230VAC@CV MIN 1288mA/230VAC@CV MAX-1V 1284mA /230VAC@CV MIN 1385mA/230VAC@CV MAX-1V 1382mA /230VAC@CV MIN 1486mA/230VAC@CV MAX-1V 1483mA /230VAC@CV MIN 1586mA/230VAC@CV MAX-1V 1583mA /230VAC@CV MIN 1688mA/230VAC@CV MAX-1V 1682mA /230VAC@CV MIN |
| 3 | OPEN CIRCUIT VOLTAGE (max) | 60V | I/P: 230VAC O/P: OPEN Ta:25°C | 57.81V |
| 4 | CONSTANT CURRENT OPERATION VOLTAGE | CH1: 9V~ 54V | I/P: 230 VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST | 7.06V~54.1V /230VAC |
| 5 | CURRENT RIPPLE | < 4% | I/P: 230 VAC I/P:115VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST | 230VAC: 1.61% 115VAC: 1.68% |

| | | | |
|--|---|--|--|
| <p>6</p> <p>SET UP TIME (Max)</p> | <p>230VAC/ 800 ms 115VAC/ 1000 ms</p> | <p>I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST</p> | <p>230VAC/ 698ms 115 VAC/880ms</p> |
| <p>INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH2: AC Input Voltage DSO-X 3012A, MY56200990, Wed Nov 01 16:56:57 2023</p> | | <p>INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH2: AC Input Voltage DSO-X 3012A, MY56200990, Wed Nov 01 16:59:27 2023</p> | |
| <p>7</p> <p>RISE TIME (Max)</p> | <p>230VAC/ 100 ms 115VAC/ 100 ms</p> | <p>I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST</p> | <p>230VAC/2.12ms 115 VAC/2.2ms</p> |
| <p>INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage DSO-X 3012A, MY56200990, Wed Nov 01 16:58:09 2023</p> | | <p>INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage DSO-X 3012A, MY56200990, Wed Nov 01 17:00:07 2023</p> | |

INPUT FUNCTION TEST

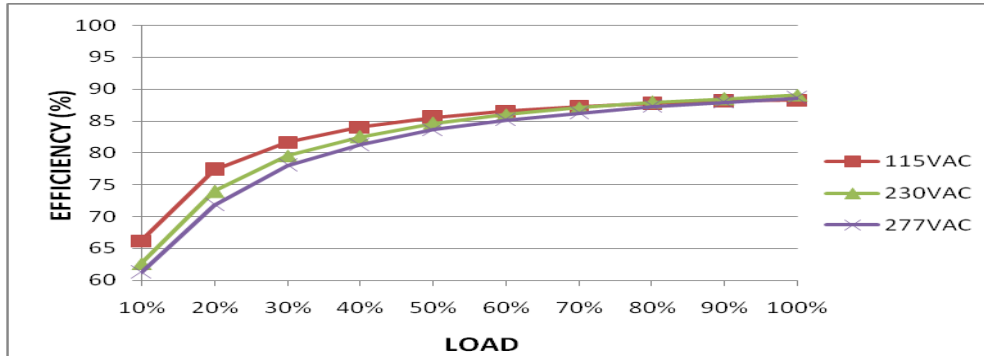
| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------|---|--|--|
| 1 | INPUT VOLTAGE RANGE | 110VAC~305 VAC 155VDC~400VDC | (1) I/P: TESTING O/P: FULL LOAD (2) I/P: DC TESTING (L: + N:-) O/P: FULL / 50% LOAD (3) I/P: DC TESTING (L: - N: +) O/P: FULL / 50% LOAD (4) I/P: LOW-LINE=141VDC HIGH-LINE=431VDC O/P: Dim on/off 【for Dimming type】 Ta:25°C | (1) 97VAC ~308VAC (2) 155Vdc~431Vdc/FULL LOAD 155Vdc~431Vdc/50% LOAD (3) 155Vdc~431Vdc/FULL LOAD 155Vdc~431Vdc/50% LOAD (4)OK |
| | | | I/P: LOW-LINE-3V=97 VAC HIGH-LINE+10V=315 VAC O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE) | TEST:OK |
| 2 | INPUT FREQUENCY RANGE | 47HZ ~63 HZ NO DAMAGE | I/P: 100VAC ~305VAC O/P:FULL~MIN LOAD Ta:25°C | OK |
| 3 | INPUT CURRENT (TYP) | 277VAC/ 0.30 A 230 VAC/ 0.35 A 115 VAC/ 0.75 A | I/P: 277VAC/230 VAC/115 VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST | I= 0.243A/277VAC I =0.280A/ 230VAC I =0.542A/ 115VAC |
| 4 | POWER FACTOR(TYP) | 0.95/230 VAC FULL LOAD 0.95/115 VAC FULL LOAD 0.9/277 VAC FULL LOAD | I/P: 230 VAC/115VAC/277VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST | PF= 0.965/230V/100%LOAD PF= 0.994 /115V/100%LOAD PF= 0.919/277V/100%LOAD |

P.F vs LOAD



| | | | | |
|---|------------------|------|---|--------|
| 5 | EFFICIENCY (TYP) | 90 % | I/P: 230 VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST | 90.59% |
|---|------------------|------|---|--------|

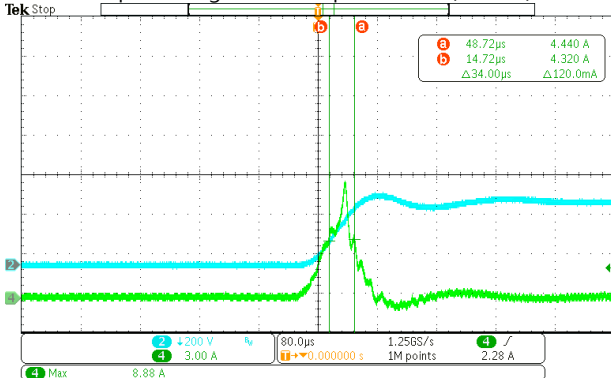
EFFICIENCY vs LOAD



| | | | | |
|---|----------------------|---|---|------------------------------------|
| 6 | INRUSH CURRENT (TYP) | 230 V/ 15A COLD START (twidth=310us measured at 50% Ipeak) COLD START | I/P: 230 VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST | I =8.88A/ 230VAC T50= 34 us |
|---|----------------------|---|---|------------------------------------|

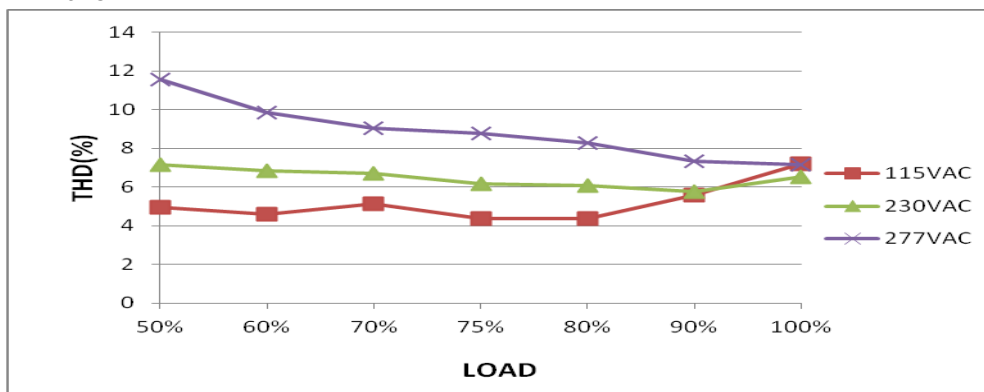
INPUT=230VAC/50HZ @ FULL LOAD

CH2 : AC Input Voltage CH4 : Input current (1V=1A)



| | | | | |
|---|---------------------------|---|---|---|
| 7 | TOTAL HARMONIC DISTORTION | THD < 20%(@load ≥ 60%/230VAC; @load ≥ 75%/277VAC); THD < 10% @load 100%/230VAC | I/P : 230VAC/277VAC O/P : 60% /75% /100% LOAD Ta : 25°C | THD : 6.83% 230VAC 60% THD : 8.56% 277VAC 75% THD : 6.55% 230VAC 100% |
|---|---------------------------|---|---|---|

THD vs LOAD

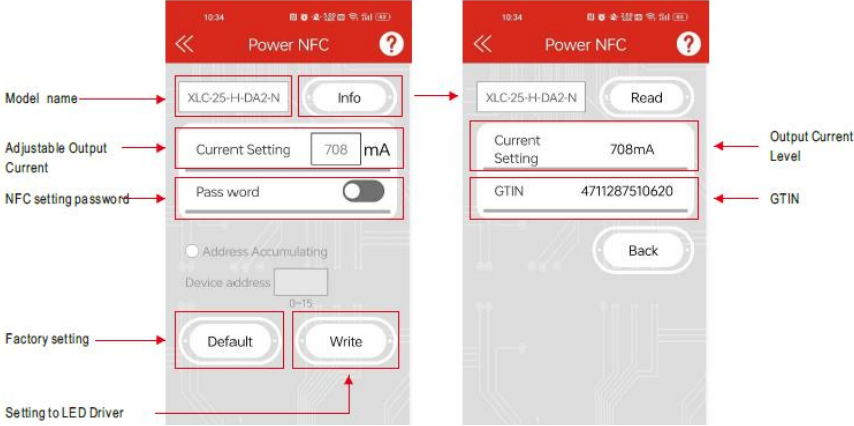


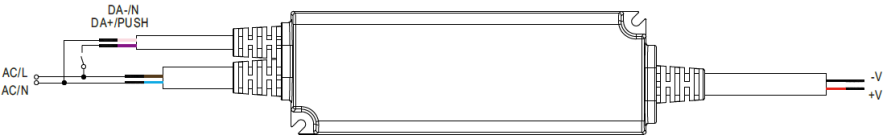


| | | | | |
|---|---------------------------|--|--|---|
| 8 | LEAKAGE CURRENT | < 0.75mA / 277VAC | I/P: 277 VAC O/P:Min LOAD Ta:25°C | L-FG: 0.021 mA N-FG: 0.022 mA |
| 9 | STANDBY POWER CONSUMPTION | Standby power consumption<0.5W (Dimming OFF, only for standard version B/DA2-type) | I/P : 230VAC O/P : TESTING Ta : 25°C | 0.3711W for B-type 0.357W for DA2-type |

PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------------|--|--|---|
| 1 | OVER TEMPERATURE PROTECTION | NO DAMAGE | I/P: 305 VAC I/P: 100 VAC O/P:FULL LOAD | O.T.P. Active PROTECTION TYPE : DA2 type: Stage 1: Derating to 75% loading; stage2: Derating to 50% loading; Recovers automatically after fault condition is removed Blank & B type: Derating to lowest output level, Recovers automatically after fault condition is removed |
| 2 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE | I/P: 305VAC I/P: 110 VAC O/P: FULL LOAD Ta:25°C | NO DAMAGE PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed |

CONTROL FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | | | | | | | | | | | | |
|--------------|--|--|----------------|-----------------|----------|------------|--------|------------------------|--------------|---------------------|----------------------------------|-----------|---------|---|--|--|
| 1 | NFC Function Description | <p>The output current of the NFC Mode LED driver can be adjusted using NFC via the mobile APP</p> <p>Operation Instruction:</p> <ul style="list-style-type: none"> Compatible phone <ul style="list-style-type: none"> Install an NFC-compatible smart mobile device or phone with Android™ 4.1 or IOS12 updates. Steps for setting output current via NFC <ol style="list-style-type: none"> Download Meanwell APP on mobile device or mobile phone, and enable NFC function. Check the NFC antenna position of the mobile phone please. Enter Meanwell APP -> Top left menu -Installation Manual/APP->PowerNFC, approach the LED driver NFC sensing position and perform sensing. APP displays the functional parameters, and the relevant parameters are modified as required. Tap the APP write button and quickly move the phone antenna close to the NFC sensing position of the LED driver. The write completes when the mobile phone displays "Success". <p>APP Function Description:</p> <p>※ APP Interface:</p>  <p>Model name → XLC25-H-DA2-N</p> <p>Adjustable Output Current → Current Setting 708 mA</p> <p>NFC setting password → Pass word</p> <p>Factory setting → Default Write</p> <p>Setting to LED Driver →</p> <p>Output Current Level</p> <p>GTIN</p> <p>- To be used through APP available on Apple Store and Google Play Store for iOS and Android. Search: MEAN WELL on</p>   <p>I/P: 230 VAC O/P: FULL LOAD Ta: 25°C TEST RESULT : OK</p> | | | | | | | | | | | | | | |
| 2 | DA2 type (DALI-2 digital dimming function) | <p>◎ DA2 type (DALI-2 digital dimming function)</p> <p>※ Input wiring diagram</p>  <p>※ PUSH dimming (primary side)</p> <ul style="list-style-type: none"> The factory default dimming level is at 100%. If the push action lasts less than 0.05 sec., it will not lead to a change for the status of the driver. Up to 10 drivers can perform the PUSH dimming at the same time when utilizing one common push button. The maximum length of the cable from the push button to the last driver is 20 meters. <table border="1" data-bbox="539 1832 1184 1937"> <thead> <tr> <th>Action</th> <th>Action duration</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>Short Push</td> <td>0.1~1s</td> <td>Turn ON-OFF the driver</td> </tr> <tr> <td>Double Click</td> <td>Click twice in 1.5s</td> <td>Set up the dimming level to 100%</td> </tr> <tr> <td>Long Push</td> <td>1.5~10s</td> <td>Every Long Push changes the dimming direction, dimming up or down</td> </tr> </tbody> </table> <p>I/P : 230 VAC O/P : DIMMING TEST Ta : 25°C TEST RESULT : OK</p> | Action | Action duration | Function | Short Push | 0.1~1s | Turn ON-OFF the driver | Double Click | Click twice in 1.5s | Set up the dimming level to 100% | Long Push | 1.5~10s | Every Long Push changes the dimming direction, dimming up or down | | |
| Action | Action duration | Function | | | | | | | | | | | | | | |
| Short Push | 0.1~1s | Turn ON-OFF the driver | | | | | | | | | | | | | | |
| Double Click | Click twice in 1.5s | Set up the dimming level to 100% | | | | | | | | | | | | | | |
| Long Push | 1.5~10s | Every Long Push changes the dimming direction, dimming up or down | | | | | | | | | | | | | | |

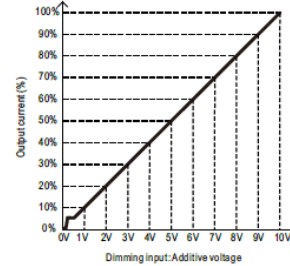
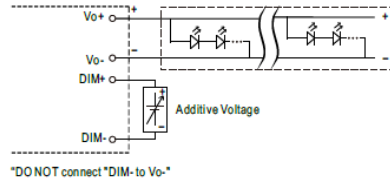
3 DIMMING OPERATION(B-Type)

◎ B type

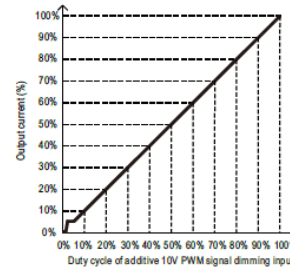
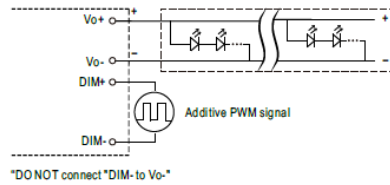
※ 3 in 1 dimming function

- Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-: 0~10VDC, or 10V PWM signal or resistance.
- Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.
- Dimming source current from power supply: 100 μ A (typ.)

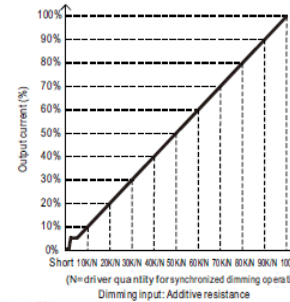
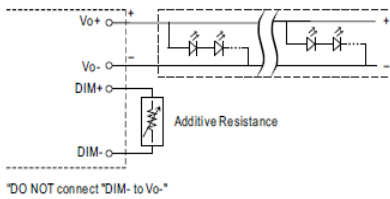
◎ Applying additive 0~10VDC



◎ Applying additive 10V PWM signal (frequency range 300Hz~3KHz):



◎ Applying additive resistance: 0~100k Ω



- Note: 1. Min. dimming level is about 8% and the output current is not defined when 0% < Iout < 8%.
 2. The output current could drop down to 0% when dimming input is about 0k Ω or 0Vdc, or 10V PWM signal with 0% duty cycle.

I/P : 230 VAC ; O/P : DIMMING TEST ; Ta : 25°C

| 1 | Resistance value | Short | 10K | 20K | 30K | 40K | 50K | 60K | 70K | 80K | 90K | 100K | OPEN |
|---------------------|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | Output Current | 0 | 0.11 2A | 0.18 0A | 0.30 3A | 0.40 4A | 0.50 9A | 0.61 3A | 0.72 0A | 0.82 6A | 0.93 6A | 1.042 A | 1.042 A |
| Output Current duty | 0% | 10.6 7% | 17.1 4% | 28.8 6% | 38.4 8% | 48.4 8% | 58.3 8% | 68.5 7% | 78.6 7% | 89.1 4% | 99.24 % | 99.24 % | |
| 2 | Dimming value | 0V | 1V | 2V | 3V | 4V | 5V | 6V | 7V | 8V | 9V | 10V | OPEN |
| | Output Current | 0 | 0.11 2A | 0.21 1A | 0.30 3A | 0.40 5A | 0.50 6A | 0.61 1A | 0.71 7A | 0.82 3A | 0.92 9A | 1.042 A | 1.042 A |
| | Output Current duty | 0% | 10.6 7% | 20.1 0% | 28.8 6% | 38.5 7% | 48.1 9% | 58.1 9% | 68.2 9% | 78.3 8% | 88.4 8% | 99.24 % | 99.24 % |
| 3 | Duty value | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | OPEN |
| | Output Current | 0 | 0.12 0A | 0.22 2A | 0.31 9A | 0.41 9A | 0.52 2A | 0.62 7A | 0.73 1A | 0.83 4A | 0.93 9A | 1.041 A | 1.042 A |
| | Output Current duty | 0% | 11.4 3% | 21.1 4% | 30.3 8% | 39.9 0% | 49.7 1% | 59.7 1% | 69.6 2% | 79.4 3% | 89.4 3% | 99.14 % | 99.24 % |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|--|--------------------------|---|--|
| 1 | PWM Transistor (D to S) or (C to E) Peak Voltage | Q 1 Rated 800 V11A | <p>AC ON/OFF I/P: High-Line +3V =308v</p> <p>VDS: O/P: (1) LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short</p> <p>I/P: Low-Line -3V = 97V</p> <p>VDS: O/P: (1) LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short</p> <p>Ta:25°C</p> | <p>308V CP: 1.05A Q1 VDS: (1) 738V (2) 632V (3) 584V (4) 552V (5) 544V</p> <p>CP: 1.7A VDS: (1) 762V (2) 658V (3) 726V (4) 582V (5) 562V</p> <p>97V CP: 1.05A Q1 VDS: (1) 392V (2) 344V (3) 264V (4) 264V (5) 240V</p> <p>CP: 1.7A VDS: (1) 418V (2) 365V (3) 352V (4) 264V (5) 259V</p> |
| 2 | Diode Peak Voltage | Q100 Rated : 20A/600V | <p>AC ON/OFF I/P: High-Line +3V =308 V</p> <p>VDS: O/P: (1) LEDmax (2) LEDmax continue (3) Output Short</p> <p>Ta:25°C</p> | <p>(1) 495V (2) 470V (3) 523V</p> |

| 3 | Control IC Voltage Test | <p>U150 -0.3-80V</p> <p>U100 Rated 22V~78V</p> <p>U261 Rated 1.7V-3.6V</p> | <p>AC ON/OFF I/P: High-Line +3V =308 V</p> <p>O/P: (1) LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) NO LOAD (6) Dim off</p> <p>Ta:25°C</p> | <p>U150</p> <p>(1) 72.5V (2) 73.3V (3) 70.9V (4) 70.9V (5) 70.9V (6) 70.9V</p> <p>U100</p> <p>(1) 68.9V (2) 68.9V (3) 67.3V (4) 66.5V (5) 66.5V (6) 64.9V</p> <p>U261</p> <table border="1" data-bbox="1107 983 1485 1310"> <thead> <tr> <th>TEST CONDITION</th> <th>Level</th> <th>Ripple</th> <th>Spike</th> </tr> </thead> <tbody> <tr> <td>LEDmax</td> <td>3.301</td> <td>0.84%</td> <td>1.26%</td> </tr> <tr> <td>LEDmin</td> <td>3.303</td> <td>0.62%</td> <td>1.18%</td> </tr> <tr> <td>Output Short</td> <td>3.301</td> <td>0.68%</td> <td>1.32%</td> </tr> <tr> <td>NO LOAD VRmin.LOW LINE</td> <td>3.302</td> <td>0.61%</td> <td>0.89%</td> </tr> <tr> <td>DIM OFF</td> <td>3.302</td> <td>0.59%</td> <td>1.09%</td> </tr> </tbody> </table> | TEST CONDITION | Level | Ripple | Spike | LEDmax | 3.301 | 0.84% | 1.26% | LEDmin | 3.303 | 0.62% | 1.18% | Output Short | 3.301 | 0.68% | 1.32% | NO LOAD VRmin.LOW LINE | 3.302 | 0.61% | 0.89% | DIM OFF | 3.302 | 0.59% | 1.09% |
|------------------------------|--------------------------|--|---|--|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|-------|-------|--------------|-------|-------|-------|------------------------------|-------|-------|-------|---------|-------|-------|-------|
| TEST CONDITION | Level | Ripple | Spike | | | | | | | | | | | | | | | | | | | | | | | | | |
| LEDmax | 3.301 | 0.84% | 1.26% | | | | | | | | | | | | | | | | | | | | | | | | | |
| LEDmin | 3.303 | 0.62% | 1.18% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Output Short | 3.301 | 0.68% | 1.32% | | | | | | | | | | | | | | | | | | | | | | | | | |
| NO LOAD VRmin.LOW LINE | 3.302 | 0.61% | 0.89% | | | | | | | | | | | | | | | | | | | | | | | | | |
| DIM OFF | 3.302 | 0.59% | 1.09% | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Clamp Diode Peak Voltage | D 10 Rated : 1000V/1A | <p>AC ON/OFF I/P : High-Line +3V = 308 V</p> <p>O/P: (1) LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) NO LOAD</p> <p>Ta : 25°C</p> | <p>(1)540V (2)540V (3)520V (4)520V (5)480V</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Dimming MOS | Q 110 Rated : 100V /45A | <p>AC ON/OFF I/P : High-Line +3V = 308 V</p> <p>O/P: (1) LEDmax (2) LEDmax continue (3) Short</p> <p>Ta : 25°C</p> | <p>CP1.05A:</p> <p>(1)72.6V (2)74.2V (3)76.6V</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Buck Diode | D112 Rated : 100V /20A | <p>AC ON/OFF I/P : High-Line +3V = 308 V</p> <p>O/P: (1) LEDmax (2) LEDmax continue (3) Short</p> <p>Ta : 25°C</p> | <p>CP1.05A:</p> <p>(1)74.2V (2) 74.2V (3)73.4V</p> | | | | | | | | | | | | | | | | | | | | | | | | |

SAFETY & EMC TEST

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|-----------------------|------------------------------------|----------------------------------|
| 1 | WITHSTAND VOLTAGE | I/P-O/P: 3.75KVAC/min | I/P-O/P: 4.125 KVAC/min Ta:25°C | I/P-O/P: 1.92mA NO DAMAGE |
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ | I/P-O/P: 500 VDC Ta:25°C | I/P-O/P: >9999 MΩ NO DAMAGE |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|---|------------|--|---|-------------------------------|
| 1 | HARMONIC | EN61000-3-2 CLASS C | I/P: 230VAC/50HZ O/P:FULL LOAD Ta:25°C | PASS |
| 2 | CONDUCTION | EN55015 | I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C | PASS Test by certified Lab |
| 3 | RADIATION | EN55015 | I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C | PASS Test by certified Lab |
| 4 | E.S.D | EN61000-4-2 AIR : 8KV / Contact : 4KV | I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C | CRITERIA A |
| 5 | E.F.T | EN61000-4-4 INPUT: 1KV | I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C | CRITERIA A |
| 6 | SURGE | IEC61000-4-5 L-N :1KV | I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C | CRITERIA A |
| Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report | | | | |

■ **RELIABILITY TEST**

ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|--|--|--|---|----|----------|------------------------|------------------------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|----|--------|--------|---|----|--------|--------|---|----|--------|--------|---|----|--------|--------|---|------|--------|--------|---|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|-----|--------|--------|----|----|--------|--------|
| 1 | TEMPERATURE RISE TEST | MODEL : XLN-60-H-DA2 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=26.8 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=51.8 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=26.8°C</th> <th>HIGH AMBIENT Ta=51.8°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>R37</td><td>63.5°C</td><td>88.7°C</td></tr> <tr><td>2</td><td>C20</td><td>62.7°C</td><td>87.9°C</td></tr> <tr><td>3</td><td>D10</td><td>65.6°C</td><td>90.4°C</td></tr> <tr><td>4</td><td>Q2</td><td>61.7°C</td><td>86.3°C</td></tr> <tr><td>5</td><td>U1</td><td>63.4°C</td><td>88.6°C</td></tr> <tr><td>6</td><td>Q1</td><td>64.5°C</td><td>89.1°C</td></tr> <tr><td>7</td><td>T1</td><td>68.8°C</td><td>93.8°C</td></tr> <tr><td>8</td><td>D100</td><td>68.8°C</td><td>93.5°C</td></tr> <tr><td>9</td><td>C101</td><td>66.6°C</td><td>91.4°C</td></tr> <tr><td>10</td><td>Q110</td><td>71.7°C</td><td>96.3°C</td></tr> <tr><td>11</td><td>D112</td><td>67.8°C</td><td>92.5°C</td></tr> <tr><td>12</td><td>R110</td><td>73.9°C</td><td>98.9°C</td></tr> <tr><td>13</td><td>L100</td><td>64.3°C</td><td>89.5°C</td></tr> <tr><td>14</td><td>U150</td><td>67.6°C</td><td>92.3°C</td></tr> <tr><td>15</td><td>U261</td><td>61.8°C</td><td>86.6°C</td></tr> <tr><td>16</td><td>RT1</td><td>58.3°C</td><td>83.1°C</td></tr> <tr><td>17</td><td>TC</td><td>56.7°C</td><td>81.4°C</td></tr> </tbody> </table> | NO | Position | ROOM AMBIENT Ta=26.8°C | HIGH AMBIENT Ta=51.8°C | 1 | R37 | 63.5°C | 88.7°C | 2 | C20 | 62.7°C | 87.9°C | 3 | D10 | 65.6°C | 90.4°C | 4 | Q2 | 61.7°C | 86.3°C | 5 | U1 | 63.4°C | 88.6°C | 6 | Q1 | 64.5°C | 89.1°C | 7 | T1 | 68.8°C | 93.8°C | 8 | D100 | 68.8°C | 93.5°C | 9 | C101 | 66.6°C | 91.4°C | 10 | Q110 | 71.7°C | 96.3°C | 11 | D112 | 67.8°C | 92.5°C | 12 | R110 | 73.9°C | 98.9°C | 13 | L100 | 64.3°C | 89.5°C | 14 | U150 | 67.6°C | 92.3°C | 15 | U261 | 61.8°C | 86.6°C | 16 | RT1 | 58.3°C | 83.1°C | 17 | TC | 56.7°C | 81.4°C |
| NO | Position | ROOM AMBIENT Ta=26.8°C | HIGH AMBIENT Ta=51.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | R37 | 63.5°C | 88.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | C20 | 62.7°C | 87.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | D10 | 65.6°C | 90.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Q2 | 61.7°C | 86.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | U1 | 63.4°C | 88.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Q1 | 64.5°C | 89.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | T1 | 68.8°C | 93.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | D100 | 68.8°C | 93.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | C101 | 66.6°C | 91.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Q110 | 71.7°C | 96.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | D112 | 67.8°C | 92.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | R110 | 73.9°C | 98.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | L100 | 64.3°C | 89.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | U150 | 67.6°C | 92.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | U261 | 61.8°C | 86.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | RT1 | 58.3°C | 83.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | TC | 56.7°C | 81.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOUR | I/P : 305VAC/110VAC O/P : 100 * LOAD Ta=-30 °C | TEST : OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST | AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE | I/P : 305 VAC O/P : FULL LOAD Ta=50 °C HUMIDITY= 95 %R.H | TEST : OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | TEMPERATURE COEFFICIENT | ± 0.03 %/(0°C~50°C) | I/P : 230 VAC O/P : FULL LOAD | ± 0.001 %/°C(0~50°C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | STORAGE TEMPERATURE TEST | -40~80°C | 1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10CYCLE 5. Input/output condition : STATIC TEST : OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| 6 | THERMAL SHOCK TEST | -25~50°C | 1. Thermal shock Temperature : -30°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input/output condition : 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ FULL LOAD Burn In Test |
| 7 | VIBRATION TEST | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes | 1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 3G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C |
| 8 | CAPACITOR LIFE CYCLE | SUPPOSE C101 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Tc=75 °C LIFE TIME (2) I/P : 230VAC O/P : 75% LOAD Tc=75 °C LIFE TIME (3) I/P : 230VAC O/P : 50% LOAD Tc=75 °C LIFE TIME | (1) 63884HRS (2) 107775HRS (3) 141671HRS |
| 9 | MTBF | Conducted by Parts Stress Analysis Prediction 4053.7K hrs min. Telcordia SR-332 (Bellcore) ; 329.4K hrs min. MIL-HDBK-217F (25°C) | |
| 10 | Ongoing Reliability Test | I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 50,000 hours | |

| TEST RESULT | TESTER | REVIEW | APPROVAL |
|-------------|--------------|--------|----------|
| PASS | WUWQ/HUANGMK | WENF | LINKX |

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