

TEST DATA OF TECS20F-5

Regulated DC Power Supply
February 20, 2025

Approved by : Tetsuro Hirata
Design Manager

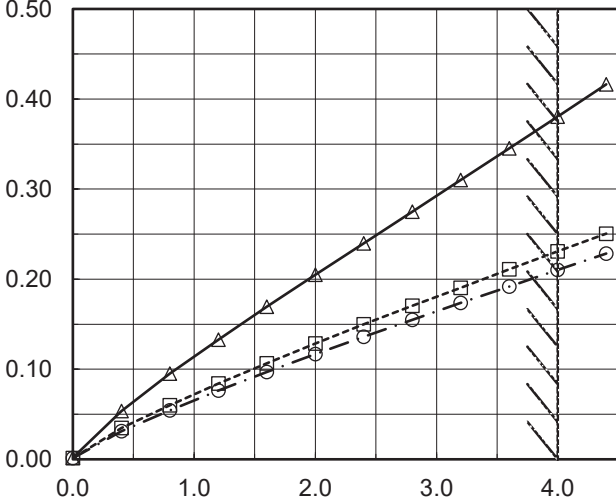
Prepared by : Junichi Otsubo
Design Engineer

COSEL CO.,LTD.

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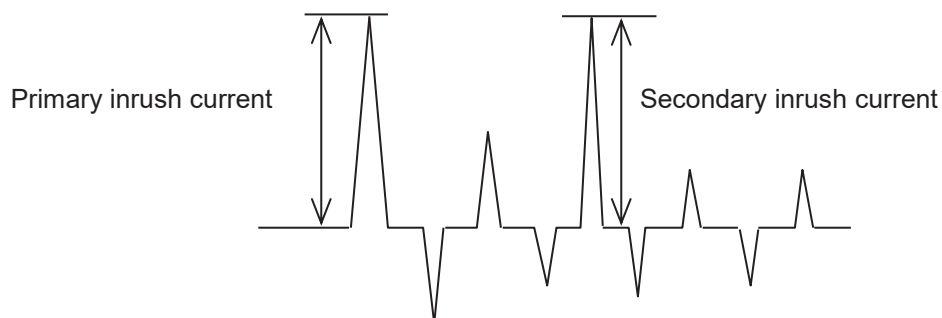
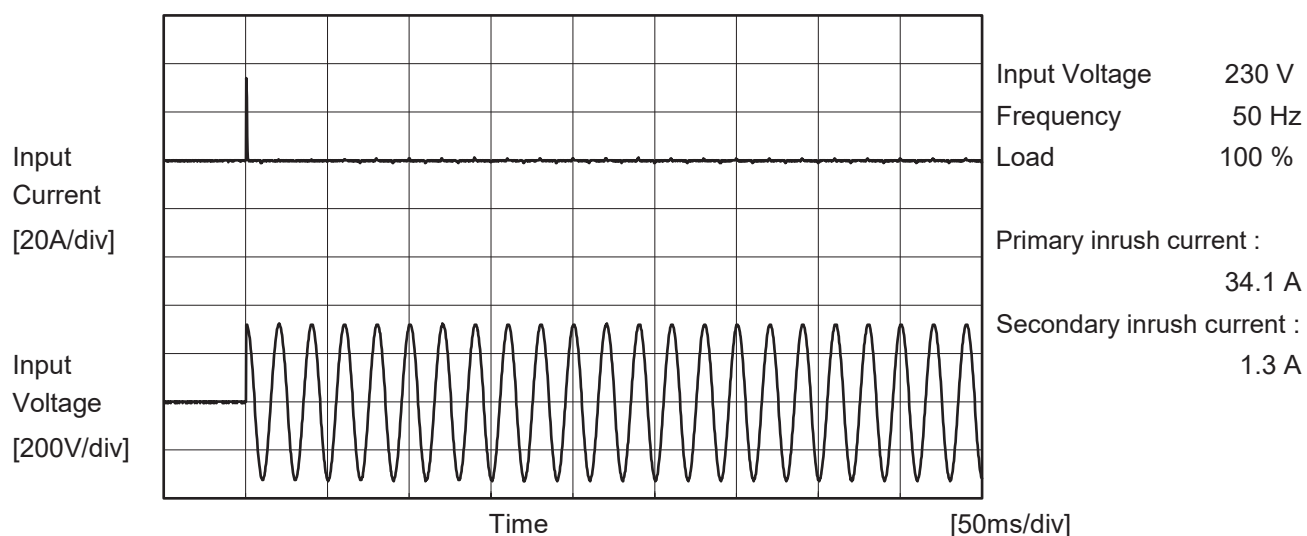
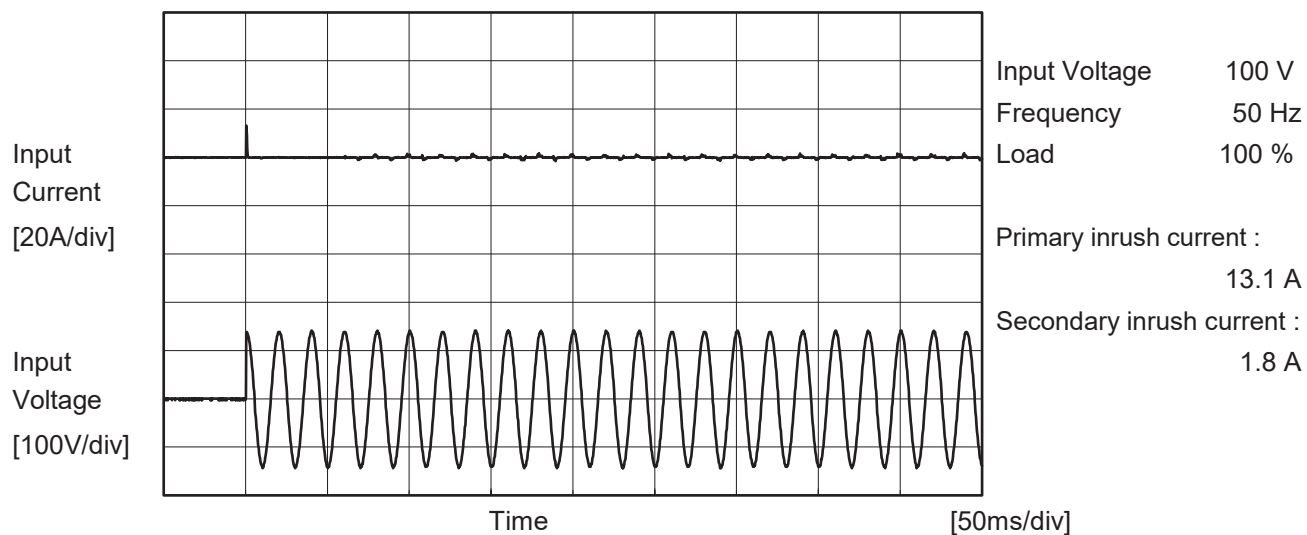
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Model	TECS20F-5	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





Model		TECS20F-5	Temperature 25°C Testing Circuitry Figure C
Item		Leakage Current	
Object		_____	

1.Results

[μA]

Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			100 [V]	230 [V]	264 [V]	
DEN-AN	Figure C-1	Both phases	23	47	54	Operation
		One of phases	28	70	81	Stand by
IEC62368-1	Figure C-2	Both phases	19	44	52	Operation
		One of phases	28	69	80	Stand by
	Figure C-3	Both phases	19	45	52	Operation
		One of phases	28	69	81	Stand by

The value for "One of phases" is the reference value only.

2.Condition

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

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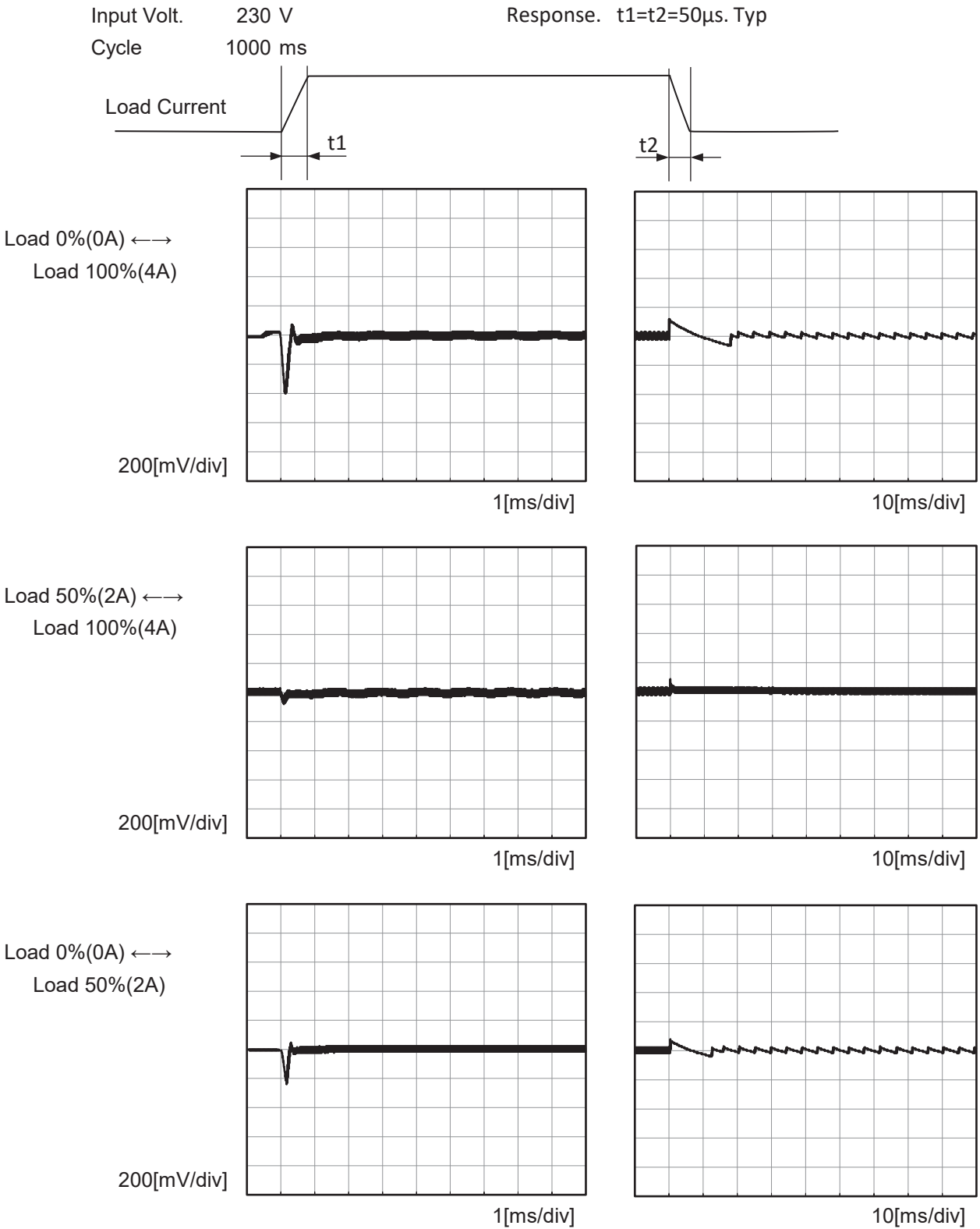
Model		TECS20F-5	Temperature Testing Circuitry	25°C Figure A
Item		Line Regulation		
Object		+5V4A		
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Model		TECS20F-5		Temperature		25°C																																																								
Item		Load Regulation		Testing Circuitry		Figure A																																																								
Object		+5V4A																																																												
1.Graph				2.Values																																																										
<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div>Input Volt.</div><div>100V</div></div><div><div>Input Volt.</div><div>200V</div></div><div><div>Input Volt.</div><div>230V</div></div></div></div> <div></div> <div><div>Note: Slanted line shows the range of the rated load current.</div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.0</td><td>5.107</td><td>5.105</td><td>5.108</td></tr><tr><td>0.4</td><td>5.106</td><td>5.106</td><td>5.106</td></tr><tr><td>0.8</td><td>5.106</td><td>5.106</td><td>5.106</td></tr><tr><td>1.2</td><td>5.106</td><td>5.106</td><td>5.106</td></tr><tr><td>1.6</td><td>5.106</td><td>5.106</td><td>5.105</td></tr><tr><td>2.0</td><td>5.106</td><td>5.106</td><td>5.105</td></tr><tr><td>2.4</td><td>5.106</td><td>5.105</td><td>5.105</td></tr><tr><td>2.8</td><td>5.105</td><td>5.105</td><td>5.105</td></tr><tr><td>3.2</td><td>5.102</td><td>5.104</td><td>5.104</td></tr><tr><td>3.6</td><td>5.101</td><td>5.101</td><td>5.101</td></tr><tr><td>4.0</td><td>5.100</td><td>5.101</td><td>5.100</td></tr><tr><td>4.4</td><td>5.100</td><td>5.100</td><td>5.100</td></tr></table>				Load Current [A]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	5.107	5.105	5.108	0.4	5.106	5.106	5.106	0.8	5.106	5.106	5.106	1.2	5.106	5.106	5.106	1.6	5.106	5.106	5.105	2.0	5.106	5.106	5.105	2.4	5.106	5.105	5.105	2.8	5.105	5.105	5.105	3.2	5.102	5.104	5.104	3.6	5.101	5.101	5.101	4.0	5.100	5.101	5.100	4.4	5.100	5.100	5.100
Load Current [A]	Output Voltage [V]																																																													
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4.0	5.100	5.101	5.100																																																											
4.4	5.100	5.100	5.100																																																											
Item		Ripple-Noise		Temperature		25°C																																																								
Object		+5V4A		Testing Circuitry		Figure B																																																								
1.Graph																																																														
<div><div><div>Input Voltage</div><div>230V</div></div><div><div>Load</div><div>100%</div></div></div> <div></div> <div><div>20[mV/div]</div><div>4[μs/div]</div></div>																																																														



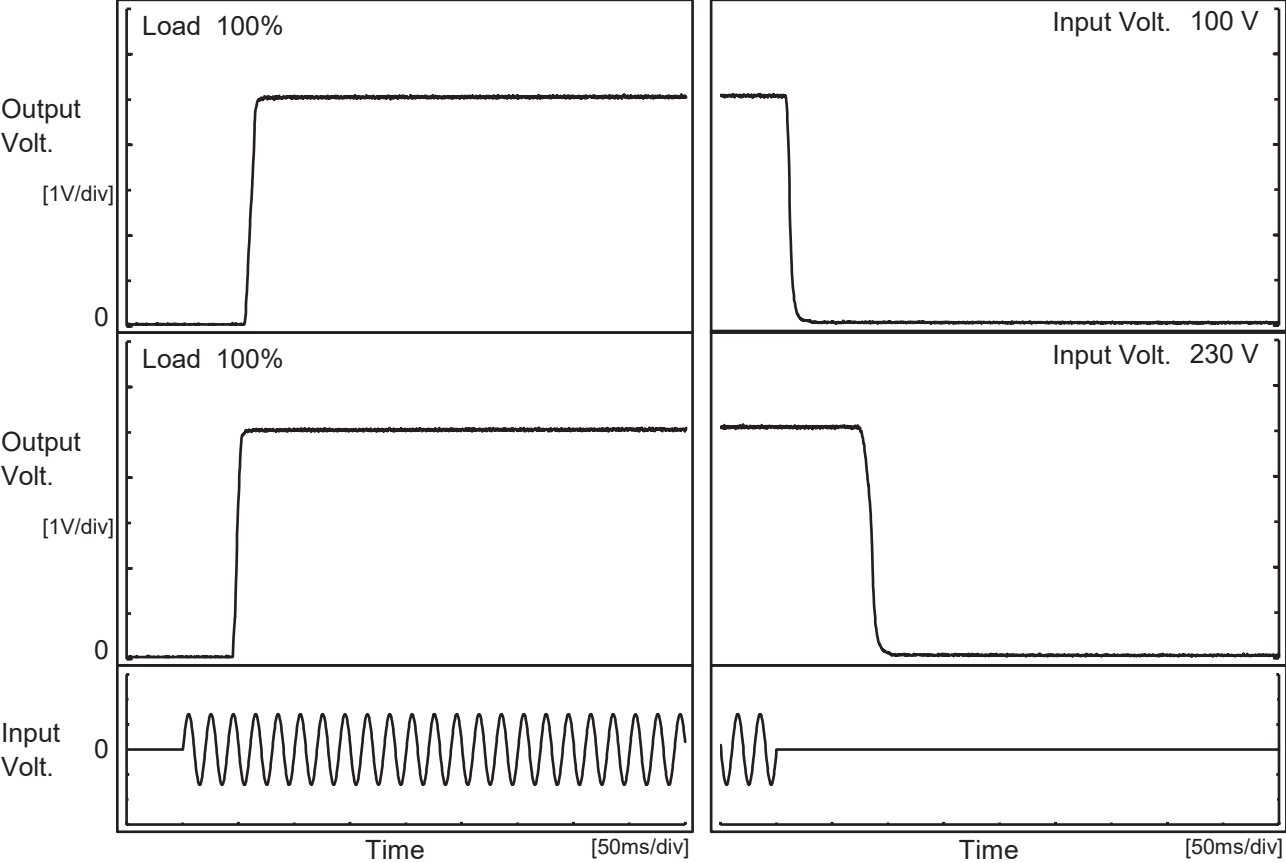
Model		TECS20F-5	Temperature 25°C Testing Circuitry Figure A
Item		Dynamic Load Response	
Object		+5V4A	





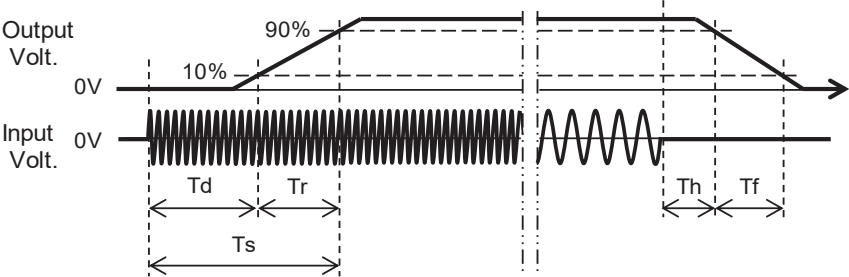
Model		TECS20F-5	Temperature 25°C Testing Circuitry Figure A
Item		Rise and Fall Time	
Object		+5V4A	

1.Graph



2.Values

		[ms]				
Input Volt.	Time	Td	Tr	Ts	Th	Tf
100V		56.8	8.0	64.8	10.3	6.0
230V		45.5	6.3	51.8	79.3	11.0



Model

TECS20F-5

Item

Hold-Up Time

Object

+5V4A

1.Graph

---□---

Load 50%

—△—

Load 100%

Hold-Up Time [ms]

1000

100

10

1

50

100

150

200

250

300

Input Voltage [V]

100

150

200

250

300

50

100

150

200

250

300

100

150

200

250

300

50

100

150

200

250

300

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 input voltage.

Temperature

25°C

Testing Circuitry

Figure A

2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	16	5
100	25	10
115	36	14
200	125	54
230	169	76
264	227	105
280	257	119
--	-	-
--	-	-

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Model		TECS20F-5	Temperature Testing Circuitry	25°C Figure A																																																						
Item		Instantaneous Interruption Compensation																																																								
Object		+5V4A																																																								
1.Graph		<div><div>—△—</div>Input Volt. 100V</div> <div><div>---□---</div>Input Volt. 200V</div> <div><div>-·-○-·-</div>Input Volt. 230V</div> <p>Instantaneous Compensation Time [ms]</p> <p>Load Current [A]</p>	2.Values																																																							
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.4</td><td>146</td><td>629</td><td>840</td></tr><tr><td>0.8</td><td>71</td><td>320</td><td>426</td></tr><tr><td>1.2</td><td>46</td><td>212</td><td>285</td></tr><tr><td>1.6</td><td>33</td><td>158</td><td>212</td></tr><tr><td>2.0</td><td>26</td><td>125</td><td>168</td></tr><tr><td>2.4</td><td>21</td><td>104</td><td>139</td></tr><tr><td>2.8</td><td>17</td><td>86</td><td>118</td></tr><tr><td>3.2</td><td>14</td><td>74</td><td>101</td></tr><tr><td>3.6</td><td>11</td><td>63</td><td>87</td></tr><tr><td>4.0</td><td>9</td><td>54</td><td>76</td></tr><tr><td>4.4</td><td>7</td><td>45</td><td>65</td></tr></table>		Load Current [A]	Time [ms]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	-	-	-	0.4	146	629	840	0.8	71	320	426	1.2	46	212	285	1.6	33	158	212	2.0	26	125	168	2.4	21	104	139	2.8	17	86	118	3.2	14	74	101	3.6	11	63	87	4.0	9	54	76	4.4	7	45	65
Load Current [A]	Time [ms]																																																									
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1.6	33	158	212																																																							
2.0	26	125	168																																																							
2.4	21	104	139																																																							
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Note: Slanted line shows the range of the rated load current.																																																										



Model		TECS20F-5		Temperature 25°C Testing Circuitry Figure A																																																								
Item		Overcurrent Protection																																																										
Object		+5V4A																																																										
1.Graph		<div><div></div>Input Volt. 100V</div> <div><div></div>Input Volt. 200V</div> <div><div></div>Input Volt. 230V</div> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Overcurrent protection is Hiccup mode.</p>		2.Values																																																								
				<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>5.00</td><td>5.76</td><td>5.91</td><td>6.28</td></tr><tr><td>4.75</td><td>-</td><td>-</td><td>-</td></tr><tr><td>4.50</td><td>-</td><td>-</td><td>-</td></tr><tr><td>4.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>3.50</td><td>-</td><td>-</td><td>-</td></tr><tr><td>3.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2.50</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>1.50</td><td>-</td><td>-</td><td>-</td></tr><tr><td>1.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.50</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr></table>		Output Voltage [V]	Load Current [A]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	5.00	5.76	5.91	6.28	4.75	-	-	-	4.50	-	-	-	4.00	-	-	-	3.50	-	-	-	3.00	-	-	-	2.50	-	-	-	2.00	-	-	-	1.50	-	-	-	1.00	-	-	-	0.50	-	-	-	0.00	-	-	-
Output Voltage [V]	Load Current [A]																																																											
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																									
5.00	5.76	5.91	6.28																																																									
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0.00	-	-	-																																																									



		Testing Circuitry Figure A	
Model	TECS20F-5		
Item	Ambient Temperature Drift		
Object	+5V4A		
1.Values Load 100%			
Ambient Temperature[°C]		Output Voltage [V]	
	Input Volt. 100V	Input Volt. 200V	Input Volt. 230V
-20	5.111	5.112	5.111
25	5.103	5.104	5.103
60	5.094	5.094	5.093
Item Minimum Input Voltage for Regulated Output Voltage		Testing Circuitry Figure A	
Object	+5V4A		
1.Values			
Ambient Temperature[°C]		Input Voltage [V]	
	Load 50%	Load 100%	
-20	45	67	
25	44	65	
60	44	63	
Item Overvoltage Protection		Testing Circuitry Figure A	
Object	+5V4A		
1.Values Load 0%			
Ambient Temperature[°C]		Operating Point [V]	
	Input Volt. 100V	Input Volt. 230V	
-20	6.23	6.16	
25	6.17	6.17	
60	6.16	6.16	

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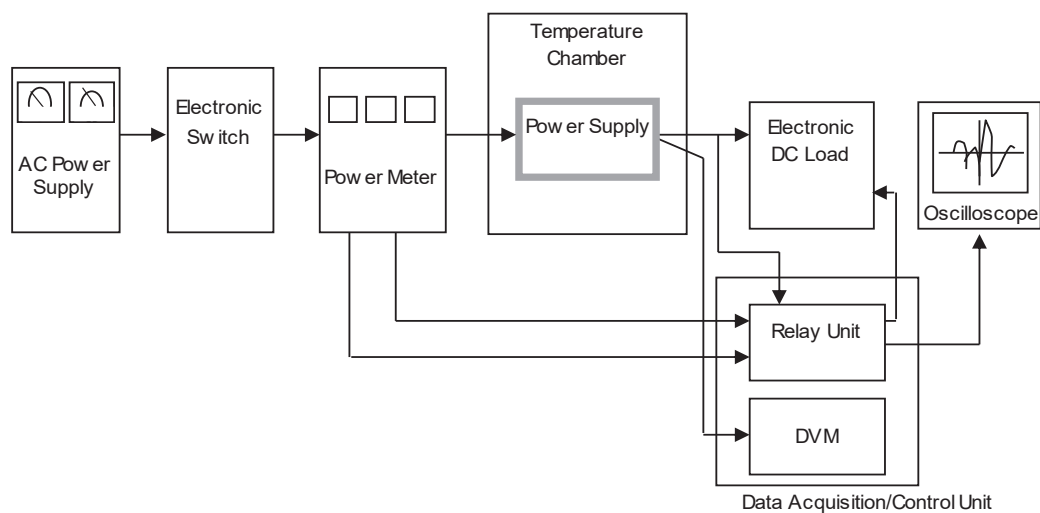


Figure A

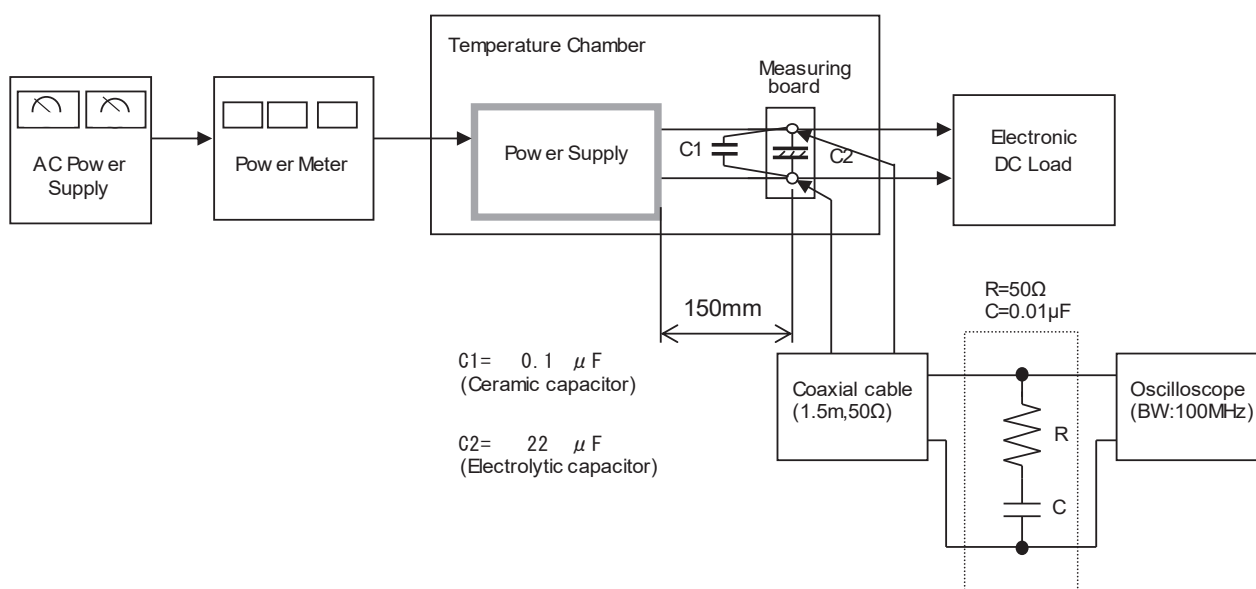


Figure B

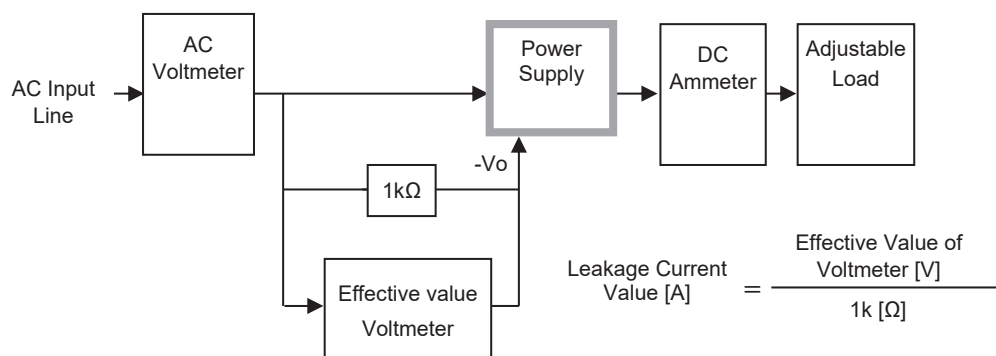


Figure C-1 (DEN-AN)

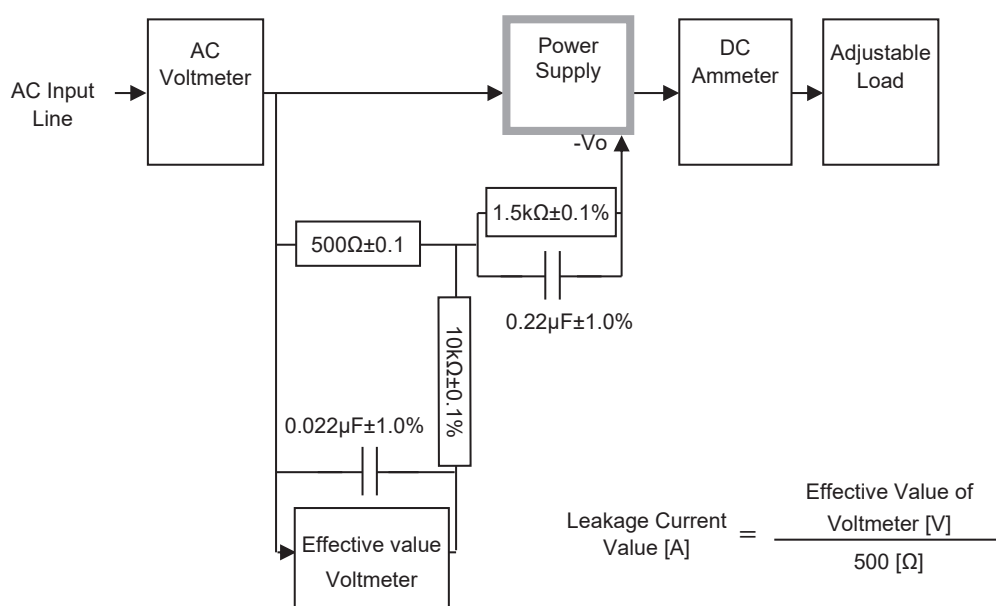


Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

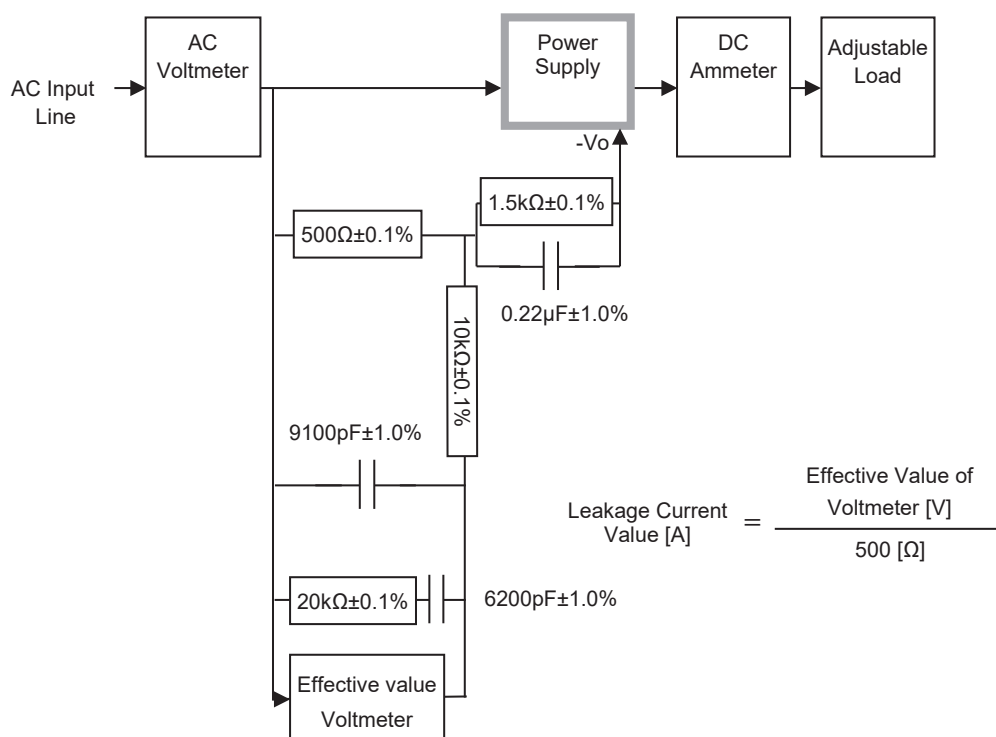


Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)