



Test Report: DBR-3200-48

3200W Rack Mountable Front End Battery Charger

■ 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	BOOST CHARGE VOLTAGE	Default, programmable 57.6V±0.48V	I/P: 230 VAC O/P: CV MODE Ta:25°C	57.56 V
2	FLOAT CHARGE VOLTAGE	Default, programmable 55.2V±0.48V	I/P: 230 VAC O/P: CV MODE Ta:25°C	55.16V
3	OUTPUT CURRENT	55A±3%	I/P: 230 VAC O/P:CV MODE-2V Ta:25°C	55.9A
4	VOLTAGE ADJ. RANGE	47.5V~58.8V	I/P: 230 VAC O/P:NO LOAD Ta:25°C	46.14V~62.48V/230VAC 46.14V~62.48V/115VAC
5	LEAKAGE CURRENT FROM BATTERY (Typ.)	<1.5mA	I/P: AC OFF O/P:BATTERY(48V) Ta:25°C	1.084mA

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~264VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	180V~264V/ FULL LOAD 76V~264V/HALF LOAD
			I/P: (1)LOW-LINE-3V=87 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (2)230Vac ON: 0.5 Sec OFF: 0.5 Sec 20MIN (3)230Vac ON:3Sec OFF:3Sec 12HOURS (POWER ON/OFF NO DAMAGE)	TEST:OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:180 VAC ~264 VAC O/P:FULL ~MIN LOAD Ta:25°C	TEST: OK
3	INPUT CURRENT (Typ.)	230V/ 17A	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 14.9A/ 230VAC
4	LEAKAGE CURRENT	<1.5 mA / 230 VAC	I/P : 230 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.63 mA N-FG : 0.63 mA
5	POWER FACTOR (Typ.)	0.97 / 230VAC	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF=0.993/230VAC
6	EFFICIENCY(Typ.)	94.5%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	94.62%

7	INRUSH CURRENT(Typ.)	230V/55 A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=49.2A/ 230VAC T50=2230 us/230V
<p>INPUT=230VAC/50HZ @ FULL LOAD CH4 : Input current CH2: input voltage</p>				

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	63V~ 75 V PROTECTION TYPE : Shut down o/p voltage, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25°C	68.2V/ 264VAC 68.2V/ 230VAC 68.11V/ 90VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
2	OVER TEMPERATURE PROTECTION	NO DAMAGE PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 90VAC O/P:FULL LOAD	O.T.P. Active PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down

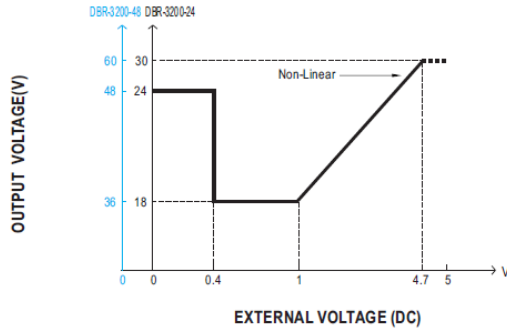
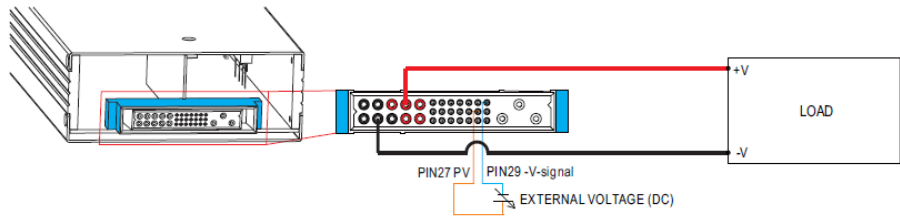
CONTROL FUNCTION TEST

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1	PMBus Communication Interface	※DBR-3200 supports PMBus Rev. 1.1 with maximum 100KHz bus speed, allowing information reading, status monitoring, output trimming, etc. For details, please refer to the Installation Manual. Test Result : OK																																		
2	Charging Curve	<p>※ By factory default, this charger performs the default curve which can be programmed via PMBus. ※ To disable / enable the charging curve, change to a 2 stage curve, a different curve frequently used for certain types of batteries in the industry, and so on, please refer to the Installation Manual.</p> <p>◎ Default 3 stage charging curve</p> <p>Color of LED: Orange (stage 1), Green (stage 3) Status Indicator: Charger fail if charging time exceed charging timeout</p> <p>◎ Suitable for lead-acid batteries (flooded, Gel and AGM) and Li-ion batteries (lithium iron and lithium manganese).</p>	<p>◎ Embedded 3 stage charging curve</p> <table border="1"> <thead> <tr> <th>MODEL</th> <th>Description</th> <th>Vboost</th> <th>Vfloat</th> <th>CC(default)</th> </tr> </thead> <tbody> <tr> <td rowspan="4">24V</td> <td>Default, programmable</td> <td>28.8</td> <td>27.6</td> <td rowspan="4">110A</td> </tr> <tr> <td>Pre-defined, gel battery</td> <td>28</td> <td>27.2</td> </tr> <tr> <td>Pre-defined, flooded battery</td> <td>28.4</td> <td>26.8</td> </tr> <tr> <td>Pre-defined, AGM battery</td> <td>29</td> <td>27</td> </tr> <tr> <td rowspan="4">48V</td> <td>Default, programmable</td> <td>57.6</td> <td>55.2</td> <td rowspan="4">55A</td> </tr> <tr> <td>Pre-defined, gel battery</td> <td>56</td> <td>54.4</td> </tr> <tr> <td>Pre-defined, flooded battery</td> <td>56.8</td> <td>53.6</td> </tr> <tr> <td>Pre-defined, AGM battery</td> <td>58</td> <td>54</td> </tr> </tbody> </table> <p>Note: When using this charger unit, please configured the system with recommended battery capacity by specification defined. Should battery capacity in use be much smaller so that user needs to set a low current for charging, under such condition it might cause higher current ripple.</p>	MODEL	Description	Vboost	Vfloat	CC(default)	24V	Default, programmable	28.8	27.6	110A	Pre-defined, gel battery	28	27.2	Pre-defined, flooded battery	28.4	26.8	Pre-defined, AGM battery	29	27	48V	Default, programmable	57.6	55.2	55A	Pre-defined, gel battery	56	54.4	Pre-defined, flooded battery	56.8	53.6	Pre-defined, AGM battery	58	54
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		<p>O/P: TESTING Ta: 25°C TEST RESULT : OK</p>																																							
3	REMOTE ON/OFF CONTROL	<p>The power supply can be turned ON/OFF individually or along with other units by using the "Remote ON-OFF" function.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Between Remote ON-OFF and +5V-AUX</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td>Switch Short</td> <td>ON</td> </tr> <tr> <td>Switch Open</td> <td>OFF</td> </tr> </tbody> </table> <p>I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Between ON/OFF and +5V-AUX</th> <th>OUTPUT</th> </tr> </thead> <tbody> <tr> <td>SW SHORT</td> <td>ON</td> </tr> <tr> <td>SW OPEN</td> <td>OFF</td> </tr> </tbody> </table>	Between Remote ON-OFF and +5V-AUX	Power Supply Status	Switch Short	ON	Switch Open	OFF	Between ON/OFF and +5V-AUX	OUTPUT	SW SHORT	ON	SW OPEN	OFF																											
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4	ALARM SIGNAL	<p>1. DC OK SIGNAL High (4.5 ~ 5.5V) : When the $V_{out} \leq 32V \pm 1V$. Low (-0.1 ~ 0.5V) : When $V_{out} \geq 32V \pm 1V$. The maximum sourcing current is 10mA and only for output. I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Vout</th> <th>DC OK SIGNAL</th> </tr> </thead> <tbody> <tr> <td>$V_{out} \leq 31V$</td> <td>5.031v</td> </tr> <tr> <td>$V_{out} \geq 33V$</td> <td>-0.044</td> </tr> </tbody> </table> <p>2. T-ALARM</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>P.SU STATUS</th> <th>Vo</th> <th>T-ALARM</th> </tr> </thead> <tbody> <tr> <td>NORMAL</td> <td>100%±2%</td> <td>-0.1 ~0.5V</td> </tr> <tr> <td>OTP OR FAN LOCK</td> <td>0V</td> <td>4.5~5.5V</td> </tr> </tbody> </table> <p>I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>P.SU STATUS</th> <th>T-ALARM</th> </tr> </thead> <tbody> <tr> <td>NORMAL</td> <td>-0.046</td> </tr> <tr> <td>OTP OR FAN LOCK</td> <td>5.031v</td> </tr> </tbody> </table> <p>3. AC-OK</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>AC IN</th> <th>Vo</th> <th>AC OK</th> </tr> </thead> <tbody> <tr> <td>$AC I/P \geq 87V_{rms}$</td> <td>100%±2%</td> <td>4.5~5.5V</td> </tr> <tr> <td>$AC I/P \leq 75V_{rms}$</td> <td>0V</td> <td>-0.1~0.5V</td> </tr> </tbody> </table> <p>I/P: TEST O/P: 50%LOAD Test Result :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>AC IN</th> <th>Vo</th> <th>AC OK</th> </tr> </thead> <tbody> <tr> <td>$AC I/P \geq 87V$</td> <td>57.57V</td> <td>5.031v</td> </tr> <tr> <td>$AC I/P \leq 75V$</td> <td>0V</td> <td>-0.045V</td> </tr> </tbody> </table>	Vout	DC OK SIGNAL	$V_{out} \leq 31V$	5.031v	$V_{out} \geq 33V$	-0.044	P.SU STATUS	Vo	T-ALARM	NORMAL	100%±2%	-0.1 ~0.5V	OTP OR FAN LOCK	0V	4.5~5.5V	P.SU STATUS	T-ALARM	NORMAL	-0.046	OTP OR FAN LOCK	5.031v	AC IN	Vo	AC OK	$AC I/P \geq 87V_{rms}$	100%±2%	4.5~5.5V	$AC I/P \leq 75V_{rms}$	0V	-0.1~0.5V	AC IN	Vo	AC OK	$AC I/P \geq 87V$	57.57V	5.031v	$AC I/P \leq 75V$	0V	-0.045V
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5 OUTPUT VOLTAGE PROGRAMMABLE(PV)

※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed to 75~125% of the nominal voltage by applying EXTERNAL VOLTAGE.



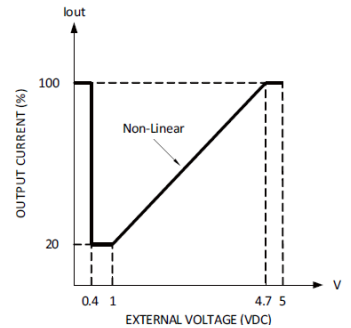
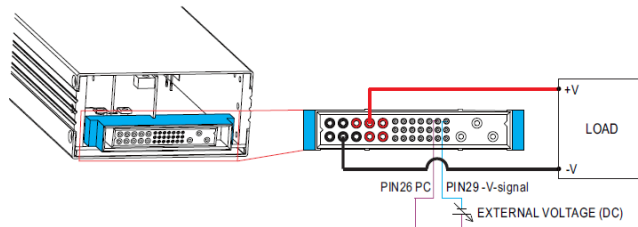
I/P: 230 VAC
 O/P: FULL LOAD
 Ta: 25°C
 TEST RESULT :

PV	<0.3V	1V	4.7V	5V
MODEL				
SPEC	48V±5%	36V±5%	60V±5%	60V±5%
Vout	48.1V	35.59V	61.46V	62.5V

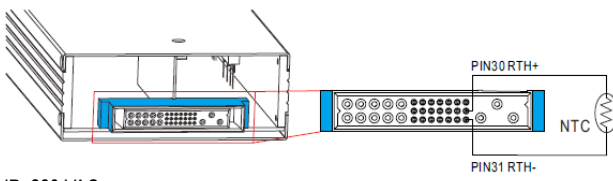
6 OUTPUT CURRENT PROGRAMMABLE (PC)

ADJ V	<0.4V	1V	4.7V	5V
SPEC	100%±10%	20%±10%	100%±10%	100%±10%
Iout	56.3A	10.4A	56.3A	56.3A

※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.



I/P: 230 VAC
 O/P: TESTING
 Ta: 25°C

7	Temperature Compensation	 <p>IP: 230 VAC O/P:FULL LOAD Ta:25°C Test Result :</p> <table border="1" data-bbox="470 560 1500 884"> <thead> <tr> <th rowspan="2">TEMP</th> <th rowspan="2">Voltage compensation</th> <th colspan="2">Temperature compensation</th> </tr> <tr> <th>BEFORE</th> <th>AFTER</th> </tr> </thead> <tbody> <tr> <td>(Ta=0°C)</td> <td>57.6V=+1.80V ±0.48V</td> <td>57.6</td> <td>59.4</td> </tr> <tr> <td>(Ta=25°C)</td> <td>57.6V=0V ±0.48V</td> <td>57.6</td> <td>57.6</td> </tr> <tr> <td>(Ta=50°C)</td> <td>57.6V=-1.80V ±0.48V</td> <td>57.6</td> <td>55.82</td> </tr> </tbody> </table> <p>⊙ To exploit the temperature compensation function, please attach the temperature sensor, NTC, to the battery or the battery's vicinity. ⊙ The charger is able to work normally without the NTC.</p>	TEMP	Voltage compensation	Temperature compensation		BEFORE	AFTER	(Ta=0°C)	57.6V=+1.80V ±0.48V	57.6	59.4	(Ta=25°C)	57.6V=0V ±0.48V	57.6	57.6	(Ta=50°C)	57.6V=-1.80V ±0.48V	57.6	55.82
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8	AUXILIARY POWER	<p>a.12V : Auxiliary voltage output, 10.8~13.2V, referenced to GND-AUX (pin 12). The maximum load current is 0.8A. This output has the built-in "Oring diodes" and is not controlled by the Remote ON/OFF control</p> <p>b.5V : Auxiliary voltage output, 4.5~5.5V, referenced to GND-AUX (pin 12). The maximum load current is 0.3A. This output has the built-in "Oring diodes" and is not controlled by the Remote ON/OFF control</p> <p>I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result :</p> <table border="1" data-bbox="550 1153 1388 1377"> <thead> <tr> <th>AUX</th> <th>TOLERANCE</th> <th>RIPPLE</th> <th>TEST RESULT</th> </tr> </thead> <tbody> <tr> <td>12V / 0.8A</td> <td>10.8~13.2 V</td> <td>450mVp-p</td> <td>12.29V /52mv</td> </tr> <tr> <td>5V / 0.3A</td> <td>4.5 ~ 5.5V</td> <td>150mVp-p</td> <td>4.806V/52mv</td> </tr> </tbody> </table>	AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.8A	10.8~13.2 V	450mVp-p	12.29V /52mv	5V / 0.3A	4.5 ~ 5.5V	150mVp-p	4.806V/52mv						
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9	LED Status Indicators	<p>※ LED Status Indicators</p> <table border="1" data-bbox="478 1411 1492 1556"> <thead> <tr> <th>LED</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td> Green</td> <td>Float (stage 3)</td> </tr> <tr> <td> Orange</td> <td>Charging (stage 1 or stage 2)</td> </tr> <tr> <td> Red</td> <td>The LED will present a constant red light when the abnormal status (OTP, OLP, fan fail and charging timeout) arises.</td> </tr> <tr> <td> Red (Flashing)</td> <td>The LED will flash with the red light when the internal temperature reaches 60°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus interface.)</td> </tr> </tbody> </table> <p>Test Result : OK</p>	LED	Description	Green	Float (stage 3)	Orange	Charging (stage 1 or stage 2)	Red	The LED will present a constant red light when the abnormal status (OTP, OLP, fan fail and charging timeout) arises.	Red (Flashing)	The LED will flash with the red light when the internal temperature reaches 60°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus interface.)								
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10	CURRENT SHARING	<p>< ±5%</p> <table border="1" data-bbox="829 1601 1500 1960"> <tr> <td>I/P : 230 VAC O/P : 198A/80A Ta : 25°C</td> <td>O/P : 198A PSU1 : 48.9A PSU2 : 49 A PSU3 : 49.1 A PSU4 : 49 A</td> </tr> <tr> <td></td> <td>O/P : 80A PSU1 : 18.9 A PSU2 : 20 A PSU3 : 19.9 A PSU4 : 19.5 A</td> </tr> </table>	I/P : 230 VAC O/P : 198A/80A Ta : 25°C	O/P : 198A PSU1 : 48.9A PSU2 : 49 A PSU3 : 49.1 A PSU4 : 49 A		O/P : 80A PSU1 : 18.9 A PSU2 : 20 A PSU3 : 19.9 A PSU4 : 19.5 A														
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COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 52A/600V Q3 Rated 52A/600V	I/P:High-Line +3V =267V AC ON/OFF VDS: O/P: (1)Full Load Ta:25°C	Q1: 267VAC: (1)481V	Q3: 267VAC: (1)504V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q 900 Rated 52A/600V Q 902 Rated 52A/600V	I/P:High-Line +3V =267V AC ON/OFF VDS: O/P: (1)Full Load Ta:25°C	Q 900 267VAC:: (1)509V	Q 902 267VAC: (1)439V
3	P.F.C DIODE	D8 Rated : 16A/600V	I/P:High-Line +3V = 267V AC ON/OFF O/P: (1)Full Load Ta:25°C	(1) 452V	
4	Diode Peak Voltage	Q101 Rated 87A/150V Q104 Rated 87A/150V Q107 Rated 87A/150V Q110 Rated 87A/150V	I/P:High-Line +3V = 267V AC ON/OFF VDS: O/P: (1)Full Load Ta:25°C	Q101: VDS: (1)116.2V Q107: VDS: (1)119.4V	Q104: VDS: (1)114.6V Q110: VDS: (1)117.8V
5	Input Capacitor Voltage	C5 Rated: : 330μ/ 450V 105°C	I/P:High-Line +3V =267V O/P: (1)Full Load input on/off Ta:25°C	(1)436V	
6	Control IC Voltage Test	PWM IC U201 Rated 3V~18V PFC IC U900 Rated 4.5V~20V	I/P:High-Line +3V = 267V AC ON/OFF O/P:(1)FULL LOAD Ta:25°C	U201 (1) 13.72V	U900 (1) 11.95V
7	TOP SWITCHING STAND BY POWER	U 71 Rated 20A/800V	I/P:High-Line +3V = 267V AC ON/OFF O/P: (1)Full Load (2)Remote On/Off Ta:25°C	(1) 589V (2) 585V	

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:1.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.8 KVAC/min Ta:25°C	I/P-O/P: 12.17 mA I/P-FG: 13.99 mA O/P-FG: 18.51 mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 22.6 GΩ I/P-FG: 20 GΩ O/P-FG: 10GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	25mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:100% LOAD Ta:25°C	PASS
2	CONDUCTION	EN55032 (CISPR32) / EN55011 (CISPR11) CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	EN55032 (CISPR32) / EN55011 (CISPR11) CLASS A	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 INDUSTRY 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 INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-6-2 INDUSTRY L-N : 2KV L,N-PE : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare			

■ **RELIABILITY TEST**

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE RISE TEST	MODEL : DBR-3200-48 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD 2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD		

		NO	Position	ROOM AMBIENT Ta= 25°C	HIGH AMBIENT Ta= 50°C
		1	BD1	53.5°C	78.7°C
		2	RY1	44.1°C	70.4°C
		3	D7	63.2°C	88.9°C
		4	D8	76.6°C	102.3°C
		5	T3	40.0°C	65.5°C
		6	U900	42.9°C	68.2°C
		7	Q900	60.0°C	85.8°C
		8	Q902	59.6°C	84.6°C
		9	C5	30.8°C	54.4°C
		10	U902	48.7°C	74.4°C
		11	Q1	53.8°C	80.0°C
		12	Q3	51.2°C	77.0°C
		13	T1-2	64.7°C	91.1°C
		14	T1-1	80.1°C	106.4°C
		15	T2-2	57.7°C	82.7°C
		16	T2-1	70.6°C	96.9°C
		17	T301	34.0°C	57.9°C
		18	U71	39.5°C	63.2°C
		19	U201	40.6°C	65.8°C
		20	C111	50.9°C	76.2°C
		21	C121	45.6°C	70.4°C
		22	C115	46.4°C	71.2°C
		23	C116	45.9°C	70.8°C
		24	Q401	59.8°C	85.5°C
		25	Q411	59.5°C	85.2°C
		26	Q101	54.8°C	80.2°C
		27	Q108	53.8°C	79.3°C
		28	U110	49.4°C	74.5°C
		29	RT90	40.0°C	64.2°C
		30	U903	34.1°C	58.5°C
		31	U501	47.2°C	71.7°C
		32	RG76	85.4°C	110.3°C
		33	L1	43.3°C	68.0°C
		34	L3	62.1°C	87.2°C
		35	R900	47.1°C	71.8°C
		36	ZR2	37.9°C	63.3°C
		37	LF1	51.6°C	78.0°C
		38	C2	43.5°C	69.0°C
		39	C10	50.4°C	76.3°C
		40	ZR1	48.5°C	74.0°C
		41	RT1	37.2°C	62.4°C
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR		I/P : 230VAC/180VAC O/P : 100 % LOAD Ta= -30°C/-25°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 : 272 VAC O/P : FULL LOAD Ta= 50°C HUMIDITY= 95 %R.H	TEST : OK
4	TEMPERATURE COEFFICIENT	± 0.03 %/°C(0~50°C)		I/P : 230 VAC O/P : FULL LOAD	± 0.001 %/°C(0~50°C)



5	STORAGE TEMPERATURE TEST	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 : 10 CYCLE 5. Input/Output condition : STATIC	OK
6	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°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	OK
7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C	TEST : OK
8	CAPACITOR LIFE CYCLE	SUPPOSE C111 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= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME	(1) 383955HRS (2) 66460HRS (3) 16891HRS (4) 294949HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 528.8K hrs min. Telcordia SR-332 (Bellcore) ; 44.4K hrs min. MIL-HDBK-217F (25°C)	
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50°C	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	DANIEL GAO	SANFORD SU	VINCENT TSENG

2018.4.30 GP-A50-F010