



TEST DATA OF FCA75F-24 (480V INPUT)

Regulated DC Power Supply

July 17, 2000

Approved by : *Yoshiaki Shimizu*
Yoshiaki Shimizu Design Manager

Prepared by : *Tetsukazu Okamoto*
Tetsukazu Okamoto Design Engineer

コーセル株式会社
COSEL CO., LTD.



C O N T E N T S

1. Line Regulation	1
静的入力変動	
2. Input Current (by Load Current)	2
入力電流 (負荷特性)	
3. Input Power (by Load Current)	3
入力電力 (負荷特性)	
4. Efficiency (by Input Voltage)	4
効率 (入力電圧特性)	
5. Efficiency (by Load Current)	5
効率 (負荷特性)	
6. Power Factor (by Input Voltage)	6
力率 (入力電圧特性)	
7. Power Factor (by Load Current)	7
力率 (負荷特性)	
8. Hold-Up Time	8
出力保持時間	
9. Instantaneous Interruption Compensation	9
瞬時停電保障	
10. Load Regulation	10
静的負荷変動	
11. Ripple Voltage (by Load Current)	11
リップル電圧 (負荷特性)	
12. Ripple-Noise	12
リップルノイズ	
13. Overcurrent Protection	13
過電流保護	
14. Overvoltage Protection	14
過電圧保護	
15. Inrush Current	15
突入電流	
16. Dynamic Load Responce	16
動的負荷変動	
17. Rise and Fall Time	17
立上り、立下り時間	
18. Ambient Temperature Drift	18
周囲温度変動	
19. Minimum Input Voltage for Regulated Output Voltage	19
最低レギュレーション電圧	
20. Ripple Voltage (by Ambient Temperature)	20
リップル電圧 (周囲温度特性)	
21. Time Lapse Drift	21
経時ドリフト	
22. Output Voltage Accuracy	22
定電圧精度	
23. Condensation	23
結露特性	
24. Leakage Current	24
漏洩電流	
25. Line Noise Tolerance	25
入力雑音耐量	
26. Conducted Emission	26
雑音端子電圧	
27. Figure of Testing Circuitry	27
測定回路図	

(Final Page 28)

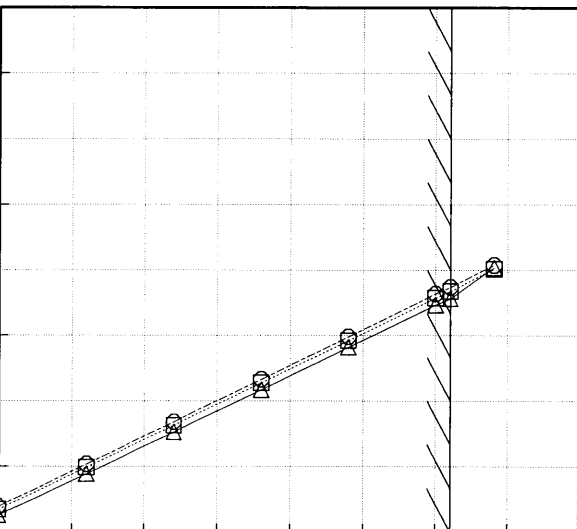
COSEL

Model	FCA75F-24																																		
Item	Line Regulation 静的入力変動	Temperature	25℃																																
Object	+24.0V3.1A	Testing Circuitry	Figure A																																
1. Graph		2. Values																																	
<div><div><div><div></div><div>□</div><div>Load 50%</div></div><div><div></div><div>△</div><div>Load 100%</div></div></div><div><div><div>Output Voltage [V]</div><div><div></div><div>24.400</div><div>24.300</div><div>24.200</div><div>24.100</div><div>24.000</div><div>23.900</div><div>23.800</div><div>23.700</div></div><div><div></div><div>250</div><div>300</div><div>350</div><div>400</div><div>450</div><div>500</div><div>550</div><div>600</div></div><div><div></div><div>Input Voltage [V]</div></div></div></div></div> <div><div>Note: Slanted line shows the range of the rated input voltage.</div><div>(注)斜線は定格入力電圧範囲を示す。</div></div>		<table><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><tr><td>370</td><td>24.058</td><td>24.055</td></tr><tr><td>380</td><td>24.058</td><td>24.055</td></tr><tr><td>400</td><td>24.058</td><td>24.055</td></tr><tr><td>440</td><td>24.058</td><td>24.060</td></tr><tr><td>480</td><td>24.058</td><td>24.061</td></tr><tr><td>520</td><td>24.058</td><td>24.054</td></tr><tr><td>528</td><td>24.066</td><td>24.054</td></tr><tr><td>540</td><td>24.056</td><td>24.054</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	370	24.058	24.055	380	24.058	24.055	400	24.058	24.055	440	24.058	24.060	480	24.058	24.061	520	24.058	24.054	528	24.066	24.054	540	24.056	24.054	—	—	—
Input Voltage [V]	Output Voltage [V]																																		
	Load 50%	Load 100%																																	
370	24.058	24.055																																	
380	24.058	24.055																																	
400	24.058	24.055																																	
440	24.058	24.060																																	
480	24.058	24.061																																	
520	24.058	24.054																																	
528	24.066	24.054																																	
540	24.056	24.054																																	
—	—	—																																	

COSEL

Model		FCA75F-24		Temperature		25℃																																																								
Item		Input Current (by Load Current) 入力電流 (負荷特性)		Testing Circuitry		Figure A																																																								
Object																																																														
1. Graph				2. Values																																																										
<div><div><div>—△— Input Volt. 380V</div><div>- - -□- - - Input Volt. 480V</div><div>- - -○- - - Input Volt. 528V</div></div><div><div><div><div>Input Current [A]</div><div>1</div><div>0.8</div><div>0.6</div><div>0.4</div><div>0.2</div><div>0</div></div><div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div></div><div><div>Load Current [A]</div></div></div></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 380 [V]</th><th>Input Volt. 480 [V]</th><th>Input Volt. 528 [V]</th></tr><tr><td>0.00</td><td>0.084</td><td>0.103</td><td>0.111</td></tr><tr><td>0.60</td><td>0.149</td><td>0.151</td><td>0.154</td></tr><tr><td>1.20</td><td>0.222</td><td>0.208</td><td>0.206</td></tr><tr><td>1.80</td><td>0.296</td><td>0.268</td><td>0.260</td></tr><tr><td>2.40</td><td>0.371</td><td>0.329</td><td>0.316</td></tr><tr><td>3.00</td><td>0.448</td><td>0.391</td><td>0.373</td></tr><tr><td>3.10</td><td>0.461</td><td>0.402</td><td>0.383</td></tr><tr><td>3.41</td><td>0.510</td><td>0.434</td><td>0.413</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></table>				Load Current [A]	Input Current [A]			Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]	0.00	0.084	0.103	0.111	0.60	0.149	0.151	0.154	1.20	0.222	0.208	0.206	1.80	0.296	0.268	0.260	2.40	0.371	0.329	0.316	3.00	0.448	0.391	0.373	3.10	0.461	0.402	0.383	3.41	0.510	0.434	0.413	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Input Current [A]																																																													
	Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]																																																											
0.00	0.084	0.103	0.111																																																											
0.60	0.149	0.151	0.154																																																											
1.20	0.222	0.208	0.206																																																											
1.80	0.296	0.268	0.260																																																											
2.40	0.371	0.329	0.316																																																											
3.00	0.448	0.391	0.373																																																											
3.10	0.461	0.402	0.383																																																											
3.41	0.510	0.434	0.413																																																											
—	—	—	—																																																											
—	—	—	—																																																											
—	—	—	—																																																											
—	—	—	—																																																											
<div><div>Note: Slanted line shows the range of the rated load current</div><div>(注)斜線は定格負荷電流範囲を示す。</div></div>																																																														

COSEL

Model		FCA75F-24		Temperature		25℃																																																								
Item		Input Power (by Load Current) 入力電力（負荷特性）		Testing Circuitry		Figure A																																																								
Object		_____																																																												
1. Graph				2. Values																																																										
<div><div><div>△</div><div>□</div><div>○</div></div><div>Input Volt. 380V</div><div>Input Volt. 480V</div><div>Input Volt. 528V</div></div> <div><div><div>Input Power [W]</div><div>200</div><div>150</div><div>100</div><div>50</div><div>0</div></div><div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div></div><div><div>Load Current [A]</div></div></div>  <div>Note: Slanted line shows the range of the rated load current</div> <div>(注)斜線は定格負荷電流範囲を示す。</div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Power [W]</th></tr><tr><th>Input Volt. 380 [V]</th><th>Input Volt. 480 [V]</th><th>Input Volt. 528 [V]</th></tr><tr><td>0.00</td><td>6.40</td><td>8.60</td><td>9.70</td></tr><tr><td>0.60</td><td>22.10</td><td>24.60</td><td>25.90</td></tr><tr><td>1.20</td><td>38.10</td><td>40.70</td><td>42.00</td></tr><tr><td>1.80</td><td>54.30</td><td>56.90</td><td>58.30</td></tr><tr><td>2.40</td><td>70.50</td><td>73.10</td><td>74.60</td></tr><tr><td>3.00</td><td>86.70</td><td>89.40</td><td>90.90</td></tr><tr><td>3.10</td><td>89.20</td><td>91.90</td><td>93.50</td></tr><tr><td>3.41</td><td>101.00</td><td>100.40</td><td>101.90</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></table>				Load Current [A]	Input Power [W]			Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]	0.00	6.40	8.60	9.70	0.60	22.10	24.60	25.90	1.20	38.10	40.70	42.00	1.80	54.30	56.90	58.30	2.40	70.50	73.10	74.60	3.00	86.70	89.40	90.90	3.10	89.20	91.90	93.50	3.41	101.00	100.40	101.90	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Input Power [W]																																																													
	Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]																																																											
0.00	6.40	8.60	9.70																																																											
0.60	22.10	24.60	25.90																																																											
1.20	38.10	40.70	42.00																																																											
1.80	54.30	56.90	58.30																																																											
2.40	70.50	73.10	74.60																																																											
3.00	86.70	89.40	90.90																																																											
3.10	89.20	91.90	93.50																																																											
3.41	101.00	100.40	101.90																																																											
—	—	—	—																																																											
—	—	—	—																																																											
—	—	—	—																																																											
—	—	—	—																																																											

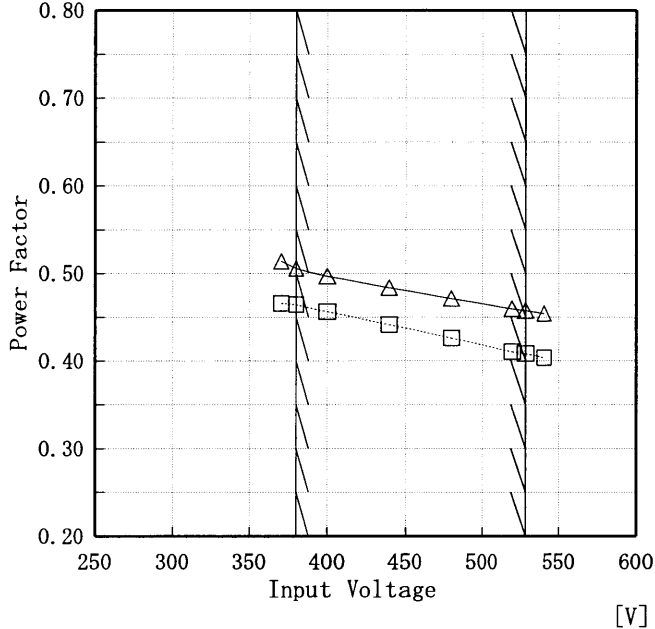
COSEL

Model FCA75F-24		Temperature 25°C Testing Circuitry Figure A																																
Item	Efficiency (by Input Voltage) 効率 (入力電圧特性)																																	
Object																																		
<p>1. Graph</p> <p> Load 50% Load 100% </p> <p>Efficiency [%]</p> <p>Input Voltage [V]</p> <p>Note: Slanted line shows the range of the rated input voltage.</p> <p>(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">Efficiency [%]</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> </thead> <tbody> <tr><td>370</td><td>76.6</td><td>81.7</td></tr> <tr><td>380</td><td>76.1</td><td>81.6</td></tr> <tr><td>400</td><td>75.3</td><td>81.4</td></tr> <tr><td>440</td><td>73.7</td><td>80.4</td></tr> <tr><td>480</td><td>71.9</td><td>79.3</td></tr> <tr><td>520</td><td>70.0</td><td>78.1</td></tr> <tr><td>528</td><td>69.7</td><td>77.9</td></tr> <tr><td>540</td><td>69.3</td><td>77.5</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	370	76.6	81.7	380	76.1	81.6	400	75.3	81.4	440	73.7	80.4	480	71.9	79.3	520	70.0	78.1	528	69.7	77.9	540	69.3	77.5	—	—	—
Input Voltage [V]	Efficiency [%]																																	
	Load 50%	Load 100%																																
370	76.6	81.7																																
380	76.1	81.6																																
400	75.3	81.4																																
440	73.7	80.4																																
480	71.9	79.3																																
520	70.0	78.1																																
528	69.7	77.9																																
540	69.3	77.5																																
—	—	—																																

COSEL

Model		FCA75F-24	Temperature25℃ Testing CircuitryFigure A																																																								
Item		Efficiency (by Load Current) 効率（負荷特性）																																																									
Object																																																											
1. Graph		<div><div>△</div>Input Volt. 380V</div> <div><div>□</div>Input Volt. 480V</div> <div><div>○</div>Input Volt. 528V</div> <div><div>Efficiency [%]</div><div><div>Load Current [A]</div></div></div> <div><div>Note: Slanted line shows the range of the rated load current</div><div>(注)斜線は定格負荷電流範囲を示す。</div></div>	2. Values																																																								
			<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 380 [V]</th><th>Input Volt. 480 [V]</th><th>Input Volt. 528 [V]</th></tr><tr><td>0.60</td><td>63.0</td><td>56.6</td><td>54.4</td></tr><tr><td>1.20</td><td>74.2</td><td>69.2</td><td>66.9</td></tr><tr><td>1.80</td><td>78.5</td><td>74.7</td><td>73.2</td></tr><tr><td>2.40</td><td>80.9</td><td>77.8</td><td>76.4</td></tr><tr><td>3.00</td><td>82.3</td><td>79.8</td><td>78.5</td></tr><tr><td>3.10</td><td>82.6</td><td>80.2</td><td>78.8</td></tr><tr><td>3.41</td><td>82.5</td><td>80.8</td><td>79.5</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><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table>		Load Current [A]	Efficiency [%]			Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]	0.60	63.0	56.6	54.4	1.20	74.2	69.2	66.9	1.80	78.5	74.7	73.2	2.40	80.9	77.8	76.4	3.00	82.3	79.8	78.5	3.10	82.6	80.2	78.8	3.41	82.5	80.8	79.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Efficiency [%]																																																										
	Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]																																																								
0.60	63.0	56.6	54.4																																																								
1.20	74.2	69.2	66.9																																																								
1.80	78.5	74.7	73.2																																																								
2.40	80.9	77.8	76.4																																																								
3.00	82.3	79.8	78.5																																																								
3.10	82.6	80.2	78.8																																																								
3.41	82.5	80.8	79.5																																																								
—	—	—	—																																																								
—	—	—	—																																																								
—	—	—	—																																																								
—	—	—	—																																																								
—	—	—	—																																																								

COSEL

Model FCA75F-24		Temperature 25°C Testing Circuitry Figure A																																
Item	Power Factor (by Input Voltage) 力率 (入力電圧特性)																																	
Object	*																																	
<p>1. Graph</p> <p>-----□----- Load 50% -----△----- Load 100%</p>  <p>Power Factor</p> <p>Input Voltage [V]</p> <p>Note: Slanted line shows the range of the rated input voltage.</p> <p>(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">Power Factor</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> </thead> <tbody> <tr><td>370</td><td>0.47</td><td>0.51</td></tr> <tr><td>380</td><td>0.46</td><td>0.51</td></tr> <tr><td>400</td><td>0.46</td><td>0.50</td></tr> <tr><td>440</td><td>0.44</td><td>0.48</td></tr> <tr><td>480</td><td>0.43</td><td>0.47</td></tr> <tr><td>520</td><td>0.41</td><td>0.46</td></tr> <tr><td>528</td><td>0.41</td><td>0.46</td></tr> <tr><td>540</td><td>0.40</td><td>0.45</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Input Voltage [V]	Power Factor		Load 50%	Load 100%	370	0.47	0.51	380	0.46	0.51	400	0.46	0.50	440	0.44	0.48	480	0.43	0.47	520	0.41	0.46	528	0.41	0.46	540	0.40	0.45	—	—	—
Input Voltage [V]	Power Factor																																	
	Load 50%	Load 100%																																
370	0.47	0.51																																
380	0.46	0.51																																
400	0.46	0.50																																
440	0.44	0.48																																
480	0.43	0.47																																
520	0.41	0.46																																
528	0.41	0.46																																
540	0.40	0.45																																
—	—	—																																

COSEL

Model		FCA75F-24		Temperature		25℃																																																								
Item		Power Factor (by Load Current) 力率（負荷特性）		Testing Circuitry		Figure A																																																								
Object																																																														
1. Graph				2. Values																																																										
<div><div><div>△</div><div>□</div><div>○</div></div><div><div>Input Volt. 380V</div><div>Input Volt. 480V</div><div>Input Volt. 528V</div></div></div> <div><div><div>Power Factor</div><div>0.8</div><div>0.7</div><div>0.6</div><div>0.5</div><div>0.4</div><div>0.3</div><div>0.2</div><div>0.1</div><div>0.0</div></div><div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div></div><div><div>Load Current</div><div>[A]</div></div></div> <div><div>Note: Slanted line shows the range of the rated load current</div><div>(注) 斜線は定格負荷電流範囲を示す。</div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Power Factor</th></tr><tr><th>Input Volt. 380 [V]</th><th>Input Volt. 480 [V]</th><th>Input Volt. 528 [V]</th></tr><tr><td>0.00</td><td>0.20</td><td>0.17</td><td>0.16</td></tr><tr><td>0.60</td><td>0.40</td><td>0.34</td><td>0.32</td></tr><tr><td>1.20</td><td>0.46</td><td>0.41</td><td>0.39</td></tr><tr><td>1.80</td><td>0.49</td><td>0.44</td><td>0.43</td></tr><tr><td>2.40</td><td>0.50</td><td>0.46</td><td>0.45</td></tr><tr><td>3.00</td><td>0.51</td><td>0.48</td><td>0.46</td></tr><tr><td>3.10</td><td>0.51</td><td>0.48</td><td>0.46</td></tr><tr><td>3.41</td><td>0.52</td><td>0.48</td><td>0.47</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></table>				Load Current [A]	Power Factor			Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]	0.00	0.20	0.17	0.16	0.60	0.40	0.34	0.32	1.20	0.46	0.41	0.39	1.80	0.49	0.44	0.43	2.40	0.50	0.46	0.45	3.00	0.51	0.48	0.46	3.10	0.51	0.48	0.46	3.41	0.52	0.48	0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Power Factor																																																													
	Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]																																																											
0.00	0.20	0.17	0.16																																																											
0.60	0.40	0.34	0.32																																																											
1.20	0.46	0.41	0.39																																																											
1.80	0.49	0.44	0.43																																																											
2.40	0.50	0.46	0.45																																																											
3.00	0.51	0.48	0.46																																																											
3.10	0.51	0.48	0.46																																																											
3.41	0.52	0.48	0.47																																																											
—	—	—	—																																																											
—	—	—	—																																																											
—	—	—	—																																																											
—	—	—	—																																																											

COSEL

Model		FCA75F-24	Temperature		25°C																																																																
Item		Hold-Up Time 出力保持時間	Testing Circuitry		Figure A																																																																
Object		+24.0V3.1A																																																																			
1. Graph			2. Values																																																																		
<div><div><div>.....□.....</div><div>Load 50%</div></div><div><div>————△———</div><div>Load 100%</div></div></div> <div><div>Hold-Up Time</div><div>[mS]</div><div>1000</div><div>100</div><div>10</div><div>1</div><div>250 300 350 400 450 500 550 600</div><div>Input Voltage</div><div>[V]</div></div> <table><thead><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Hold-Up Time [mS]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>370</td><td>323</td><td>162</td></tr><tr><td>380</td><td>342</td><td>173</td></tr><tr><td>400</td><td>386</td><td>195</td></tr><tr><td>440</td><td>477</td><td>244</td></tr><tr><td>480</td><td>576</td><td>295</td></tr><tr><td>520</td><td>681</td><td>353</td></tr><tr><td>528</td><td>703</td><td>366</td></tr><tr><td>540</td><td>736</td><td>384</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></tbody></table> <div><p>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</p><p>Note: Slanted line shows the range of the rated input voltage.</p><p>出力保持時間とは、入力電圧断から出力電圧が、定電圧精度の規格範囲を保持しているところまでの時間。</p><p>(注)斜線は定格入力電圧範囲を示す。</p></div>			Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	370	323	162	380	342	173	400	386	195	440	477	244	480	576	295	520	681	353	528	703	366	540	736	384	—	—	—	<table><thead><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Hold-Up Time [mS]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>370</td><td>323</td><td>162</td></tr><tr><td>380</td><td>342</td><td>173</td></tr><tr><td>400</td><td>386</td><td>195</td></tr><tr><td>440</td><td>477</td><td>244</td></tr><tr><td>480</td><td>576</td><td>295</td></tr><tr><td>520</td><td>681</td><td>353</td></tr><tr><td>528</td><td>703</td><td>366</td></tr><tr><td>540</td><td>736</td><td>384</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></tbody></table>			Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	370	323	162	380	342	173	400	386	195	440	477	244	480	576	295	520	681	353	528	703	366	540	736	384	—	—	—
Input Voltage [V]	Hold-Up Time [mS]																																																																				
	Load 50%	Load 100%																																																																			
370	323	162																																																																			
380	342	173																																																																			
400	386	195																																																																			
440	477	244																																																																			
480	576	295																																																																			
520	681	353																																																																			
528	703	366																																																																			
540	736	384																																																																			
—	—	—																																																																			
Input Voltage [V]	Hold-Up Time [mS]																																																																				
	Load 50%	Load 100%																																																																			
370	323	162																																																																			
380	342	173																																																																			
400	386	195																																																																			
440	477	244																																																																			
480	576	295																																																																			
520	681	353																																																																			
528	703	366																																																																			
540	736	384																																																																			
—	—	—																																																																			

COSEL

Model		FCA75F-24		Temperature		25℃																																																				
Item		Instantaneous Interruption Compensation 瞬時停電保障		Testing Circuitry		Figure A																																																				
Object		+24.0V3.1A																																																								
1. Graph				2. Values																																																						
<div><div><div>—△—</div><div>—□—</div><div>—○—</div></div><div><div>Input Volt.380 V</div><div>Input Volt.480 V</div><div>Input Volt.528 V</div></div></div> <div><div><div>[mS]</div><div>10000</div><div>1000</div><div>100</div><div>10</div><div>1</div></div><div><div>Instantaneous Compensation Time</div><div></div></div><div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div></div><div><div>Load Current</div><div>[A]</div></div></div> <div><div>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</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">Time [mS]</th></tr><tr><th>Input Volt. 380[V]</th><th>Input Volt. 480[V]</th><th>Input Volt. 528[V]</th></tr><tr><td>0.00</td><td>—</td><td>—</td><td>—</td></tr><tr><td>0.60</td><td>798</td><td>1293</td><td>1563</td></tr><tr><td>1.20</td><td>423</td><td>714</td><td>872</td></tr><tr><td>1.80</td><td>289</td><td>492</td><td>606</td></tr><tr><td>2.40</td><td>218</td><td>374</td><td>464</td></tr><tr><td>3.00</td><td>173</td><td>303</td><td>374</td></tr><tr><td>3.10</td><td>170</td><td>293</td><td>364</td></tr><tr><td>3.41</td><td>153</td><td>266</td><td>331</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></table>				Load Current [A]	Time [mS]			Input Volt. 380[V]	Input Volt. 480[V]	Input Volt. 528[V]	0.00	—	—	—	0.60	798	1293	1563	1.20	423	714	872	1.80	289	492	606	2.40	218	374	464	3.00	173	303	374	3.10	170	293	364	3.41	153	266	331	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Time [mS]																																																									
	Input Volt. 380[V]	Input Volt. 480[V]	Input Volt. 528[V]																																																							
0.00	—	—	—																																																							
0.60	798	1293	1563																																																							
1.20	423	714	872																																																							
1.80	289	492	606																																																							
2.40	218	374	464																																																							
3.00	173	303	374																																																							
3.10	170	293	364																																																							
3.41	153	266	331																																																							
—	—	—	—																																																							
—	—	—	—																																																							
—	—	—	—																																																							

瞬時停電保障時間とは、出力電圧が定電圧精度の規格範囲を保持している瞬時停電時間をいう。

(注)斜線は定格負荷電流範囲を示す。

BC-3282

COSEL

Model		FCA75F-24		Temperature		25℃																																							
Item		Ripple Voltage(by Load Current) リップル電圧(負荷特性)		Testing Circuitry		Figure A																																							
Object		+24.0V 3.1A																																											
1. Graph				2.Values																																									
<div><div>[mV]</div><div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div></div><div><div>Ripple Voltage</div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div></div><div><div>Load Current</div><div>[A]</div></div><div><div>—△—</div><div>Input Volt. 380V</div></div><div><div>---○---</div><div>Input Volt. 528V</div></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Output Voltage [mV]</th></tr><tr><th>Input Volt. 380 [V]</th><th>Input Volt. 528 [V]</th></tr><tr><td>0.00</td><td>25</td><td>25</td></tr><tr><td>0.60</td><td>25</td><td>30</td></tr><tr><td>1.20</td><td>30</td><td>35</td></tr><tr><td>1.80</td><td>30</td><td>35</td></tr><tr><td>2.40</td><td>35</td><td>40</td></tr><tr><td>3.00</td><td>40</td><td>40</td></tr><tr><td>3.10</td><td>40</td><td>40</td></tr><tr><td>3.41</td><td>40</td><td>40</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></table>				Load Current [A]	Ripple Output Voltage [mV]		Input Volt. 380 [V]	Input Volt. 528 [V]	0.00	25	25	0.60	25	30	1.20	30	35	1.80	30	35	2.40	35	40	3.00	40	40	3.10	40	40	3.41	40	40	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple Output Voltage [mV]																																												
	Input Volt. 380 [V]	Input Volt. 528 [V]																																											
0.00	25	25																																											
0.60	25	30																																											
1.20	30	35																																											
1.80	30	35																																											
2.40	35	40																																											
3.00	40	40																																											
3.10	40	40																																											
3.41	40	40																																											
—	—	—																																											
—	—	—																																											
—	—	—																																											
<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。</p> <p>(注) 斜線は定格負荷電流範囲を示す。</p> <div><div>T1: Due to AC Input Line 入力商用周期</div><div>T2: Due to Switching スイッチング周期</div><div><div>→</div><div>T2</div><div>←</div></div><div><div>Ripple [mVp-p]</div><div>T1</div></div></div>				<p>Fig. Complex Ripple Wave Form</p> <p>図 リップル波形詳細図</p>																																									

COSEL

Model		FCA75F-24	Temperature Testing Circuitry	25℃ Figure A
Item		Ripple-Noise リップルノイズ		
Object		+24.0V 3.1A		

1. Graph

—△— Input Volt. 380V

—○— Input Volt. 528V

[mV]

Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 380 [V]	Input Volt. 528 [V]
0.00	120	155
0.60	130	175
1.20	140	190
1.80	155	205
2.40	225	265
3.00	280	330
3.10	310	360
3.41	340	420
—	—	—
—	—	—
—	—	—

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。

T1: Due to AC Input Line
入力商用周期

T2: Due to Switching
スイッチング周期

Fig. Complex Ripple Wave Form
図 リップル波形詳細図

COSEL

Model		FCA75F-24	Temperature25℃ Testing CircuitryFigure A																																																								
Item		Overcurrent Protection 過電流保護																																																									
Object		+24.0V3.1A																																																									
1. Graph			2. Values																																																								
<div><div>[V]</div><div><div>Output Voltage</div><div>Load Current [A]</div></div><div>Note: Slanted line shows the range of the rated load current.</div><div>(注) 斜線は定格負荷電流範囲を示す。</div></div>			<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 380 [V]</th><th>Input Volt. 480 [V]</th><th>Input Volt. 528 [V]</th></tr><tr><td>24.00</td><td>12.731</td><td>12.441</td><td>12.377</td></tr><tr><td>22.80</td><td>12.781</td><td>12.518</td><td>12.464</td></tr><tr><td>21.60</td><td>12.817</td><td>12.572</td><td>12.527</td></tr><tr><td>19.20</td><td>12.830</td><td>12.616</td><td>12.590</td></tr><tr><td>16.80</td><td>12.796</td><td>12.615</td><td>12.601</td></tr><tr><td>14.40</td><td>12.723</td><td>12.580</td><td>12.577</td></tr><tr><td>12.00</td><td>12.638</td><td>12.526</td><td>12.532</td></tr><tr><td>9.60</td><td>12.548</td><td>12.468</td><td>12.480</td></tr><tr><td>7.20</td><td>12.450</td><td>12.393</td><td>12.414</td></tr><tr><td>4.80</td><td>12.327</td><td>12.289</td><td>12.315</td></tr><tr><td>2.40</td><td>12.151</td><td>12.111</td><td>12.131</td></tr><tr><td>0.00</td><td>12.529</td><td>12.487</td><td>12.502</td></tr></table>		Output Voltage [V]	Load Current [A]			Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]	24.00	12.731	12.441	12.377	22.80	12.781	12.518	12.464	21.60	12.817	12.572	12.527	19.20	12.830	12.616	12.590	16.80	12.796	12.615	12.601	14.40	12.723	12.580	12.577	12.00	12.638	12.526	12.532	9.60	12.548	12.468	12.480	7.20	12.450	12.393	12.414	4.80	12.327	12.289	12.315	2.40	12.151	12.111	12.131	0.00	12.529	12.487	12.502
Output Voltage [V]	Load Current [A]																																																										
	Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]																																																								
24.00	12.731	12.441	12.377																																																								
22.80	12.781	12.518	12.464																																																								
21.60	12.817	12.572	12.527																																																								
19.20	12.830	12.616	12.590																																																								
16.80	12.796	12.615	12.601																																																								
14.40	12.723	12.580	12.577																																																								
12.00	12.638	12.526	12.532																																																								
9.60	12.548	12.468	12.480																																																								
7.20	12.450	12.393	12.414																																																								
4.80	12.327	12.289	12.315																																																								
2.40	12.151	12.111	12.131																																																								
0.00	12.529	12.487	12.502																																																								

COSEL

Model		FCA75F-24
Item		Overvoltage Protection 過電圧保護
Object		+24.0V3.1A

1. Graph

—△—

Input Volt. 380 V

---□---

Input Volt. 480 V

---○---

Input Volt. 528 V

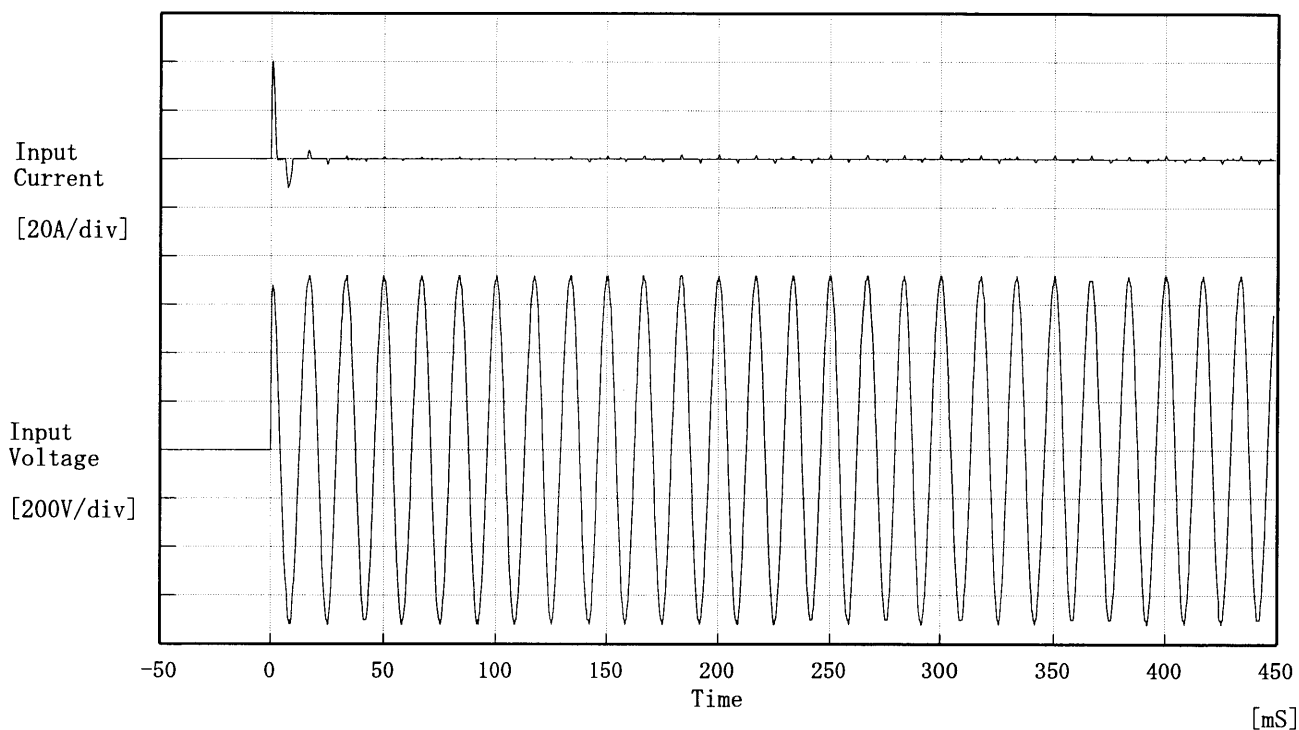
[V]

Operating Point

[V]

COSEL

Model	FCA75F-24	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current 突入電流	
Object		



Input Voltage 480 V

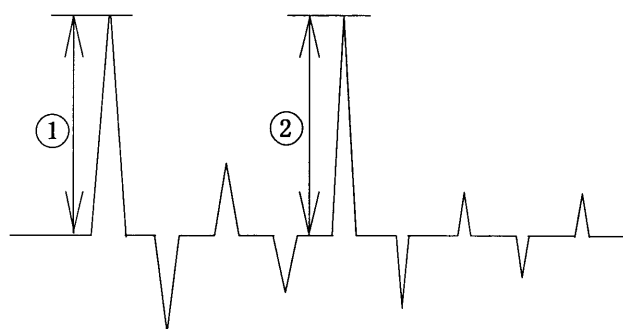
Frequency 60 Hz

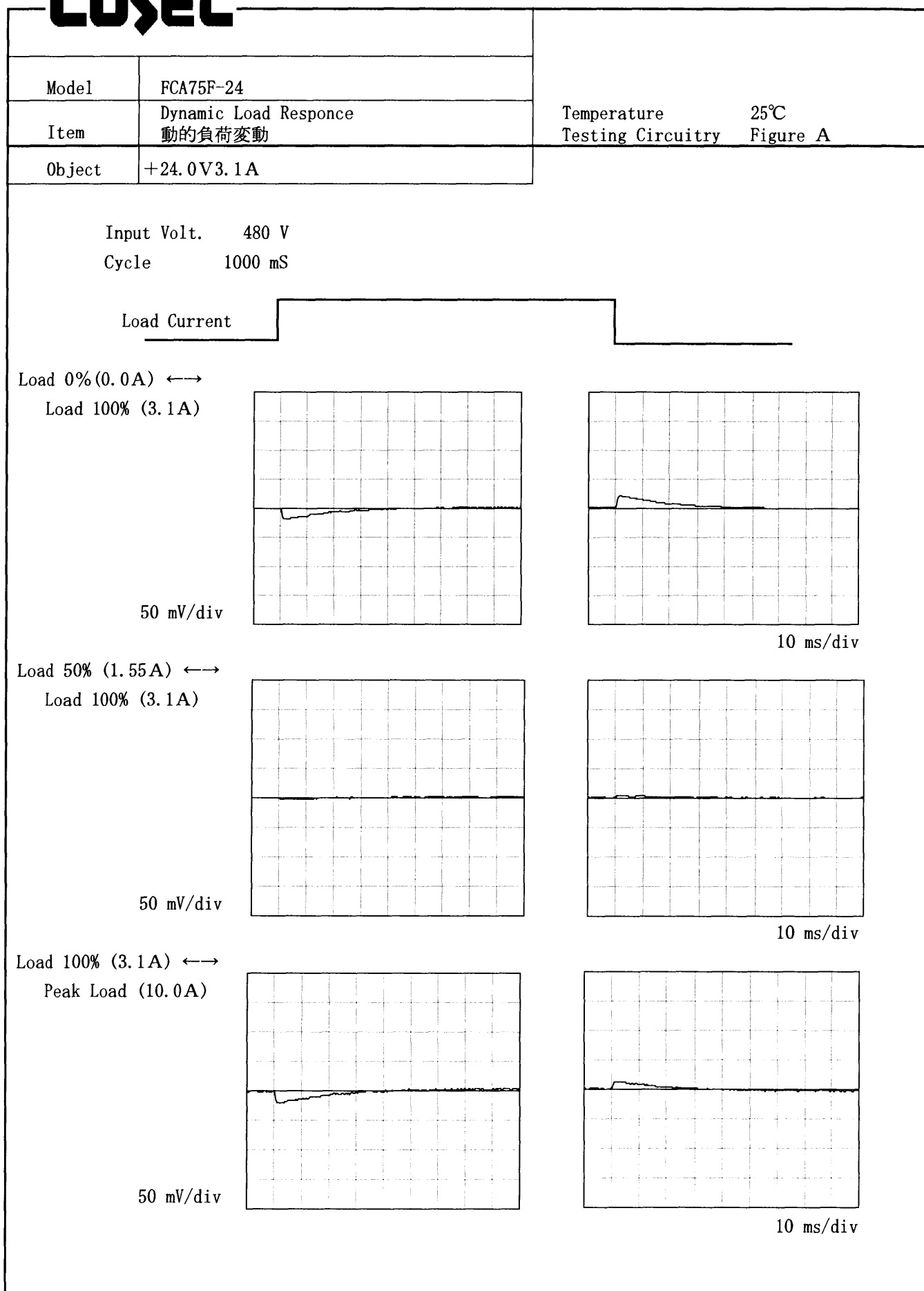
Load 100 %

Inrush Current

① 40.20 [A]

② 1.80 [A]



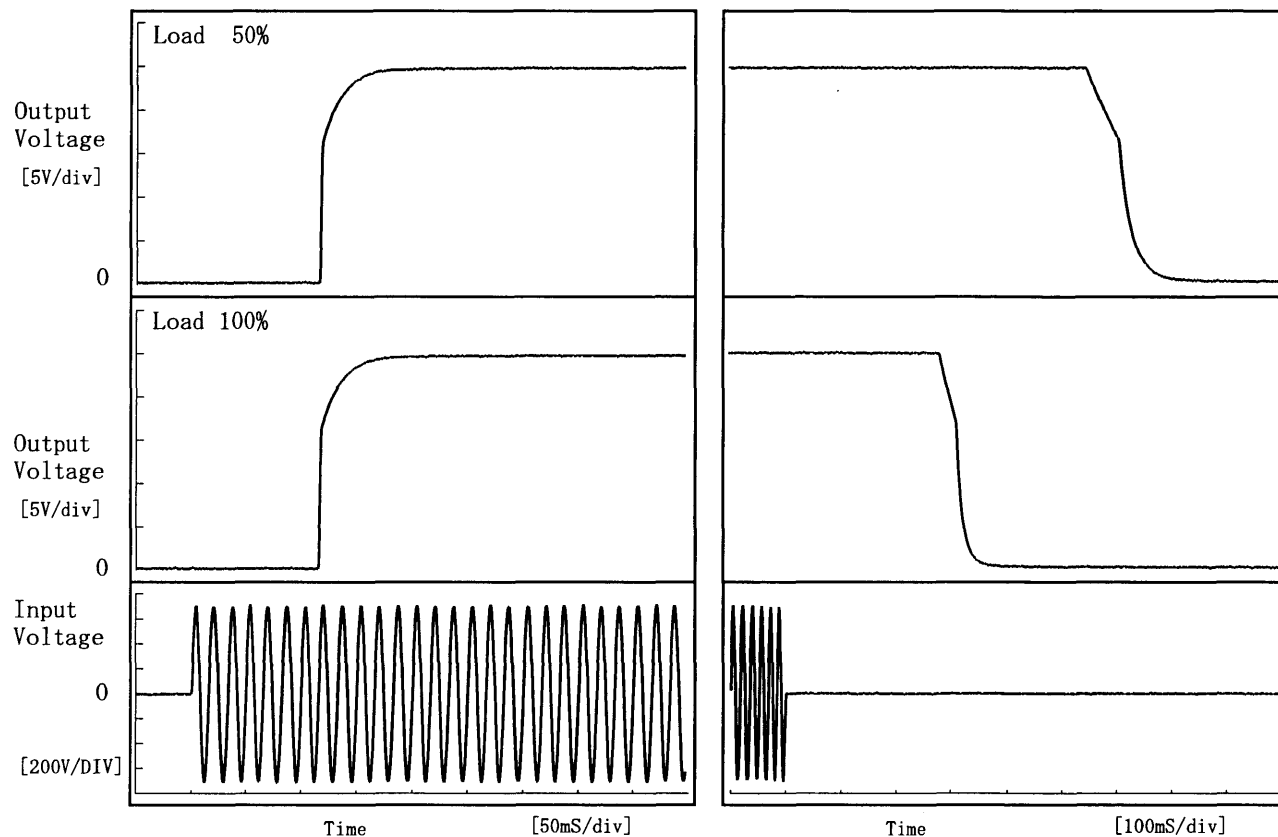
COSEL

COSEL

Model	FCA75F-24	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+24.0V 3.1A		

1. Graph

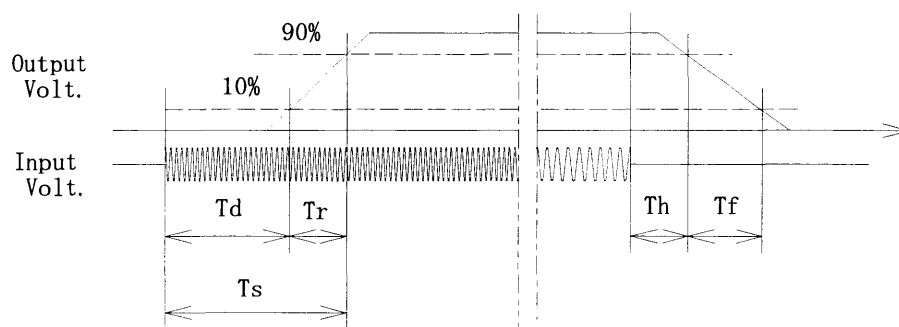
Input Volt. 480 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	118.0	18.5	136.5	564.5	85.0
100 %	117.3	18.5	135.8	293.0	44.0



COSEL

Model		FCA75F-24
Item	Ambient Temperature Drift 周囲温度変動	
Object	+24.0V3.1A	

1. Graph

△

Input Volt. 380V

□

Input Volt. 480V

○

Input Volt. 528V

Output Voltage [V]

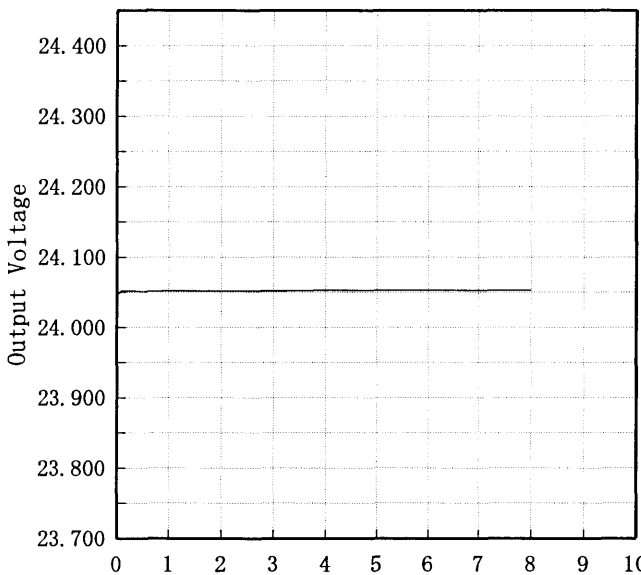
COSEL

Model		FCA75F-24																																						
Item		Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧																																						
Object		+24.0V3.1A																																						
1. Graph		<div> <div> <div>□</div> <div>Load 50%</div> </div> <div> <div>△</div> <div>Load 100%</div> </div> </div> <p>Note: Slanted line shows the range of the rated ambient temperature.</p> <p>(注)斜線は定格周囲温度範囲を示す。</p>																																						
2. Values		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Input Voltage [V]</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> </thead> <tbody> <tr><td>-20</td><td>166</td><td>170</td></tr> <tr><td>-10</td><td>164</td><td>168</td></tr> <tr><td>0</td><td>162</td><td>167</td></tr> <tr><td>10</td><td>161</td><td>166</td></tr> <tr><td>20</td><td>160</td><td>164</td></tr> <tr><td>25</td><td>159</td><td>164</td></tr> <tr><td>30</td><td>159</td><td>164</td></tr> <tr><td>40</td><td>158</td><td>164</td></tr> <tr><td>50</td><td>158</td><td>163</td></tr> <tr><td>60</td><td>157</td><td>163</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-20	166	170	-10	164	168	0	162	167	10	161	166	20	160	164	25	159	164	30	159	164	40	158	164	50	158	163	60	157	163	—	—	—
Ambient Temperature [°C]	Input Voltage [V]																																							
	Load 50%	Load 100%																																						
-20	166	170																																						
-10	164	168																																						
0	162	167																																						
10	161	166																																						
20	160	164																																						
25	159	164																																						
30	159	164																																						
40	158	164																																						
50	158	163																																						
60	157	163																																						
—	—	—																																						

COSEL

Model		FCA75F-24	Testing Circuitry Figure A																																					
Item		Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)																																						
Object		+24.0V3.1A																																						
1. Graph		<div><div>□</div>Load 50%</div> <div><div>△</div>Load 100%</div> <div><div>[mV]</div><div>100</div><div>90</div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div></div> <div><div>Ripple Voltage</div><div></div></div> <div><div>-30</div><div>-10</div><div>10</div><div>30</div><div>50</div><div>70</div></div> <div><div>Ambient Temperature</div><div>[°C]</div></div> <div>Input Volt. 480 V</div> <div>Note: Slanted line shows the range of the rated ambient temperature.</div> <div>(注) 斜線は定格周囲温度範囲を示す。</div>	2.Values																																					
		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Ripple Output Voltage [mV]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>-20</td><td>80</td><td>85</td></tr><tr><td>-10</td><td>65</td><td>70</td></tr><tr><td>0</td><td>55</td><td>60</td></tr><tr><td>10</td><td>40</td><td>50</td></tr><tr><td>20</td><td>35</td><td>45</td></tr><tr><td>25</td><td>35</td><td>40</td></tr><tr><td>30</td><td>30</td><td>35</td></tr><tr><td>40</td><td>30</td><td>30</td></tr><tr><td>50</td><td>25</td><td>30</td></tr><tr><td>60</td><td>25</td><td>30</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></table>	Ambient Temperature [°C]	Ripple Output Voltage [mV]		Load 50%	Load 100%	-20	80	85	-10	65	70	0	55	60	10	40	50	20	35	45	25	35	40	30	30	35	40	30	30	50	25	30	60	25	30	—	—	—
Ambient Temperature [°C]	Ripple Output Voltage [mV]																																							
	Load 50%	Load 100%																																						
-20	80	85																																						
-10	65	70																																						
0	55	60																																						
10	40	50																																						
20	35	45																																						
25	35	40																																						
30	30	35																																						
40	30	30																																						
50	25	30																																						
60	25	30																																						
—	—	—																																						

COSEL

COSEL																									
Model	FCA75F-24																								
Item	Time Lapse Drift 経時ドリフト	Temperature	25℃																						
		Testing Circuitry	Figure A																						
Object	+24.0V3.1A																								
1. Graph		2.Values																							
<div>[V]</div> <div></div> <div>Output Voltage</div> <div>Time</div> <div>[H]</div> <div>Input Volt. 480V</div> <div>Load 100%</div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>24.050</td></tr><tr><td>0.5</td><td>24.051</td></tr><tr><td>1.0</td><td>24.052</td></tr><tr><td>2.0</td><td>24.052</td></tr><tr><td>3.0</td><td>24.052</td></tr><tr><td>4.0</td><td>24.053</td></tr><tr><td>5.0</td><td>24.053</td></tr><tr><td>6.0</td><td>24.053</td></tr><tr><td>7.0</td><td>24.053</td></tr><tr><td>8.0</td><td>24.053</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	24.050	0.5	24.051	1.0	24.052	2.0	24.052	3.0	24.052	4.0	24.053	5.0	24.053	6.0	24.053	7.0	24.053	8.0	24.053
Time since start [H]	Output Voltage [V]																								
0.0	24.050																								
0.5	24.051																								
1.0	24.052																								
2.0	24.052																								
3.0	24.052																								
4.0	24.053																								
5.0	24.053																								
6.0	24.053																								
7.0	24.053																								
8.0	24.053																								

COSEL

Model		FCA75F-24	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+24.0 V 3.1 A	

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 : 380~528 V

Load Current : 0~3.1 A

* 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 : 380~528 V

負荷電流 : 0~3.1 A

* 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 Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-10	380	0.0	24.078	±22	±0.1
Minimum Voltage	50	380	3.1	24.034		

COSEL

Model		FCA75F-24	Testing Circuitry Figure A
Item		Condensation 結露特性	
Object		+24.0V3.1A	
1. Condensation test Testing procedure is as follows. ① Keeping and cooling the unit in a tank at -10℃ for an hour with the input off. ② Taking it out of the tank and dewing itself in a room where the temperature is 25℃ and the humidity is 40%RH. ③ Testing electrical characteristics of the unit to confirm there be no fault.			
1. 結露特性試験 入力を切った状態で、恒温槽で－10℃に冷却しておき、約1時間後に恒温槽から取り出し、室温25℃、湿度40%RHの状態におき結露させ、その電気的特性の測定を行い、異常のないことを確認する。			
2. Values			
Item		Data	Testing Conditions
Output Voltage [V]		24.065	Input Volt.: 480V, Load Current:3.1A
Line Regulation [mV]		3	Input Volt.: 380～528V, Load Current:3.1A
Load Regulation [mV]		9	Input Volt.: 480V, Load Current:0.0～3.1A

— 23 —

BC-3282

COSEL

Model	FCA75F-24													
Item	Leakage Current 漏洩電流	Temperature	25℃											
Object		Testing Circuitry	Figure B											
<p>1. Results</p> <table border="1"> <tr> <th rowspan="2">Standards</th><th colspan="3">Leakage Current [mA]</th></tr> <tr> <th>Input Volt. 380 [V]</th><th>Input Volt. 480 [V]</th><th>Input Volt. 528 [V]</th></tr> <tr> <td>(B) IEC60950</td><td>0.21</td><td>0.27</td><td>0.28</td></tr> </table>				Standards	Leakage Current [mA]			Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]	(B) IEC60950	0.21	0.27	0.28
Standards	Leakage Current [mA]													
	Input Volt. 380 [V]	Input Volt. 480 [V]	Input Volt. 528 [V]											
(B) IEC60950	0.21	0.27	0.28											
<p>2. Condition</p> <p>Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.</p> <p>交流入力両相について測定し、その大きい方を漏洩電流測定値とする。</p>														

COSEL

Model	FCA75F-24	Temperature Testing Circuitry	25°C Figure C
Item	Line Noise Tolerance 入力雑音耐量		
Object	+24.0V3.1A		

1. Results

Pulse Width [nS]	MODE		No protection failure should occur 保護回路の誤動作がない	DC-like Regulation of Output Voltage 出力電圧の直流的変動
		POLARITY		
50	COMMON	+	OK	no fluctuation
		—	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		—	OK	no fluctuation
1000	COMMON	+	OK	no fluctuation
		—	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		—	OK	no fluctuation

2. Conditions

Input Voltage : 480 V
 Pulse Voltage : 2000 V
 Pulse Cycle : 10 mS
 Pulse Input Duration : 1 min. or more
 Load : 100 %

COSEL

Model	FCA75F-24	Temperature	25℃
Item	Conducted Emission 雑音端子電圧	Testing Circuitry	Figure D
Object			

1. Graph

Remarks

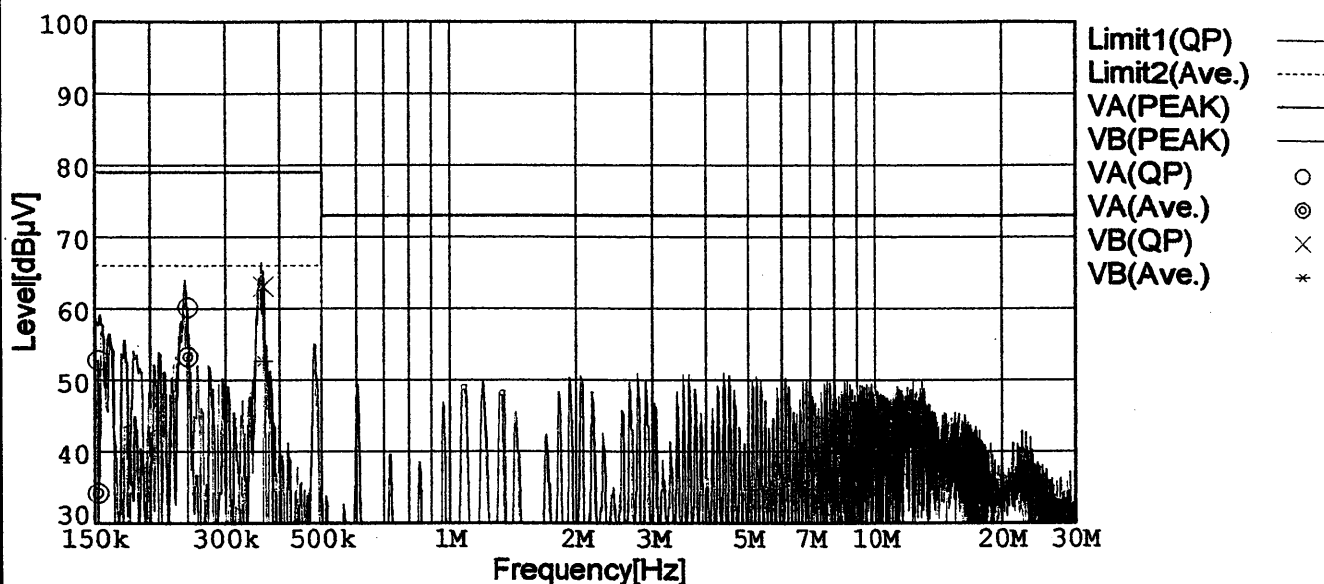
Input Volt. 480 V (CISPR Pub11 Class A)

480 V (FCC Part15 Class A)

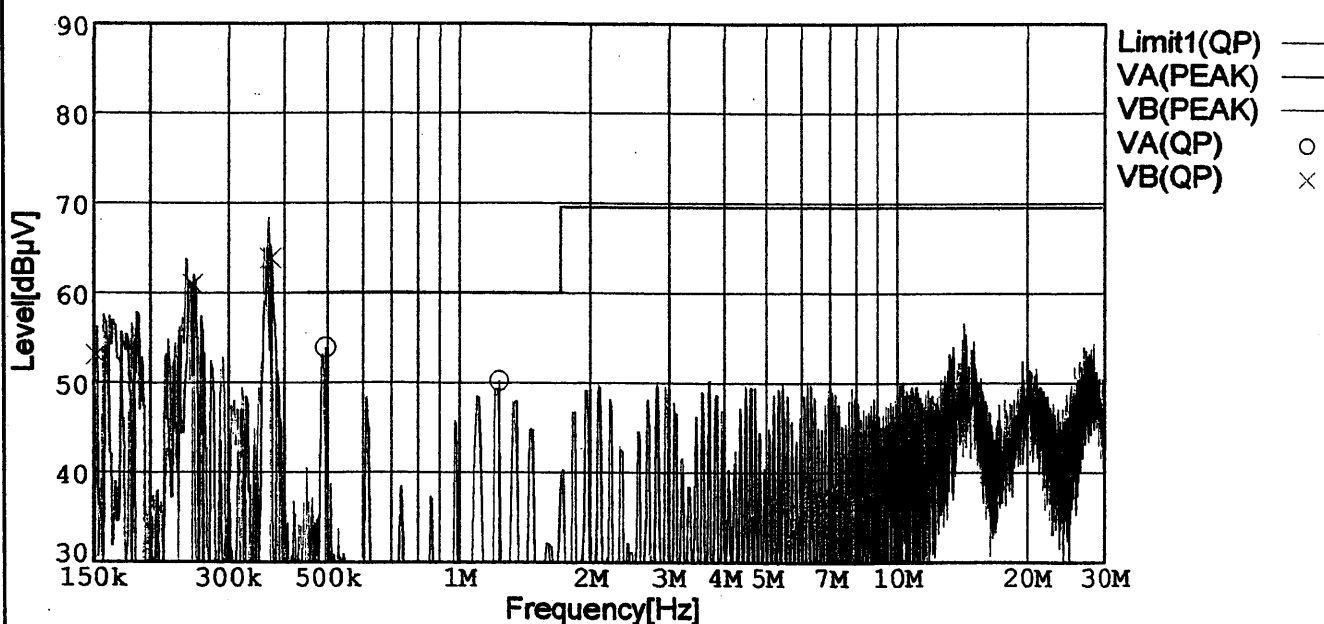
Load 100 %

Limit1: [CISPR Pub11] Class A Gr.1(QP)

Limit2: [CISPR Pub11] Class A Gr.1(Ave.)



Limit1: [FCC Part15] Class A



COSEL

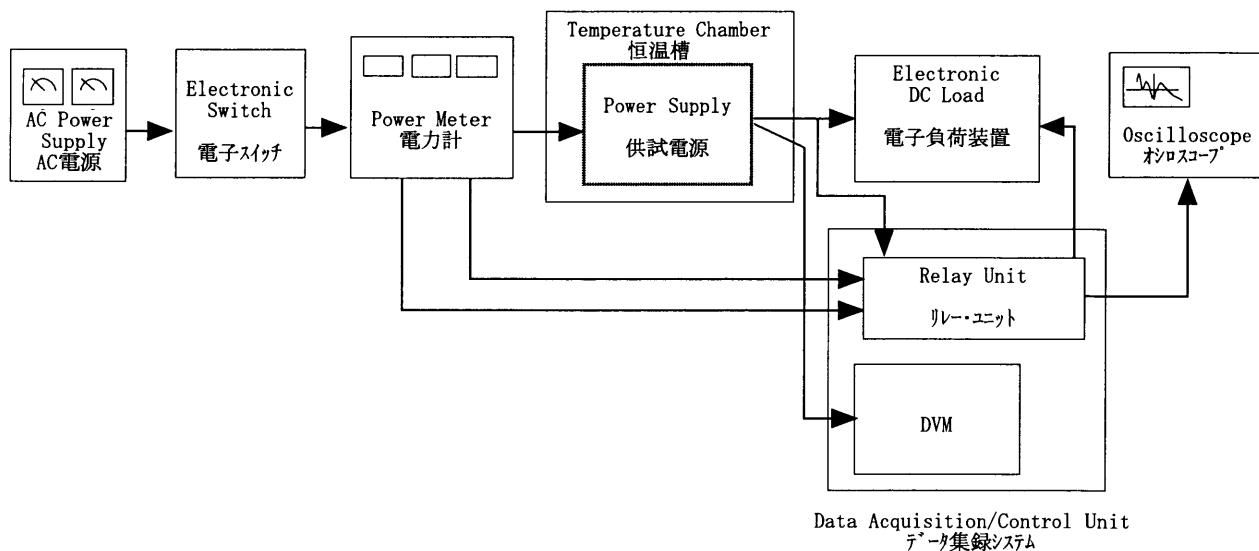


Figure A

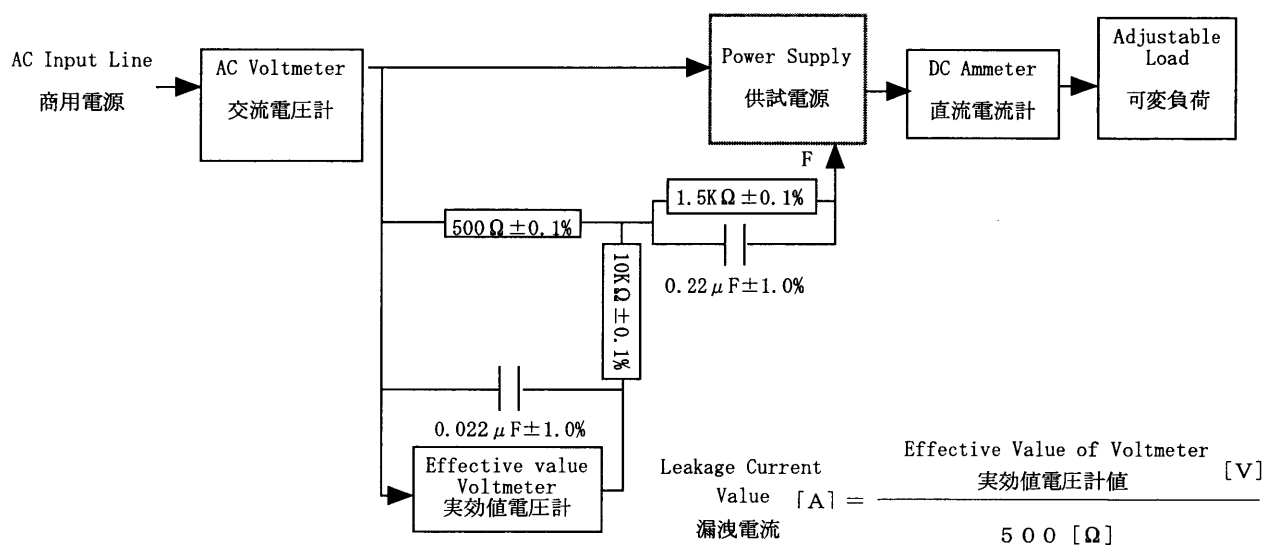


Figure B (IEC60950)

COSEL

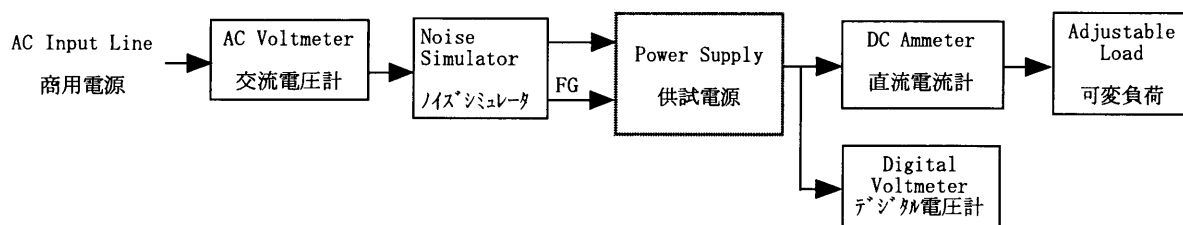


Figure C

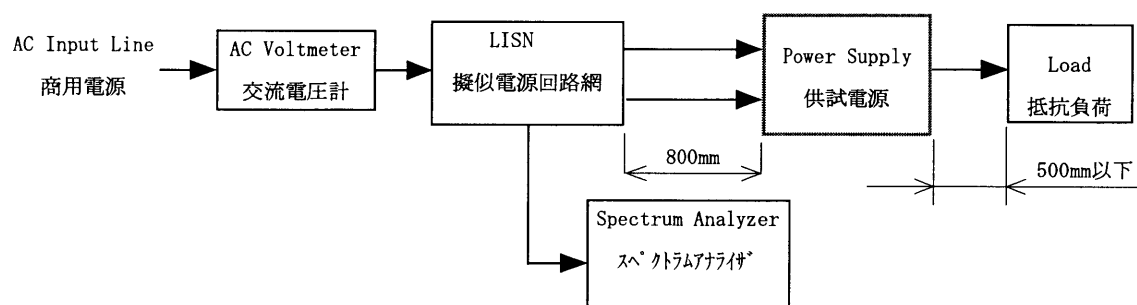


Figure D