



Test Report: XDR-120-48

120W AC/DC High-End Ultra Slim Industrial DIN Rail
Power

■ 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

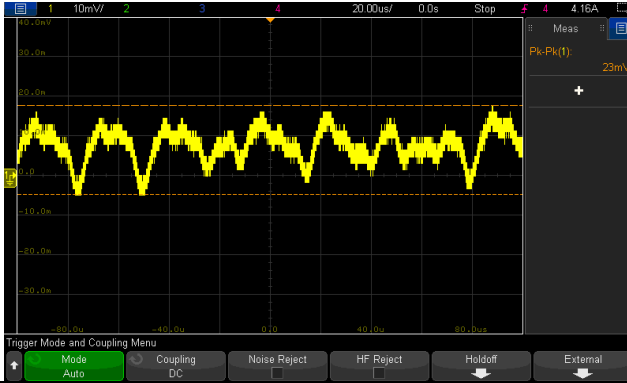
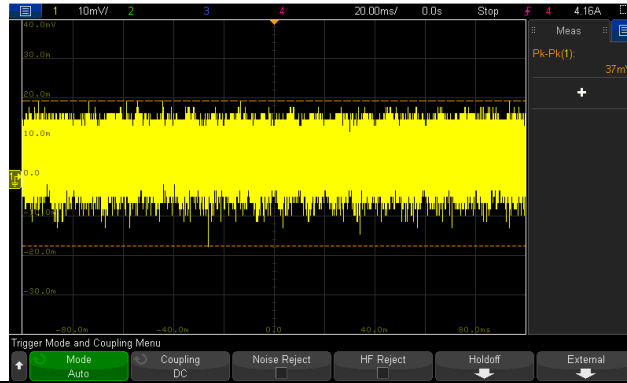
E.M.C. Test

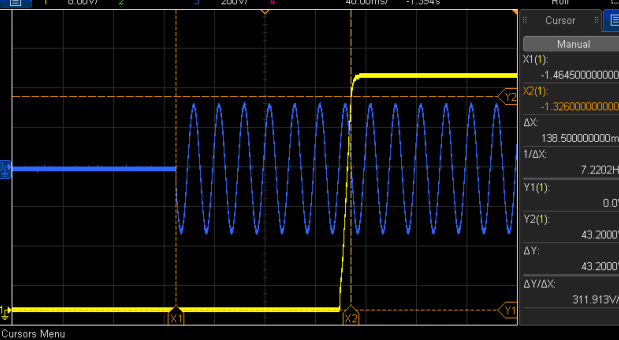
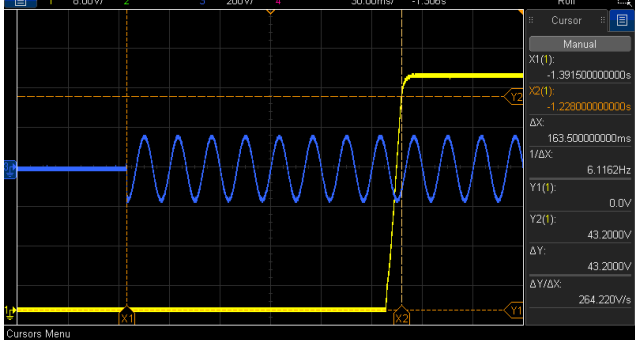
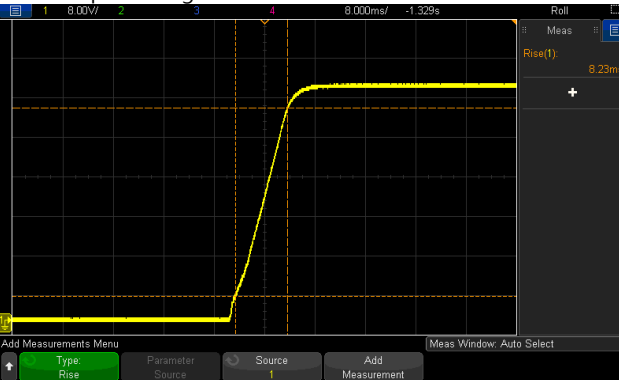
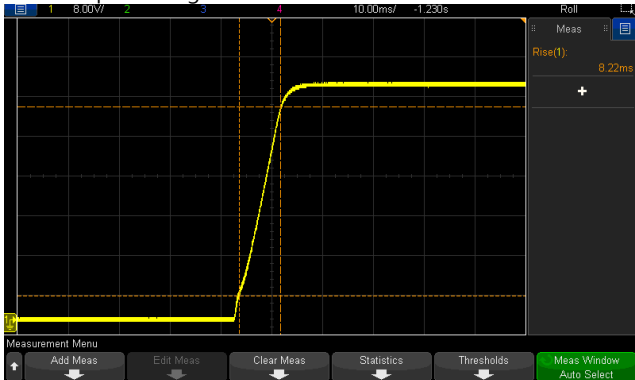
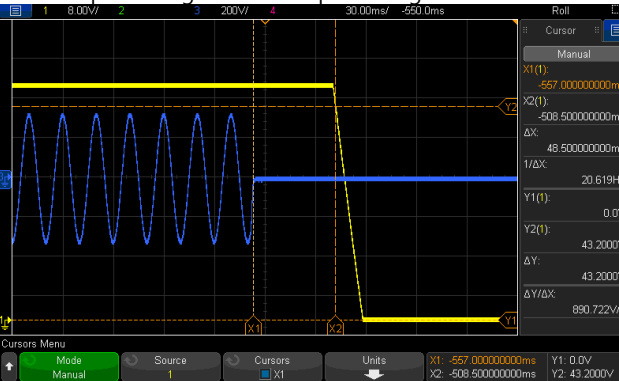
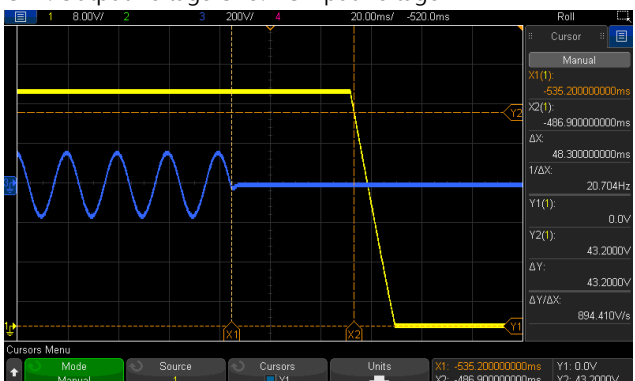
■ RELIABILITY TEST

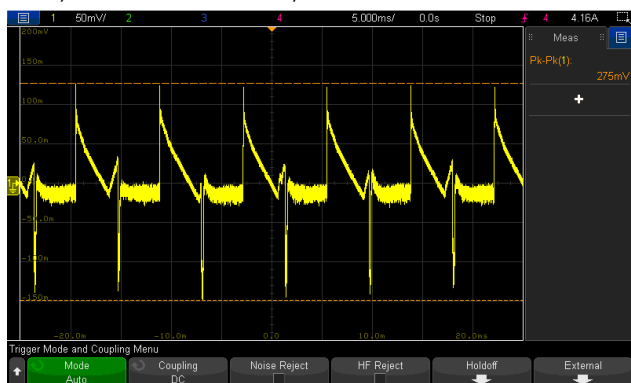
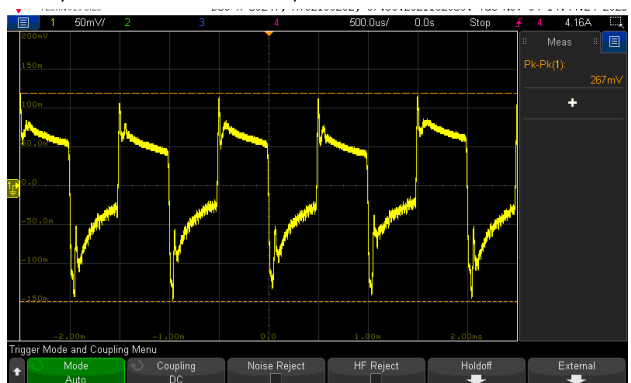
ENVIRONMENT TEST

DESIGN VERIFY TEST

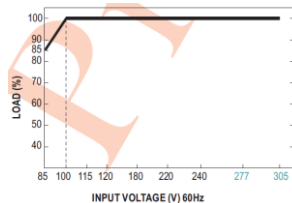
OUTPUT FUNCTION TEST

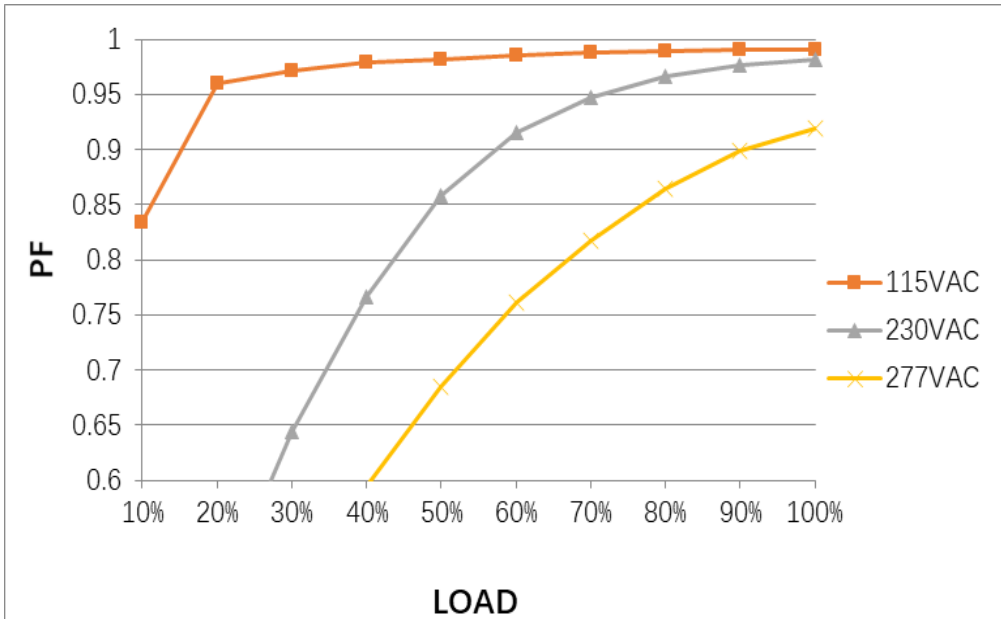
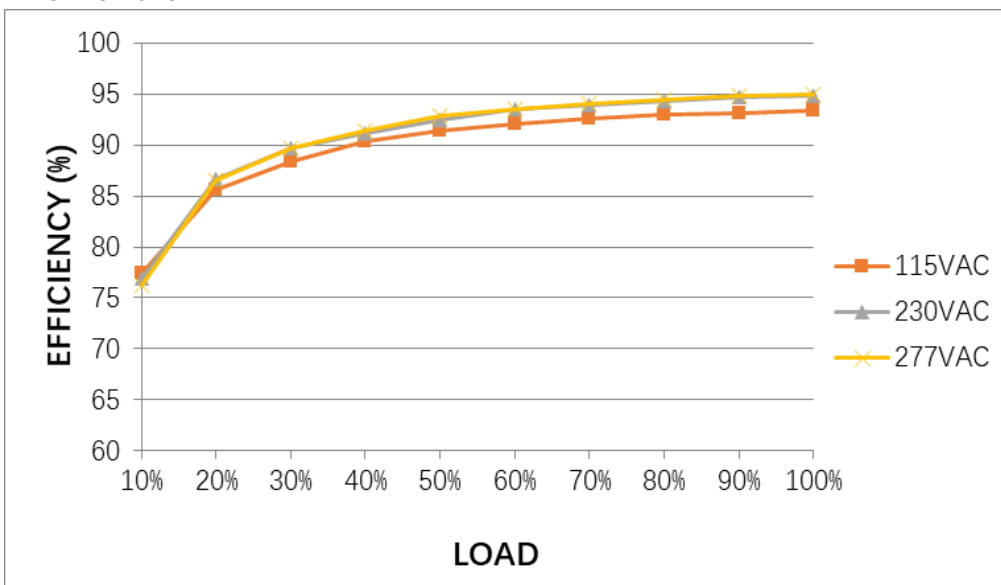
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 48V~56V	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	46.53V~57.62V/277VAC 46.53V~57.62V/230VAC 46.53V~57.62V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: -1% ~ +1%	I/P: 85VAC~305VAC O/P:FULL~MIN. LOAD Ta:25°C	V1: -0.04% ~ 0.04%
3	LINE REGULATION	V1: -0.5% ~ +0.5%	I/P: 85VAC~ 305VAC O/P:FULL LOAD Ta:25°C	V1: -0.000% ~ 0.004%
4	LOAD REGULATION	V1: -1% ~ +1%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.04% ~ 0.04%
5	OVER/UNDERSHOOT TEST	<±5%	I/P: 230VAC O/P:FULL LOAD / NO LOAD Ta:25°C	1.25%
6	RIPPLE & NOISE (Max)	V1: 120mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	23mVp-p / high frequency 37mVp-p / low frequency
high frequency :  low frequency : 				
7	SET UP TIME(Max)	230VAC/1500ms 115VAC/3000ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 138.5ms 115VAC/ 163.5ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage			INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage	

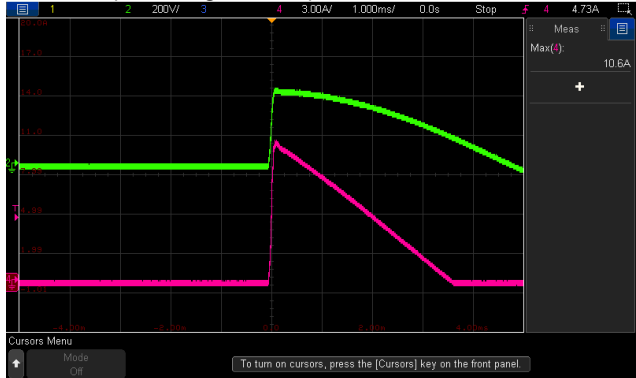
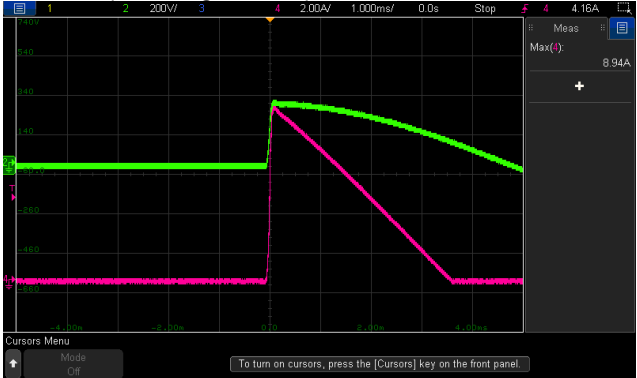
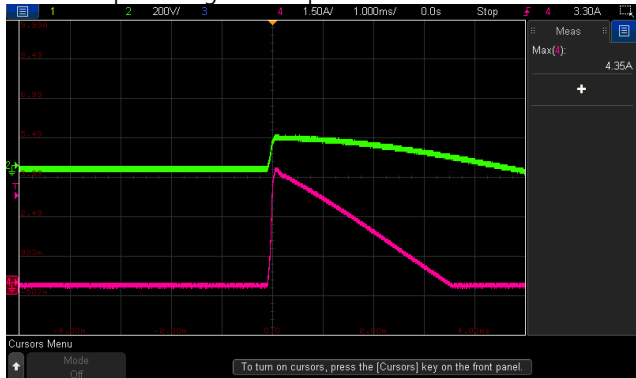
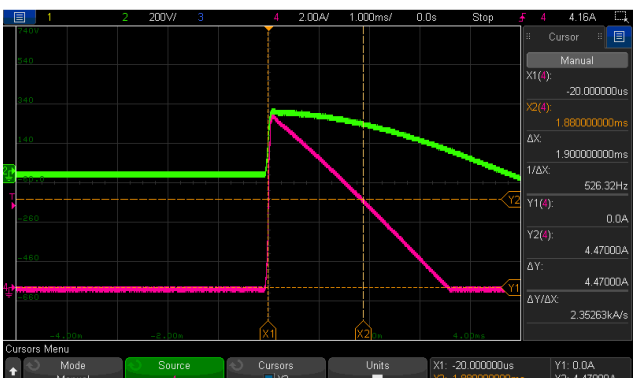
				
8	RISE TIME (Max)	230VAC/60ms 115VAC/60ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/8.23ms 115VAC/8.22 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage				
		INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage		
				
9	HOLD UP TIME (Typ.)	230VAC/ 20ms 115VAC/ 20ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 48.5ms 115VAC/ 48.3ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage				
		INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage		
				
10	DYNAMIC LOAD	V1: 4800mVp-p	I/P: 230VAC O/P: (1) FULL/ MIN LOAD 50%DUTY / 120HZ (2) FULL/ MIN LOAD 50%DUTY / 1KHZ Ta:25°C	275mVp-p 267mVp-p

FULL / MIN LOAD 50%DUTY / 120HZ		FULL / MIN LOAD 50%DUTY / 1KHZ		
				
11	TRANSIENT RECOVERY TIME	V1: 4800mVp-p <500us	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	140mVp-p

INPUT FUNCTION TEST

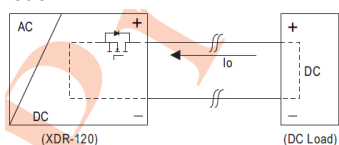
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT			
1	INPUT VOLTAGE RANGE	85VAC~305VAC 80VDC~ 431VDC 	(1) I/P: TESTING O/P: FULL / 85% LOAD (2) I/P: DC TESTING (L: + N: -) O/P: FULL / 85% LOAD (3) I/P: DC TESTING (L: - N: +) O/P: FULL / 85% LOAD Ta:25°C	(1) 56V~305V/ FULL LOAD 56V~305V/ 85% LOAD (2) 78Vdc~431Vdc/FULL LOAD 78Vdc~431Vdc/85% LOAD (2) 78Vdc~431Vdc/FULL LOAD 78Vdc~431Vdc/85% LOAD			
		Derating 50% Load @80VDC	I/P: 80VDC O/P: 50% Load	TEST: OK			
			I/P: HIGH-LINE+10V=315V 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: 85VAC~ 305VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK			
3	INPUT CURRENT (Typ.)	230V/ 1.2A 115V/ 2.3A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =0.5578A/ 230VAC I =1.1320A/ 115VAC			
4	LEAKAGE CURRENT	< 1mA@240Vac < 1.5mA@277Vac	I/P : 240VAC/60HZ I/P : 277VAC/60HZ O/P : Min LOAD Ta : 25°C	0.459mA@240Vac 0.528mA@277Vac			
5	NO LOAD CONSUMPTION	Remote Power OFF: 1W@115Vac & 230Vac	I/P : 115VAC I/P : 230VAC O/P : NO LOAD	TEST: <table><tr><td></td><td>Remote Power</td><td>Remote Power</td></tr></table>		Remote Power	Remote Power
	Remote Power	Remote Power					

		Remote Power ON: 2W@115Vac & 230Vac	Ta : 25°C	<table><tr><td></td><td>OFF</td><td>ON</td></tr><tr><td>115VAC</td><td>0.508W</td><td>1.313W</td></tr><tr><td>230VAC</td><td>0.696W</td><td>1.433W</td></tr></table>		OFF	ON	115VAC	0.508W	1.313W	230VAC	0.696W	1.433W																																			
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6	POWER FACTOR (Typ.)	0.90/ 277VAC 0.95/ 230VAC 0.98/115VAC	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF=0.9438/277VAC PF=0.9898/230VAC PF=0.9930/115VAC																																												
P.F vs LOAD  <table><caption>Approximate Power Factor (PF) vs Load Data</caption><thead><tr><th>Load (%)</th><th>115VAC PF</th><th>230VAC PF</th><th>277VAC PF</th></tr></thead><tbody><tr><td>10</td><td>0.84</td><td>-</td><td>-</td></tr><tr><td>20</td><td>0.96</td><td>-</td><td>-</td></tr><tr><td>30</td><td>0.97</td><td>0.64</td><td>-</td></tr><tr><td>40</td><td>0.98</td><td>0.77</td><td>0.60</td></tr><tr><td>50</td><td>0.985</td><td>0.86</td><td>0.68</td></tr><tr><td>60</td><td>0.99</td><td>0.92</td><td>0.76</td></tr><tr><td>70</td><td>0.992</td><td>0.95</td><td>0.82</td></tr><tr><td>80</td><td>0.993</td><td>0.97</td><td>0.87</td></tr><tr><td>90</td><td>0.994</td><td>0.98</td><td>0.90</td></tr><tr><td>100</td><td>0.995</td><td>0.985</td><td>0.92</td></tr></tbody></table>					Load (%)	115VAC PF	230VAC PF	277VAC PF	10	0.84	-	-	20	0.96	-	-	30	0.97	0.64	-	40	0.98	0.77	0.60	50	0.985	0.86	0.68	60	0.99	0.92	0.76	70	0.992	0.95	0.82	80	0.993	0.97	0.87	90	0.994	0.98	0.90	100	0.995	0.985	0.92
Load (%)	115VAC PF	230VAC PF	277VAC PF																																													
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7	EFFICIENCY(Typ.)	94%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	94.55%																																												
EFFICIENCY vs LOAD  <table><caption>Approximate Efficiency (%) vs Load Data</caption><thead><tr><th>Load (%)</th><th>115VAC Efficiency (%)</th><th>230VAC Efficiency (%)</th><th>277VAC Efficiency (%)</th></tr></thead><tbody><tr><td>10</td><td>77</td><td>77</td><td>76</td></tr><tr><td>20</td><td>86</td><td>87</td><td>86</td></tr><tr><td>30</td><td>89</td><td>90</td><td>89</td></tr><tr><td>40</td><td>91</td><td>92</td><td>91</td></tr><tr><td>50</td><td>92</td><td>93</td><td>92</td></tr><tr><td>60</td><td>93</td><td>94</td><td>93</td></tr><tr><td>70</td><td>93.5</td><td>94.5</td><td>94</td></tr><tr><td>80</td><td>94</td><td>94.8</td><td>94.5</td></tr><tr><td>90</td><td>94.2</td><td>95</td><td>95</td></tr><tr><td>100</td><td>94.5</td><td>94.5</td><td>95</td></tr></tbody></table>					Load (%)	115VAC Efficiency (%)	230VAC Efficiency (%)	277VAC Efficiency (%)	10	77	77	76	20	86	87	86	30	89	90	89	40	91	92	91	50	92	93	92	60	93	94	93	70	93.5	94.5	94	80	94	94.8	94.5	90	94.2	95	95	100	94.5	94.5	95
Load (%)	115VAC Efficiency (%)	230VAC Efficiency (%)	277VAC Efficiency (%)																																													
10	77	77	76																																													
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30	89	90	89																																													
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50	92	93	92																																													
60	93	94	93																																													
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80	94	94.8	94.5																																													
90	94.2	95	95																																													
100	94.5	94.5	95																																													

8	INRUSH CURRENT(Typ.)	277V/15A 230V/10A 115V/6A COLD START	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =10.6A/ 277VAC I =8.94A/ 230VAC I =4.35A/ 115VAC T50=1900us/230V
INPUT=277VAC/50HZ @ FULL LOAD CH2: AC Input Voltage CH4: Input current  INPUT=230VAC/50HZ @ FULL LOAD CH2: AC Input Voltage CH4: Input current  INPUT=115VAC/ 60HZ @ FULL LOAD CH2: AC Input Voltage CH4: Input current  T50@230VAC: 				

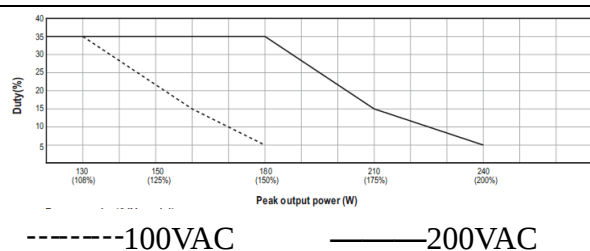
PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	Protection type: 105%~200% rated output power for more than 5 sec then constant current limiting at rate current without shutdown when $V_o=30\%\sim 100\%$ Hiccup mode when $V_o<30\%$ rated voltage	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P: TESTING Ta:25°C	TEST 153.6%/ 305VAC 153.6%/ 230VAC 153.6%/ 100VAC Protection type: 105%~200% rated output power for more than 5 sec then constant current limiting at rate current without shutdown when $V_o=30\%\sim 100\%$ Hiccup mode when $V_o<30\%$ rated voltage

2	OVER VOLTAGE PROTECTION	56V~65V Protection type: Shut down o/p voltage, re-power on to recover	I/P: 305VAC I/P: 85VAC O/P:MIN LOAD Ta:25°C	59.6V/ 305VAC 60.0V/ 85VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	Protection type: Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 305VAC I/P: 85VAC O/P:FULL LOAD	O.T.P. Active Protection type : Shut down o/p voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Protection type: Hiccup mode	I/P: 305VAC I/P: 85VAC O/P:FULL LOAD	NO DAMAGE PROTECTION TYPE : Hiccup mode
5	Protection against Inverse Voltages from the Load	Prevent PSU damage from Back Electro magnetic Force during deceleration of motor or inductive load 	I/P: 230VAC O/P:TESTING Ta:25°C	TEST : <u>OK</u>

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																
1	DC OK CONTACT RATINGS	30VDC/1A, 30VAC/0.5A RESISTIVE LOAD	I/P:230VAC O/P:FULL LOAD Ta:25°C	TEST: <u>OK</u>																																
2	REMOTE CONTROL	Power OFF: RC + ~ RC- keep 3.3~5Vdc Power ON: RC + ~ RC- keep<0.8Vdc	I/P:230VAC O/P:FULL LOAD Ta:25°C	TEST: <u>OK</u>																																
3	PULSE CURRENT CAPABILTY	<table><tr><th rowspan="2">Load</th><th rowspan="2">Vo(%)</th><th>12V</th><th>24V/36V/48V</th></tr><tr><th>Time</th><th>Time</th></tr><tr><td>3xIo</td><td>75</td><td>15ms</td><td>35ms</td></tr><tr><td>4xIo</td><td>60</td><td>8ms</td><td>17ms</td></tr><tr><td>5xIo</td><td>40</td><td>5ms</td><td>13ms</td></tr><tr><td>6xIo</td><td>25</td><td>4ms</td><td>10ms</td></tr></table> Note:The 4ms~35ms in the table must be after AC mains is turned on.	Load	Vo(%)	12V	24V/36V/48V	Time	Time	3xIo	75	15ms	35ms	4xIo	60	8ms	17ms	5xIo	40	5ms	13ms	6xIo	25	4ms	10ms	I/P:230VAC O/P:Testing Ta:25°C	TEST: <u>OK</u> : <table><tr><th>Load</th><th>Time(ms)</th></tr><tr><td>3xIo</td><td>43.1ms</td></tr><tr><td>4xIo</td><td>19.6ms</td></tr><tr><td>5xIo</td><td>13.2ms</td></tr><tr><td>6xIo</td><td>10.2ms</td></tr></table>	Load	Time(ms)	3xIo	43.1ms	4xIo	19.6ms	5xIo	13.2ms	6xIo	10.2ms
Load	Vo(%)	12V			24V/36V/48V																															
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6xIo	10.2ms																																			
4	PEAK Power	I/P: 100/200VAC O/P:		TEST: <u>OK</u>																																



COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q5/Q6: Rated:15A/650V	AC ON/OFF I/P: High-Line +3V =308V VDS: O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8) Peak Load Ta:25°C	Q5 VDS: (1) 495V (2) 463V (3) 491V (4) 495V (5) 495V (6) 495V (7) 467V (8) 495 Q6 VDS: (1) 471V (2) 459V (3) 475V (4) 471V (5) 471V (6) 479V (7) 455V (8) 471V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1: Rated:21A/600V	AC ON/OFF I/P: High-Line +3V =308V VDS: O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8) Peak Load Ta:25°C	Q1 VDS: (1) 467V (2) 439V (3) 455V (4) 455V (5) 455V (6) 455V (7) 443V (8) 463V
3	P.F.C DIODE	D1: Rated: 4A/650V	I/P: High-Line +3V =308 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz	(1) 455V (2) 435V (3) 443V (4) 439V (5) 455V

			(4) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (5) Peak Load Ta:25°C	
4	Diode Peak Voltage	Q100 / Q103: Rated: 150V	AC ON/OFF I/P: High-Line +3V =308 V <u>VO=Vomax</u> O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD (9) Peak Load (10) burst mode <u>VO=Vonormal</u> O/P: (1) Full Load Ta:25°C	Q100: <u>VO=Vomax</u> VDS: (1) 133V (2) 133V (3) 133V (4) 133V (5) 134V (6) 133V (7) 131V (8) 132V (9) 133V (10) 133V <u>VO=Vonormal</u> (1) 127.8V Q103: <u>VO=Vomax</u> VDS: (1) 139.3V (2) 136.6V (3) 136.6V (4) 136.6V (5) 137.5V (6) 137.5V (7) 137.5V (8) 136.6V (9) 136.6V (10) 139.3V <u>VO=Vonormal</u> (1) 133.3V
5	AUX Transistor (D to S) or (C to E) Peak Voltage	U5: Rated: 725V	AC ON/OFF I/P: High-Line +3V =308V VDS: O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8) Peak Load Ta:25°C	VDS: (1) 539V (2) 507V (3) 539V (4) 531V (5) 539V (6) 543V (7) 507V (8) 539V
6	AUX Clamp Diode Peak Voltage	D 19: Rated : 1A/ 1KV	AC ON/OFF I/P : High-Line +3V = 308V O/P : (1) Dynamic Load 90%Duty/1KHz (2) Full load continue Ta:25°C	(1) 507V (2) 491V

7	AUX Diode Peak Voltage	D200: Rated : 2 A/ 200V D27: Rated : 1A/600 V	AC ON/OFF I/P: High-Line +3V =308 V O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD (9) Peak Load Ta:25°C	D200: VDS: (1) 137V (2) 136V (3) 144V (4) 145V (5) 144V (6) 142V (7) 136V (8) 135V (9) 146V	D27: VDS: (1) 216V (2) 189V (3) 233V (4) 242V (5) 240V (6) 227V (7) 189V (8) 187V (9) 235V
8	Input Capacitor Voltage	C5: Rated: 150μ /450V	I/P: High-Line +3V =308V O/P: (1)Full Load input on/off (2) Min load input on /Off (3) Full Load /Min load Change (4) Full load continue (5) Peak Load on/off (6) Peak Load continue Ta:25°C	(1) 439V (2) 435V (3) 435V (4) 435V (5) 439V (6) 439V	
9	Control IC Voltage Test	PFC/PWM IC U1 : Rated : 12.5V~ 27.9V O/P IC U101: Rated: 4.75V~38 V IC U100: Rated: 3V~30V IC U105: Rated: 3V~32V IC U102: Rated: 3V ~30V AUX IC U5: Rated: -0.3V~9V	AC ON/OFF I/P: High-Line +3V =308V O/P: (1) Full Load (2) Output Short (3) O.L.P (4) O.V.P. (5) No Load VR min (Low Line) Ta:25°C	U1 (1) 15.6V (2) 15.6V (3) 15.6V (4) 15.6V (5) 15.6V U101 (1) 11.6V (2) 12.0V (3) 11.7V (4) 11.6V (5) 11.1V U100 (1) 11.8V (2) 11.8V (3) 11.8V (4) 11.8V (5) 11.8V	U105 (1) 12.89V (2) 12.32V (3) 12.40V (4) 12.32V (5) 12.24V U102 (1) 11.7V (2) 11.7V (3) 11.7V (4) 11.7V (5) 11.7V U5 (1) 6.37V (2) 6.45V (3) 6.45V (4) 6.45V (5) 6.1V

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4 KVAC/min I/P-FG : 2 KVAC/min O/P-FG:1.5 KVAC/min O/P-DC OK: 0.5 KVAC/min	I/P-O/P: 4.4 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min O/P-DC OK: 0.6 KVAC/min Ta:25°C	I/P-O/P: 3.32 mA I/P-FG: 2.82 mA O/P-FG: 3.57 mA O/P-DC OK: 0.007 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: 600 VDC I/P-FG: 600 VDC O/P-FG: 600 VDC Ta:25°C	I/P-O/P: 50 GΩ I/P-FG: 26222 MΩ O/P-FG: 50 GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100mΩ	40A /2min Ta:25°C	7mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	BS EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	BS EN/EN55032 (CISPR32) BS EN/EN61204-3 CNS15936 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	BS EN/EN55032 (CISPR32) BS EN/EN61204-3 CNS15936 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	BS EN61000-4-2 AIR : 15KV / Contact : 8KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	BS EN61000-4-4 INPUT : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	BS EN 61000-4-5 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 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 : XDR-120-24 1. ROOM AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta= 26.6°C 2. HIGH AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta=59.7°C																																																																																																																																						
		<table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=26.6°C</th><th>HIGH AMBIENT Ta=59.7°C</th></tr><tr><td>1</td><td>D27</td><td>45.1°C</td><td>76.9°C</td></tr><tr><td>2</td><td>C110</td><td>41.8°C</td><td>74.2°C</td></tr><tr><td>3</td><td>LF100</td><td>43.5°C</td><td>75.8°C</td></tr><tr><td>4</td><td>RY100</td><td>47.0°C</td><td>78.7°C</td></tr><tr><td>5</td><td>Q100</td><td>45.5°C</td><td>78.0°C</td></tr><tr><td>6</td><td>U100</td><td>45.7°C</td><td>77.3°C</td></tr><tr><td>7</td><td>C5</td><td>44.6°C</td><td>76.5°C</td></tr><tr><td>8</td><td>Q1</td><td>45.7°C</td><td>78.3°C</td></tr><tr><td>9</td><td>TSW1</td><td>43.9°C</td><td>76.2°C</td></tr><tr><td>10</td><td>C42</td><td>44.1°C</td><td>76.3°C</td></tr><tr><td>11</td><td>L1</td><td>45.7°C</td><td>78.0°C</td></tr><tr><td>12</td><td>Q105</td><td>46.5°C</td><td>78.6°C</td></tr><tr><td>13</td><td>Q106</td><td>46.4°C</td><td>78.6°C</td></tr><tr><td>14</td><td>C204</td><td>46.1°C</td><td>78.0°C</td></tr><tr><td>15</td><td>C49</td><td>43.8°C</td><td>76.0°C</td></tr><tr><td>16</td><td>T2</td><td>47.4°C</td><td>79.2°C</td></tr><tr><td>17</td><td>T1coil</td><td>50.7°C</td><td>82.0°C</td></tr><tr><td>18</td><td>T1core</td><td>47.3°C</td><td>78.6°C</td></tr><tr><td>19</td><td>C107</td><td>45.4°C</td><td>77.1°C</td></tr><tr><td>20</td><td>C106</td><td>44.2°C</td><td>76.0°C</td></tr><tr><td>21</td><td>D200</td><td>46.8°C</td><td>78.8°C</td></tr><tr><td>22</td><td>U1</td><td>46.2°C</td><td>78.7°C</td></tr><tr><td>23</td><td>BD1</td><td>48.8°C</td><td>80.9°C</td></tr><tr><td>24</td><td>Q6</td><td>45.0°C</td><td>77.2°C</td></tr><tr><td>25</td><td>Q5</td><td>44.8°C</td><td>77.0°C</td></tr><tr><td>26</td><td>LF2</td><td>42.9°C</td><td>75.7°C</td></tr><tr><td>27</td><td>C9</td><td>42.5°C</td><td>75.1°C</td></tr><tr><td>28</td><td>R11</td><td>42.7°C</td><td>75.7°C</td></tr><tr><td>29</td><td>L2</td><td>40.4°C</td><td>73.6°C</td></tr><tr><td>30</td><td>RY1</td><td>48.2°C</td><td>81.1°C</td></tr><tr><td>31</td><td>U101</td><td>54.2°C</td><td>85.6°C</td></tr><tr><td>32</td><td>Q103</td><td>45.4°C</td><td>77.6°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta=26.6°C	HIGH AMBIENT Ta=59.7°C	1	D27	45.1°C	76.9°C	2	C110	41.8°C	74.2°C	3	LF100	43.5°C	75.8°C	4	RY100	47.0°C	78.7°C	5	Q100	45.5°C	78.0°C	6	U100	45.7°C	77.3°C	7	C5	44.6°C	76.5°C	8	Q1	45.7°C	78.3°C	9	TSW1	43.9°C	76.2°C	10	C42	44.1°C	76.3°C	11	L1	45.7°C	78.0°C	12	Q105	46.5°C	78.6°C	13	Q106	46.4°C	78.6°C	14	C204	46.1°C	78.0°C	15	C49	43.8°C	76.0°C	16	T2	47.4°C	79.2°C	17	T1coil	50.7°C	82.0°C	18	T1core	47.3°C	78.6°C	19	C107	45.4°C	77.1°C	20	C106	44.2°C	76.0°C	21	D200	46.8°C	78.8°C	22	U1	46.2°C	78.7°C	23	BD1	48.8°C	80.9°C	24	Q6	45.0°C	77.2°C	25	Q5	44.8°C	77.0°C	26	LF2	42.9°C	75.7°C	27	C9	42.5°C	75.1°C	28	R11	42.7°C	75.7°C	29	L2	40.4°C	73.6°C	30	RY1	48.2°C	81.1°C	31	U101	54.2°C	85.6°C	32	Q103	45.4°C	77.6°C
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 130%LOAD Ta : 25°C	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/100VAC O/P : 80%/ 100%LOAD Ta= -45°C/-35°C	TEST : OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60°C/95 %R.H NO DAMAGE	I/P : 315 VAC O/P : FULL LOAD Ta= 60°C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	± 0.03%/°C(0~60°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.007 %/°C(0~60°C)
6	STORAGE TEMPERATURE TEST	-40~85°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 : 10 CYCLE 5. Input/Output condition : STATIC	
7	THERMAL SHOCK TEST	-30~60°C	1. Thermal shock Temperature : -35°C~ +65°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	
8	VIBRATION TEST	10 ~ 500Hz, 2G 10min./1cycle, 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	
9	CAPACITOR LIFE CYCLE	SUPPOSE C107 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= 60°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 60°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 60°C LIFE TIME		(1) 1848852HRS (2) 180070HRS (3) 220433HRS (4) 294877HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 1550.7K hrs min. Telcordia SR-332 (Bellcore) ; 246.3K hrs min. MIL-HDBK-217F (25°C)		
11	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=60°C Demonstration Mean Time Between Failure : 50,000 hours		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Hanxr	Liutt	Wangzd

2020.10.1 TAG-QA-009