



TEST DATA OF ADA1000F

ADA1000F-30
(200V INPUT)

Regulated DC power supply
Feb. 10, 2003

Approved by : *Kuniaki Nagahara*
Kuniaki Nagahara Design Manager

Prepared by : *Toshihisa Miura*
Toshihisa Miura Design Engineer

INPUT : AC 170~264V

OUTPUT : V1:30V 33.5A

コーセル株式会社
COSEL CO.,LTD.

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<p>Model ADA1000F (ADA1000F-30)</p>																																			
<p>Item Line Regulation 静的入力変動</p>		<p>Temperature 25°C</p>																																	
<p>Object V1:+30V33.5A</p>		<p>Testing Circuitry Figure A</p>																																	
<p>1. Graph</p> <p>---□--- Load 50% —△— Load 100%</p> <p>Output Voltage [V]</p> <p>Input Voltage [V]</p> <p>Note: Slanted line shows the range of the rated input voltage. (注) 斜線は定格入力電圧範囲を示す。</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>150</td><td>30.060</td><td>30.037</td></tr> <tr><td>160</td><td>30.057</td><td>30.036</td></tr> <tr><td>170</td><td>30.056</td><td>30.035</td></tr> <tr><td>180</td><td>30.055</td><td>30.035</td></tr> <tr><td>200</td><td>30.052</td><td>30.034</td></tr> <tr><td>220</td><td>30.051</td><td>30.033</td></tr> <tr><td>240</td><td>30.050</td><td>30.032</td></tr> <tr><td>264</td><td>30.048</td><td>30.032</td></tr> <tr><td>280</td><td>30.046</td><td>30.031</td></tr> </tbody> </table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	150	30.060	30.037	160	30.057	30.036	170	30.056	30.035	180	30.055	30.035	200	30.052	30.034	220	30.051	30.033	240	30.050	30.032	264	30.048	30.032	280	30.046	30.031
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<p> —△— Input Volt. 170V ---□--- Input Volt. 200V ---○--- Input Volt. 264V </p> <p>Hold-Up Time [mS]</p> <p>Load Power [W]</p>			<table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</th> <th colspan="3">Hold-Up Time [mS]</th> </tr> <tr> <th>Input Volt. 170[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 264[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>201.0</td><td>169</td><td>171</td><td>173</td></tr> <tr><td>402.0</td><td>87</td><td>88</td><td>90</td></tr> <tr><td>603.0</td><td>57</td><td>59</td><td>60</td></tr> <tr><td>804.0</td><td>42</td><td>43</td><td>44</td></tr> <tr><td>1005.0</td><td>33</td><td>34</td><td>35</td></tr> <tr><td>1105.5</td><td>29</td><td>30</td><td>32</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>			Load Power [W]	Hold-Up Time [mS]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0.0	—	—	—	201.0	169	171	173	402.0	87	88	90	603.0	57	59	60	804.0	42	43	44	1005.0	33	34	35	1105.5	29	30	32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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<p>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy. Note: Slanted line shows the range of the rated load power.</p> <p>出力保持時間とは、入力電圧断から出力電圧が定電圧精度の範囲を保持しているところまでの時間。 (注) 斜線は定格電力範囲を示す。</p>																																																								



Model		ADA1000F (ADA1000F-30)		Temperature	25°C																																																			
Item		Instantaneous Interruption Compensation (by Load Power) 瞬時停電保障 (負荷電力特性)				Testing Circuitry	Figure A																																																	
Object		_____																																																						
1. Graph			2. Values																																																					
<p>—△— Input Volt. 170V ---□--- Input Volt. 200V -·-○-·- Input Volt. 264V</p> <p>Instantaneous Compensation Time [mS]</p> <p>Load Power [W]</p>			<table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</th> <th colspan="3">Time [mS]</th> </tr> <tr> <th>Input Volt. 170[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 264[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>201.0</td><td>148</td><td>170</td><td>172</td></tr> <tr><td>402.0</td><td>69</td><td>78</td><td>88</td></tr> <tr><td>603.0</td><td>46</td><td>46</td><td>60</td></tr> <tr><td>804.0</td><td>40</td><td>40</td><td>44</td></tr> <tr><td>1005.0</td><td>32</td><td>34</td><td>35</td></tr> <tr><td>1105.5</td><td>29</td><td>30</td><td>31</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>			Load Power [W]	Time [mS]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0.0	—	—	—	201.0	148	170	172	402.0	69	78	88	603.0	46	46	60	804.0	40	40	44	1005.0	32	34	35	1105.5	29	30	31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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Model		ADA1000F (ADA1000F-30)		Temperature 25°C																																																				
Item		Load Regulation 静的負荷変動		Testing Circuitry Figure A																																																				
Object		V1:+30V33.5A																																																						
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Model		ADA1000F (ADA1000F-30)		Temperature		25°C																																							
Item		Ripple Voltage (by Load Current) リップル電圧 (負荷特性)		Testing Circuitry		Figure A																																							
Object		V1:+30V33.5A																																											
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<p> </p> <p> Input Volt. 170 V Input Volt. 264 V </p> <p>Ripple Voltage [mV]</p> <p>Load Current [A]</p>				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Output Voltage [mV]</th> </tr> <tr> <th>Input Volt. 170[V]</th> <th>Input Volt. 264[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>15</td><td>15</td></tr> <tr><td>6.00</td><td>20</td><td>20</td></tr> <tr><td>12.00</td><td>20</td><td>20</td></tr> <tr><td>18.00</td><td>25</td><td>25</td></tr> <tr><td>24.00</td><td>35</td><td>35</td></tr> <tr><td>30.00</td><td>45</td><td>45</td></tr> <tr><td>33.50</td><td>50</td><td>50</td></tr> <tr><td>36.85</td><td>55</td><td>55</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>				Load Current [A]	Ripple Output Voltage [mV]		Input Volt. 170[V]	Input Volt. 264[V]	0.00	15	15	6.00	20	20	12.00	20	20	18.00	25	25	24.00	35	35	30.00	45	45	33.50	50	50	36.85	55	55	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple Output Voltage [mV]																																												
	Input Volt. 170[V]	Input Volt. 264[V]																																											
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<p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>リップル電圧は、下図 p-p 値で示される。 (注) 斜線は定格負荷電流範囲を示す。</p> <p>T1: Due to AC Input Line 入力商用周期</p> <p>T2: Due to Switching スイッチング周期</p> <p>Ripple [mVp-p]</p> <p>T1</p> <p>T2</p>																																													
<p>Fig. Complex Ripple Wave Form 図 リップル波形詳細図</p>																																													

<p>Model ADA1000F (ADA1000F-30)</p>		<p>Temperature 25°C</p>																																							
<p>Item Ripple-Noise リップルノイズ</p>		<p>Testing Circuitry Figure A</p>																																							
<p>Object V1:+30V33.5A</p>																																									
<p>1. Graph</p> <p>—△— Input Volt. 170 V - - ○ - - - Input Volt. 264 V</p> <p>Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>リップルノイズは、下図 p-p 値で示される。 (注) 斜線は定格負荷電流範囲を示す。</p> <p>T1: Due to AC Input Line 入力商用周期 T2: Due to Switching スイッチング周期</p> <p>Fig. Complex Ripple Wave Form 図 リップル波形詳細図</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple-Noise [mV]</th> </tr> <tr> <th>Input Volt. 170[V]</th> <th>Input Volt. 264[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>20</td><td>20</td></tr> <tr><td>6.00</td><td>25</td><td>25</td></tr> <tr><td>12.00</td><td>25</td><td>25</td></tr> <tr><td>18.00</td><td>30</td><td>30</td></tr> <tr><td>24.00</td><td>40</td><td>40</td></tr> <tr><td>30.00</td><td>55</td><td>55</td></tr> <tr><td>33.50</td><td>60</td><td>60</td></tr> <tr><td>36.85</td><td>65</td><td>65</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> </tbody> </table>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 170[V]	Input Volt. 264[V]	0.00	20	20	6.00	25	25	12.00	25	25	18.00	30	30	24.00	40	40	30.00	55	55	33.50	60	60	36.85	65	65	--	--	--	--	--	--	--	--	--
Load Current [A]	Ripple-Noise [mV]																																								
	Input Volt. 170[V]	Input Volt. 264[V]																																							
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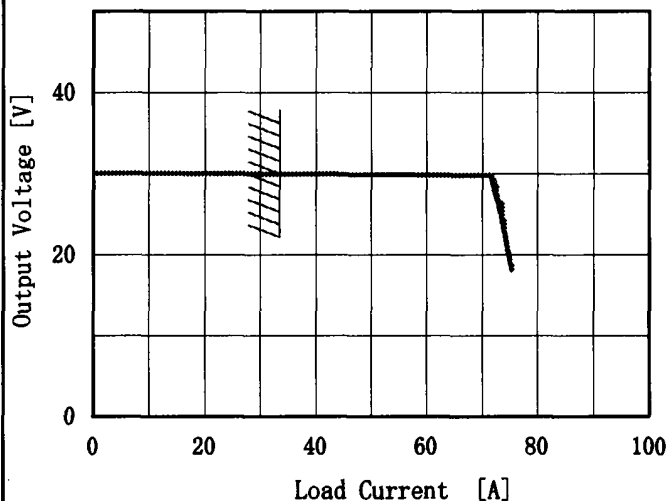


Model	ADA1000F (ADA1000F-30)
Item	Overcurrent Protection 過電流保護
Object	V1:+30V33.5A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

_____ Input Volt. 170 V
 _____ Input Volt. 200 V
 _____ Input Volt. 264 V



Note: Slanted line shows the range of the rated load current.

(注) 斜線は定格負荷電流範囲を示す。

Intermittent operation occurs when the output voltage is from 18V to 0V.

18V~0V間は、間欠モードとなる。

2. Values

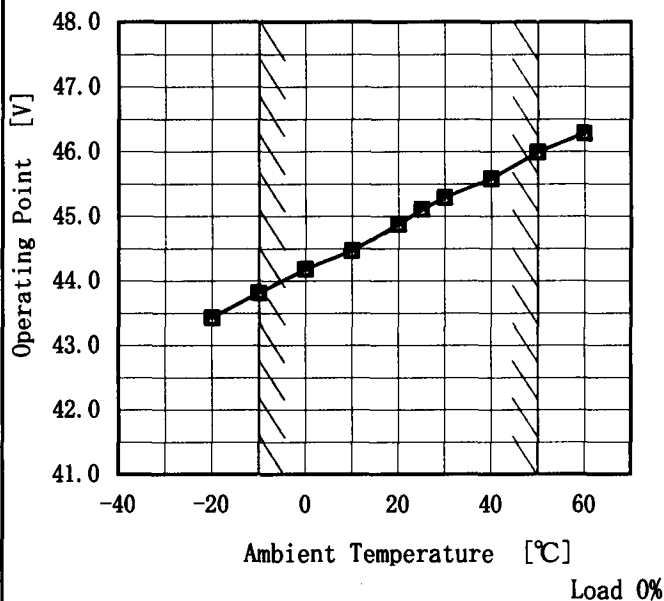
Output Voltage [V]	Load Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
30.0	71.32	71.53	71.71
28.5	71.88	72.00	72.46
27.0	72.45	72.70	72.84
24.0	73.57	73.65	73.77
21.0	74.41	74.47	74.52
18.0	75.35	75.41	75.42
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—



Model	ADA1000F (ADA1000F-30)
Item	Overvoltage Protection 過電圧保護
Object	V1:+30V33.5A

Testing Circuitry Figure A

1. Graph
- △— Input Volt. 170 V
 - Input Volt. 200 V
 - Input Volt. 264 V



2. Values

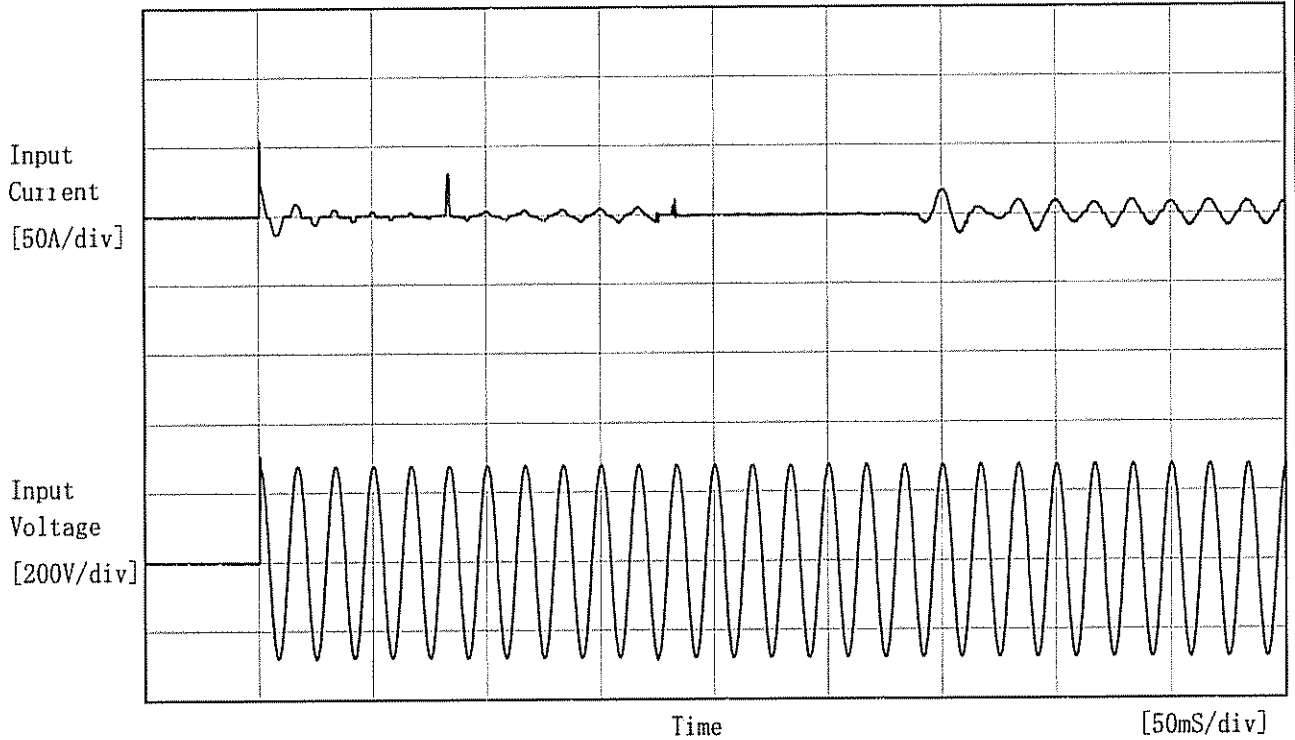
Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-20	43.43	43.43	43.43
-10	43.82	43.82	43.83
0	44.18	44.18	44.18
10	44.47	44.47	44.47
20	44.88	44.87	44.87
25	45.11	45.11	45.11
30	45.29	45.29	45.29
40	45.58	45.58	45.58
50	45.99	45.99	45.99
60	46.29	46.28	46.28
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Note: Slanted line shows the range of the rated ambient temperature.

(注) 斜線は定格周囲温度範囲を示す。



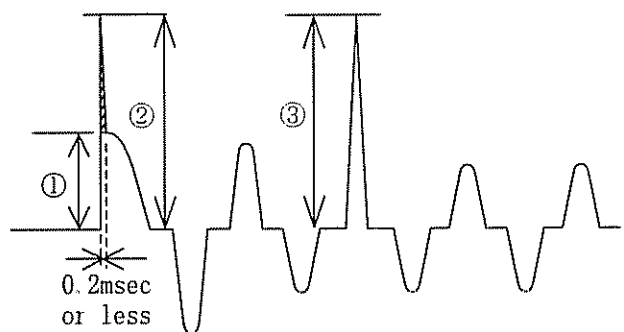
Model	ADA1000F (ADA1000F-30)	Temperature	25°C
Item	Inrush Current 突入電流	Testing Circuitry	Figure A
Object	_____		



Input Voltage 200 V
 Frequency 60 Hz
 Load 100 %

Inrush Current

- ① 24.6 [A]
- ② 54.7 [A] (0.2msec or less)*1
- ③ 20.4 [A]



*1 The specification of the inrush current (primary surge) means that the surge current to a built-in noise filter (0.2msec or less : waveform ②) is excluded.

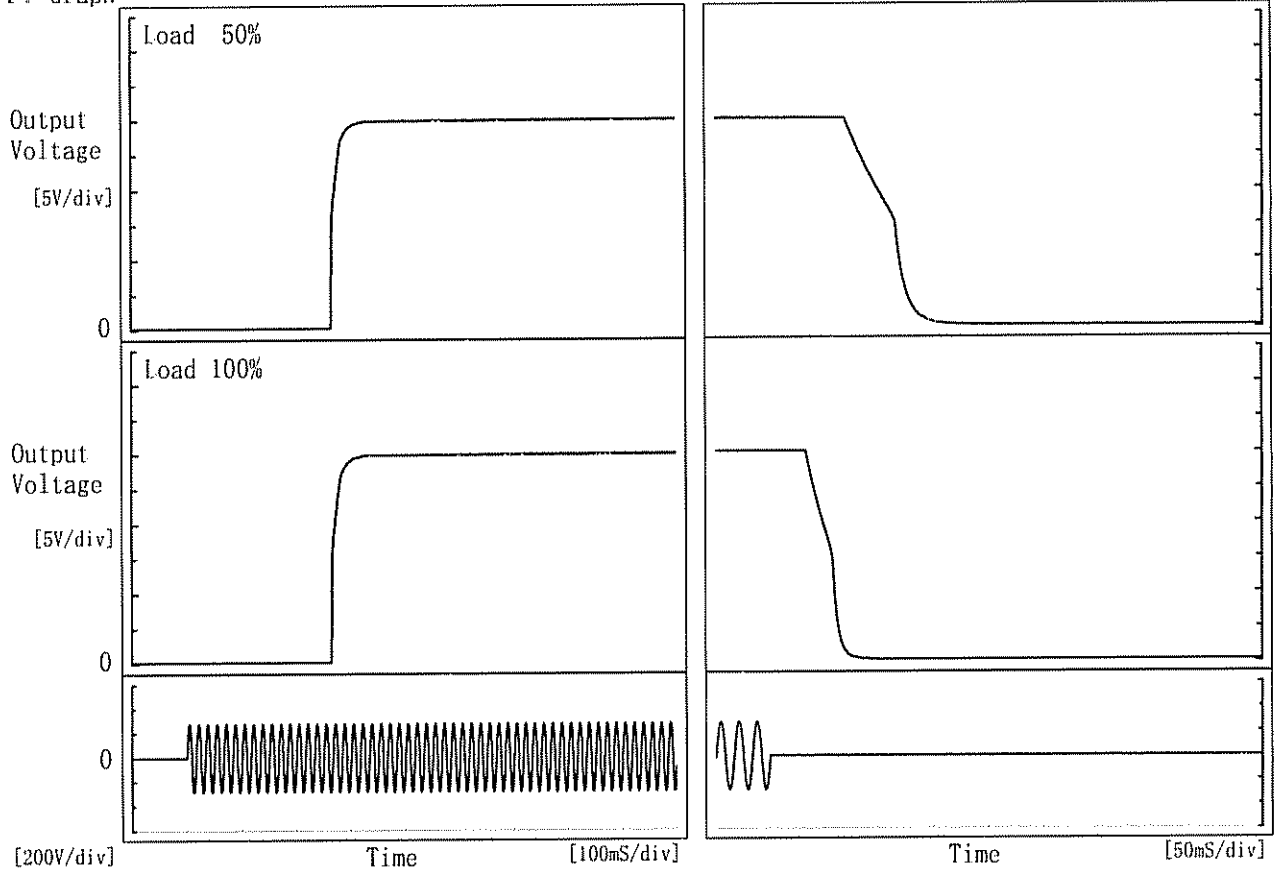
本製品の突入電流(1次サージ)の仕様は、内蔵ノイズフィルタ部へのサージ電流(0.2msec以下:波形②)を除きます。



Model	ADA1000F (ADA1000F-30)	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	VI:+30V33.5A		

1. Graph

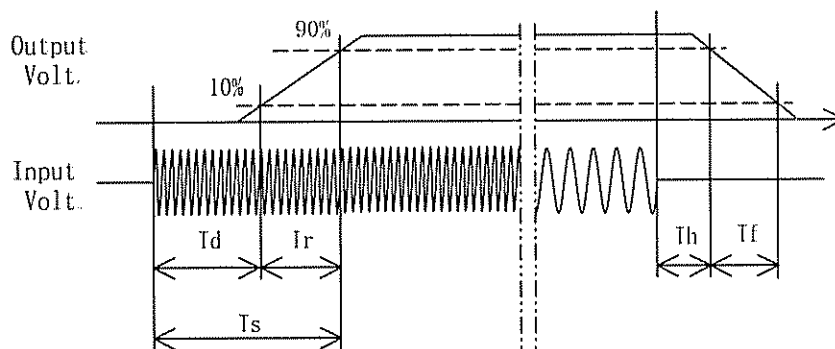
Input Volt. 200 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	265.5	18.5	284.0	76.0	54.5
100 %	261.5	22.5	284.0	37.0	28.3

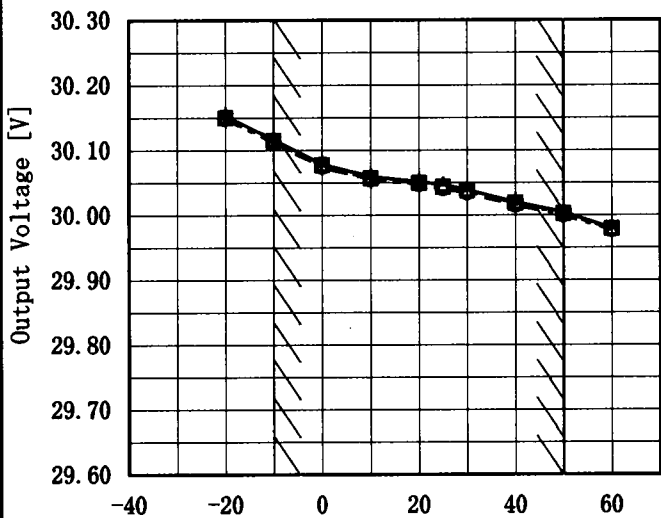




Model	ADA1000F (ADA1000F-30)
Item	Ambient Temperature Drift 周囲温度変動
Object	V1:+30V33. 5A

Testing Circuitry Figure A

1. Graph
- △— Input Volt. 170 V
 - Input Volt. 200 V
 - Input Volt. 264 V



Ambient Temperature [°C]
Load 100%

Note: Slanted line shows the range of the rated ambient temperature.

(注) 斜線は定格周囲温度範囲を示す。

2. Values

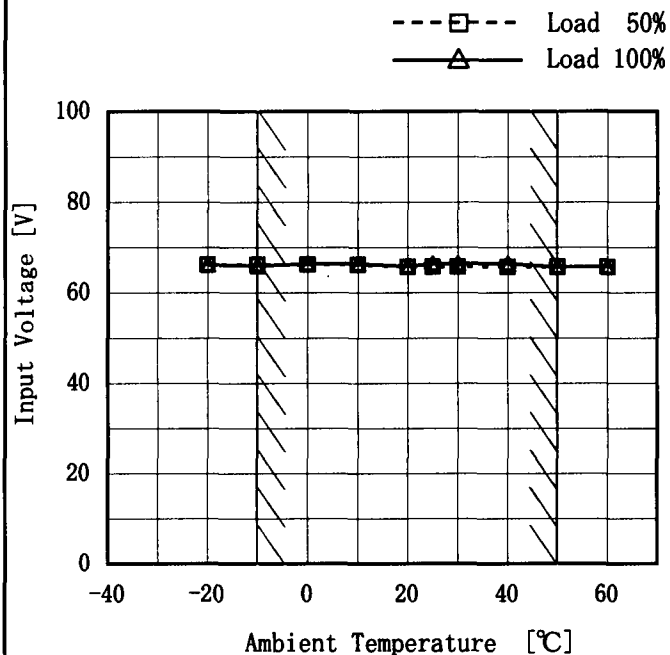
Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-20	30.153	30.150	30.149
-10	30.117	30.115	30.112
0	30.079	30.077	30.075
10	30.059	30.057	30.055
20	30.051	30.049	30.048
25	30.047	30.043	30.041
30	30.039	30.038	30.035
40	30.020	30.018	30.015
50	30.004	30.002	30.000
60	29.979	29.978	29.977
—	—	—	—



Model	ADA1000F (ADA1000F-30)
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	V1:+30V33.5A

Testing Circuitry Figure A

1. Graph



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	66	66
-10	66	66
0	66	66
10	66	66
20	66	66
25	66	66
30	66	66
40	66	66
50	66	66
60	66	66
—	—	—

Note: Slanted line shows the range of the rated ambient temperature.

(注) 斜線は定格周囲温度範囲を示す。



COSEL																												
Model	ADA1000F (ADA1000F-30)																											
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)	Testing Circuitry Figure A																										
Object	V1:+30V33.5A																											
<p>1. Graph</p> <p style="text-align: center;">Ambient Temperature [°C]</p> <p>Input Volt. 200 V Load 100 %</p> <p>Note: Slanted line shows the range of the rated ambient temperature. (注) 斜線は定格周囲温度範囲を示す。</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th>Ambient Temperature [°C]</th> <th>Ripple Voltage [mV]</th> </tr> </thead> <tbody> <tr><td>-10</td><td>75</td></tr> <tr><td>0</td><td>60</td></tr> <tr><td>25</td><td>50</td></tr> <tr><td>50</td><td>30</td></tr> <tr><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td></tr> </tbody> </table>	Ambient Temperature [°C]	Ripple Voltage [mV]	-10	75	0	60	25	50	50	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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COSEL																									
Model	ADA1000F (ADA1000F-30)	Temperature	25°C																						
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A																						
Object	V1:+30V33.5A																								
1. Graph		2. Values																							
<p style="text-align: center;">Time [H]</p> <p>Input Volt. 200V Load 100%</p>		<table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>30.076</td></tr> <tr><td>0.5</td><td>30.029</td></tr> <tr><td>1.0</td><td>30.030</td></tr> <tr><td>2.0</td><td>30.031</td></tr> <tr><td>3.0</td><td>30.031</td></tr> <tr><td>4.0</td><td>30.031</td></tr> <tr><td>5.0</td><td>30.031</td></tr> <tr><td>6.0</td><td>30.031</td></tr> <tr><td>7.0</td><td>30.031</td></tr> <tr><td>8.0</td><td>30.031</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	30.076	0.5	30.029	1.0	30.030	2.0	30.031	3.0	30.031	4.0	30.031	5.0	30.031	6.0	30.031	7.0	30.031	8.0	30.031
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COSEL		
Model	ADA1000F (ADA1000F-30)	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry Figure A
Object	V1:+30V33.5A	

1. Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -10 ~ 50°C

Input Voltage : 170 ~ 264V

Load Current : 0 ~ 33.5A

* Output Voltage Accuracy = $\pm (\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* Output Voltage Accuracy (Ration) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

1. 定電圧精度

周囲温度、入力電圧、負荷電流を下記仕様内で、任意に変動させたときの出力電圧の変動をいう。

周囲温度 : -10 ~ 50°C

入力電圧 : 170 ~ 264V

負荷電流 : 0 ~ 33.5A

* 定電圧精度(変動値) = $\pm (\text{出力電圧の最高値} - \text{出力電圧の最低値}) / 2$

* 定電圧精度(変動率) = $\frac{\text{変動値}}{\text{定格出力電圧}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage [V]	Output		Output Voltage Accuracy	
			Current [A]	Voltage [V]	Value [mV]	Ration [%]
Maximum Voltage	-10	170	0	30.116	±70	±0.2
Minimum Voltage	50	170	33.5	29.977		



COSEL			
Model	ADA1000F (ADA1000F-30)	Temperature	25°C
Item	Leakage Current 漏洩電流	Testing Circuitry	Figure B
Object	_____		

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DEN-AN	—	—	—
(B) IEC60950	—	—	—

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 240 [V]	Input Volt. 264 [V]
(B) IEC60950	0.32	0.46	0.51

2. Condition

Leakage current value is concluded after measuring each phases of AC input and by choosing the larger one.

交流入力の各相について測定し、その大きい方を漏洩電流測定値とする。

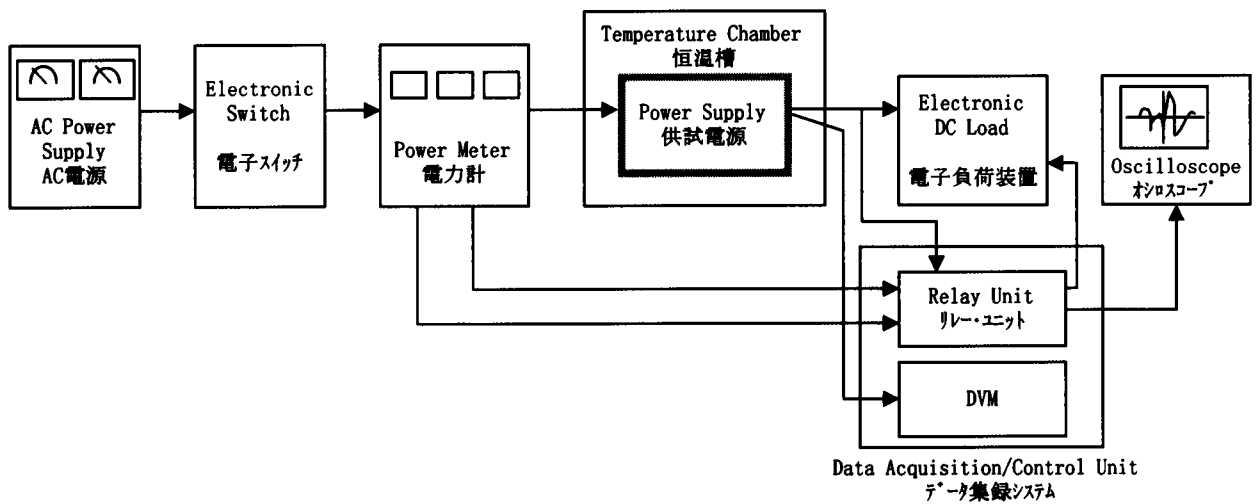


Figure A

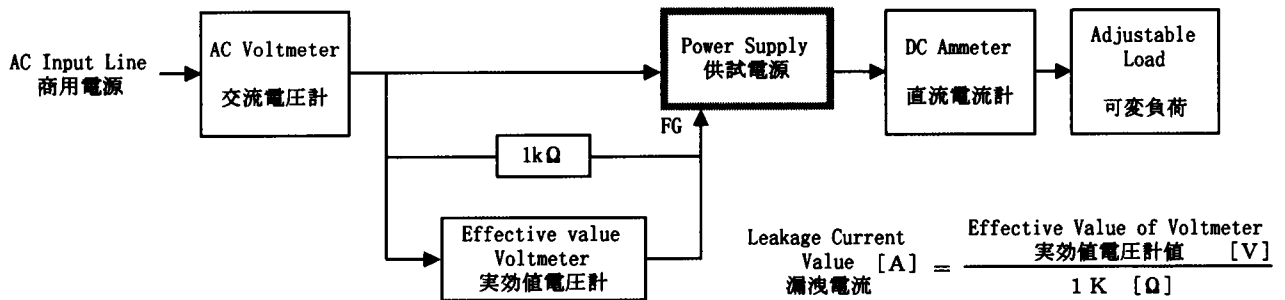


Figure B (DEN-AN)

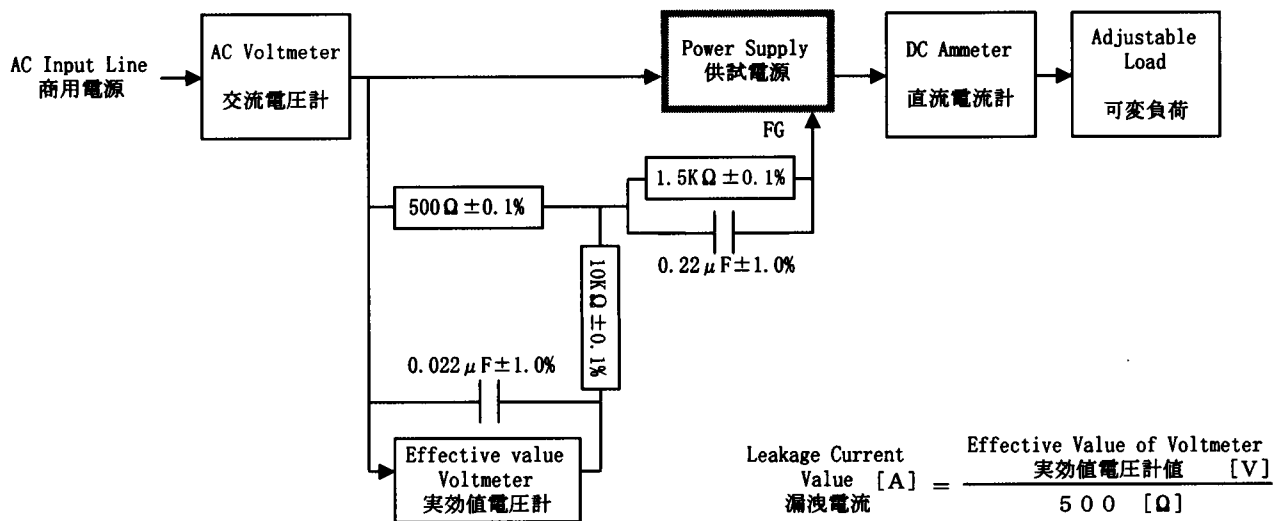


Figure B (IEC60950)