



Test Report: DLC-02KN

KNX-DALI Gateway

■ 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	SET UP TIME(Max)	230VAC/ 250 ms 115VAC 250 ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/178ms 115VAC/204ms
<p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage</p>		<p>INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage</p>		
2	RISE TIME (Max)	230VAC/ 50 ms 115VAC/ 50 ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 22ms 115VAC/ 27ms
<p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage</p>		<p>INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage</p>		

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	97 V~305V OK
			I/P: LOW-LINE-3V=97 V HIGH-LINE+10V=315 V 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:100 VAC ~277VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK
3	INPUT CURRENT (Typ.)	230V/ 0.25A 115V/ 0.5A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =0.158A/ 230VAC I =0.249A/ 115VAC
4	INRUSH CURRENT(Typ.)	230V/45 A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 28.3A/ 230VAC T50=300us
<p>INPUT=230VAC/50HZ @ FULL LOAD CH2 : AC Input Voltage CH4 : Input current</p> <p>DC: +9.5628V 10.0:1 AC: +295.000V 1000:1 DC: +0.0A 1.00:1 DC: +28.6700A 500 10.0:1</p>				

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC I/P: 100VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE PROTECTION TYPE : Short circuit delay 0.7S shutdown,Restart period 5S, Retry time 0.7S

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 11A/ 650V	I/P:High-Line +3V =308V AC ON/OFF VDS: O/P: (1)Full Load (2)Output Short (3)0%→400% Load. I/P:Low-Line -3V = 97V VDS: O/P: (1)Full Load (2)Output Short (3)0%→400% Load	U1 VDS: (1)541V (2)456V (3)541V VDS: (1)266V (2)166V (3)266V
2	Diode Peak Voltage	D100 Rated 3 A/ 200V	I/P:High-Line +3V =308V AC ON/OFF VDS: O/P: (1)Full Load (2)Output Short (3)0%→400% Load. (4).NO LOAD Ta:25°C	D100: VDS: (1)147V (2)163V (3)144V (4)142V
3	Input Capacitor Voltage	C5 Rated: 33 μ F/ 450 V	I/P:High-Line +3V =308V O/P: (1)Full Load (2) Min load (3)Full /Min load Change (4)Full load continue Ta:25°C	(1)440V (2)408V (3)408V (4)408V
4	Control IC Voltage Test	U1 Rated 9~35 V	I/P:High-Line +3V =308V AC ON/OFF O/P(1)FULL LOAD (2) Output Short. (3)NO LOAD VR LOW LINE Ta:25°C	U1 (1) 21.9V (2) 21.9V (3) 21.9V
5	VCC Diode Peak Voltage	D40 Rated: 1 A / 400V	I/P:High-Line +3V =308V O/P: (1) 100%Load input on/off (2) Output Short (3) NO Load	D40 (1)140V (2)187V (3)132V

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	EN55015 EN63044-5-2 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab

3	RADIATION	EN55015 EN63044-1 CLASS B	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 B
5	E.F.T	EN61000-4-4 INPUT : 2KV	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
7	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 : DLC-02KN 1. ROOM AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta=27.2 °C 2. HIGH AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta=47.6 °C																																																																																		
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=27.2 °C</th> <th>HIGH AMBIENT Ta=47.6 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>BD1</td><td>62.3°C</td><td>82.0°C</td></tr> <tr><td>2</td><td>C5</td><td>60.8°C</td><td>80.9°C</td></tr> <tr><td>3</td><td>D5</td><td>79.0°C</td><td>98.9°C</td></tr> <tr><td>4</td><td>U1</td><td>67.9°C</td><td>87.8°C</td></tr> <tr><td>5</td><td>Q1</td><td>78.6°C</td><td>98.2°C</td></tr> <tr><td>6</td><td>T1</td><td>73.8°C</td><td>93.6°C</td></tr> <tr><td>7</td><td>D100</td><td>79.3°C</td><td>98.7°C</td></tr> <tr><td>8</td><td>C105</td><td>61.9°C</td><td>82.3°C</td></tr> <tr><td>9</td><td>C106</td><td>67.1°C</td><td>88.4°C</td></tr> <tr><td>10</td><td>RY43</td><td>75.6°C</td><td>94.3°C</td></tr> <tr><td>11</td><td>RY42</td><td>72.6°C</td><td>91.6°C</td></tr> <tr><td>12</td><td>Q401</td><td>107.4°C</td><td>126.3°C</td></tr> <tr><td>13</td><td>Q402</td><td>105.4°C</td><td>125.4°C</td></tr> <tr><td>14</td><td>U400</td><td>81.1°C</td><td>101.0°C</td></tr> <tr><td>15</td><td>U401</td><td>85.6°C</td><td>105.5°C</td></tr> <tr><td>16</td><td>U500</td><td>66.6°C</td><td>88.1°C</td></tr> <tr><td>17</td><td>U605</td><td>56.9°C</td><td>77.9°C</td></tr> <tr><td>18</td><td>U600</td><td>54.7°C</td><td>77.7°C</td></tr> <tr><td>19</td><td>TC</td><td>62.5°C</td><td>83.3°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=27.2 °C	HIGH AMBIENT Ta=47.6 °C	1	BD1	62.3°C	82.0°C	2	C5	60.8°C	80.9°C	3	D5	79.0°C	98.9°C	4	U1	67.9°C	87.8°C	5	Q1	78.6°C	98.2°C	6	T1	73.8°C	93.6°C	7	D100	79.3°C	98.7°C	8	C105	61.9°C	82.3°C	9	C106	67.1°C	88.4°C	10	RY43	75.6°C	94.3°C	11	RY42	72.6°C	91.6°C	12	Q401	107.4°C	126.3°C	13	Q402	105.4°C	125.4°C	14	U400	81.1°C	101.0°C	15	U401	85.6°C	105.5°C	16	U500	66.6°C	88.1°C	17	U605	56.9°C	77.9°C	18	U600	54.7°C	77.7°C	19	TC	62.5°C	83.3°C
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 230VAC 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 45 °C NO DAMAGE	I/P : 305 VAC O/P : FULL LOAD Ta=45 °C HUMIDITY= 95 %R.H	TEST : OK
4	STORAGE TEMPERATURE TEST	-25~70°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	
5	THERMAL SHOCK TEST	-25~45°C	1. Thermal shock Temperature : -30°C~ +50°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	
6	VIBRATION TEST	10 ~ 150Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~150Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 3G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C	
7	CAPACITOR LIFE CYCLE	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta=25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta=45 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=45 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta=45 °C LIFE TIME		(1) 343178HRS (2) 85794HRS (3) 128254HRS (4) 193059HRS
8	MTBF	Conducted by Parts Stress Analysis Prediction 562.4 K hrs min. Telcordia SR-332 (Bellcore); 167.2 K hrs min. MIL-HDBK-217F (25°C)		
9	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

12.10.30 A50-F031