



# TEST DATA OF WXA150H-24

(230V INPUT)

Regulated DC Power Supply  
March 6, 2018

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**COSEL CO.,LTD.**

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**LUXEL**

Model	WXA150H-24		
Item	Input Current (by Load Current)		
Object			

### 1.Graph

△ Input Volt. 180V  
□ Input Volt. 230V  
○ Input Volt. 264V

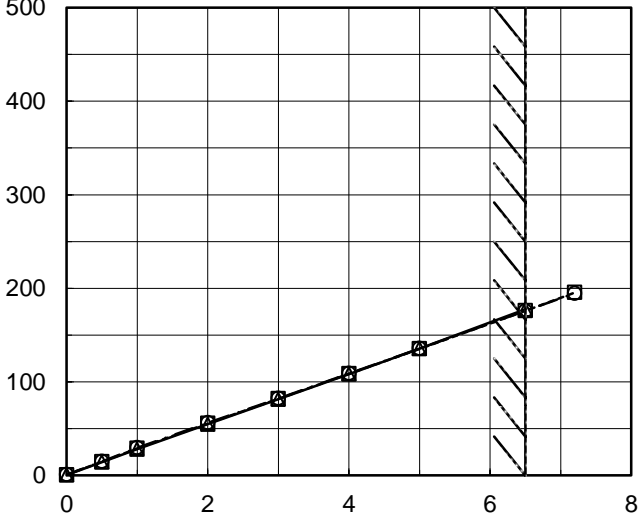
Load Current [A]

### 2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 180[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.0	0.074	0.094	0.107
0.5	0.225	0.203	0.195
1.0	0.374	0.329	0.309
2.0	0.639	0.548	0.503
3.0	0.888	0.752	0.684
4.0	1.134	0.954	0.865
5.0	1.381	1.157	1.049
6.5	1.756	1.462	1.320
7.2	-	1.612	1.457
--	-	-	-
--	-	-	-

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

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BC-11252

Model		WXA150H-24		Temperature Testing Circuitry	25°C Figure A
Item		Input Power (by Load Current)			
Object					
1.Graph					
		—△— Input Volt. 180V		2.Values	
		---□--- Input Volt. 230V			
		-·-○-·- Input Volt. 264V			
Input Power [W]					
Load Current [A]					
Note: Slanted line shows the range of the rated load current.					

Model		WXA150H-24		Temperature 25°C																															
Item		Efficiency (by Input Voltage)		Testing Circuitry Figure A																															
Object																																			
1.Graph				2.Values																															
<div><div><div>---□--- Load 50%</div><div>—△— Load 100%</div></div><table><thead><tr><th>Input Voltage [V]</th><th>Load 50% Efficiency [%]</th><th>Load 100% Efficiency [%]</th></tr></thead><tbody><tr><td>150</td><td>88.6</td><td>87.3</td></tr><tr><td>160</td><td>88.8</td><td>87.9</td></tr><tr><td>170</td><td>88.9</td><td>88.3</td></tr><tr><td>180</td><td>88.9</td><td>88.6</td></tr><tr><td>200</td><td>88.7</td><td>89.0</td></tr><tr><td>230</td><td>88.0</td><td>89.5</td></tr><tr><td>240</td><td>87.7</td><td>89.5</td></tr><tr><td>264</td><td>87.0</td><td>89.5</td></tr><tr><td>280</td><td>87.3</td><td>89.5</td></tr></tbody></table></div>				Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]	150	88.6	87.3	160	88.8	87.9	170	88.9	88.3	180	88.9	88.6	200	88.7	89.0	230	88.0	89.5	240	87.7	89.5	264	87.0	89.5	280	87.3	89.5		
Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]																																	
150	88.6	87.3																																	
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170	88.9	88.3																																	
180	88.9	88.6																																	
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BC-11252

Model	WXA150H-24		
Item	Efficiency (by Load Current)	Temperature Testing Circuitry	25°C Figure A
Object	_____		

1.Graph

—△— Input Volt. 180V  
- -□- - Input Volt. 230V  
- ·○· - Input Volt. 264V

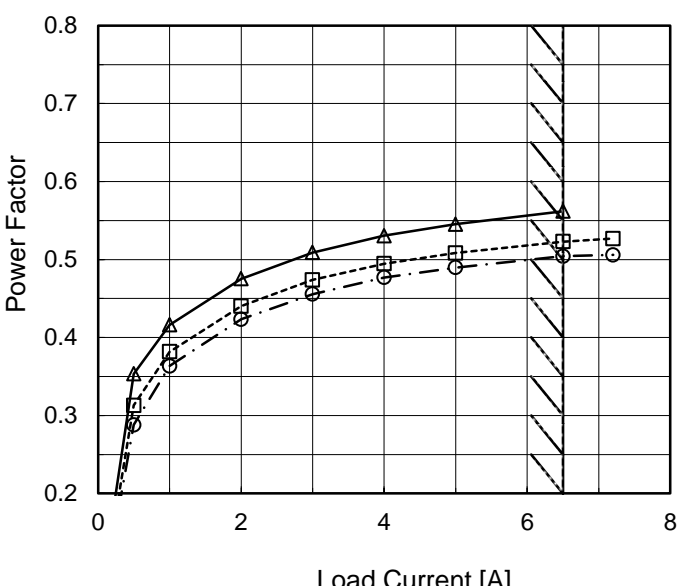
Load Current [A]

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 180[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.0	-	-	-
0.5	84.2	82.3	80.9
1.0	85.7	83.4	81.2
2.0	88.4	87.2	86.0
3.0	89.0	88.3	87.9
4.0	89.1	88.9	88.5
5.0	88.9	89.2	88.9
6.5	88.3	89.1	89.1
7.2	-	88.8	89.2
--	-	-	-
--	-	-	-

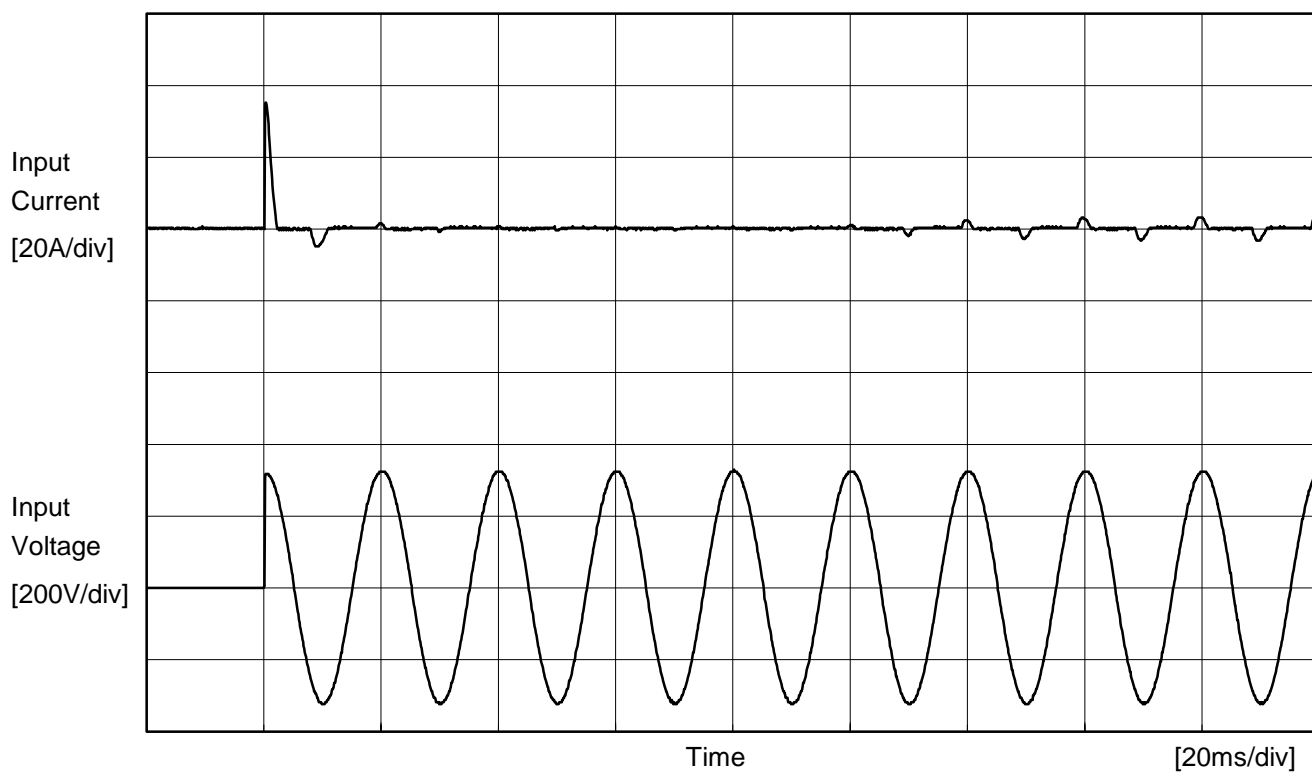
Note: Slanted line shows the range of the rated load current.



Model		WXA150H-24	Temperature Testing Circuitry	25°C Figure A																																																		
Item		Power Factor (by Load Current)																																																				
Object																																																						
1.Graph		<div><div>—△—</div>Input Volt. 180V</div> <div><div>---□---</div>Input Volt. 230V</div> <div><div>-·-○-·-</div>Input Volt. 264V</div>  <p>Note: Slanted line shows the range of the rated load current.</p>	2.Values																																																			
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Power Factor</th></tr><tr><th>Input Volt. 180[V]</th><th>Input Volt. 230[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.0</td><td>0.050</td><td>0.038</td><td>0.034</td></tr><tr><td>0.5</td><td>0.353</td><td>0.313</td><td>0.288</td></tr><tr><td>1.0</td><td>0.416</td><td>0.382</td><td>0.363</td></tr><tr><td>2.0</td><td>0.475</td><td>0.440</td><td>0.423</td></tr><tr><td>3.0</td><td>0.509</td><td>0.474</td><td>0.456</td></tr><tr><td>4.0</td><td>0.531</td><td>0.495</td><td>0.477</td></tr><tr><td>5.0</td><td>0.545</td><td>0.508</td><td>0.490</td></tr><tr><td>6.5</td><td>0.562</td><td>0.523</td><td>0.504</td></tr><tr><td>7.2</td><td>-</td><td>0.527</td><td>0.506</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. 180[V]	Input Volt. 230[V]	Input Volt. 264[V]	0.0	0.050	0.038	0.034	0.5	0.353	0.313	0.288	1.0	0.416	0.382	0.363	2.0	0.475	0.440	0.423	3.0	0.509	0.474	0.456	4.0	0.531	0.495	0.477	5.0	0.545	0.508	0.490	6.5	0.562	0.523	0.504	7.2	-	0.527	0.506	--	-	-	-	--	-	-	-
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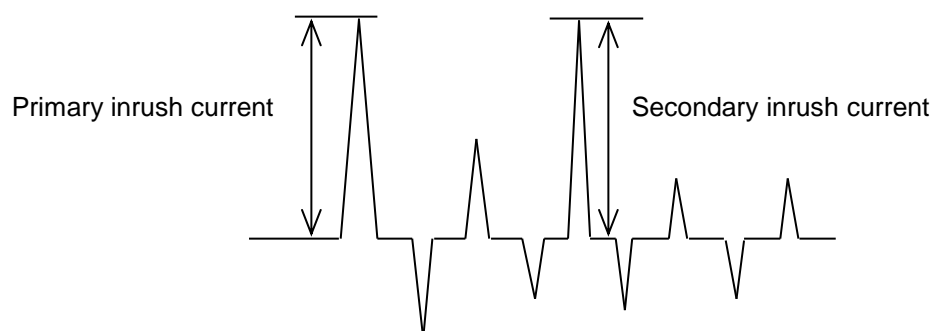


Model	WXA150H-24	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current	
Object	_____	



Input Voltage 230 V  
Frequency 50 Hz  
Load 100 %

Primary inrush current 35.2 A  
Secondary inrush current 0.0 A



COSEL		Temperature 25°C Testing Circuitry Figure B
Model	WXA150-24	
Item	Leakage Current	
Object	_____	

# 1.Results

[mA]

Standards		Input Volt.			Note
		180 [V]	240 [V]	264 [V]	
IEC60950-1	Both phases	0.50	0.65	0.75	Operation
	One of phases	1.10	1.35	1.50	Stand by

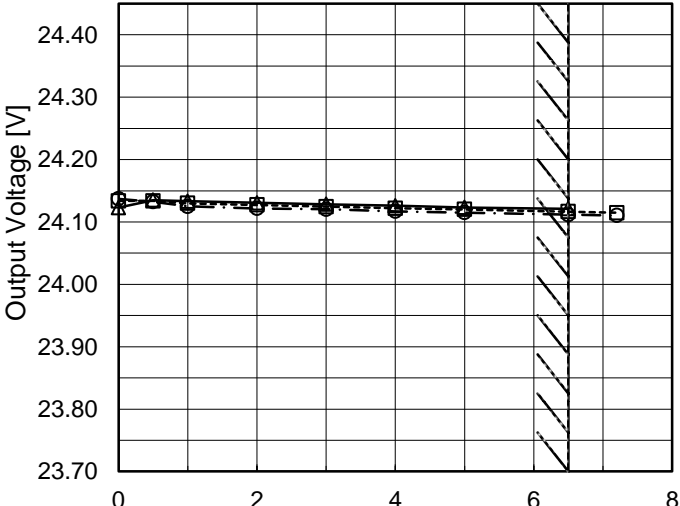
The value for "One of phases" is the reference value only.

# 2.Condition

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

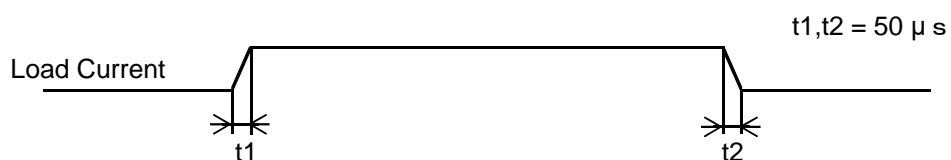
Model		WXA150H-24	Temperature25°C Testing CircuitryFigure A
Item		Line Regulation	
Object		+24V6.5A	

1.Graph

Model		WXA150H-24		Temperature Testing Circuitry	25°C Figure A
Item		Load Regulation			
Object		+24V6.5A			
1.Graph					
		—△— Input Volt. 180V		2.Values	
		---□--- Input Volt. 230V			
		-·-○-·- Input Volt. 264V			
Output Voltage [V]					
Load Current [A]					
Note: Slanted line shows the range of the rated load current.					

Model	WXA150H-24	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+24V6.5A	

Input Volt. 24 V  
Cycle 1000 ms



Min.Load (0A)  $\longleftrightarrow$   
Load 100% (6.5A)

200 mV/div

20 ms/div

20 ms/div

Min.Load (0A)  $\longleftrightarrow$   
Load 50% (3.25A)

200 mV/div

20 ms/div

20 ms/div

Load 50% (3.25A)  $\longleftrightarrow$   
Load 100% (6.5A)

200 mV/div

20 ms/div

20 ms/div

Model		WXA150H-24	Temperature Testing Circuitry	25°C Figure C
Item		Ripple-Noise (by Load Current)		
Object		+24V6.5A		

1.Graph

△

Input Volt. 180V

○

Input Volt. 264V

Load Current [A]	Input Volt. 180 [V]	Input Volt. 264 [V]
0.0	120	130
0.5	130	135
1.0	25	30
2.0	30	30
3.0	45	40
4.0	55	45
5.0	65	55
6.5	85	70
7.2	-	80
--	-	-
--	-	-

Measured by 20 MHz Oscilloscope.

Ripple-Noise is shown as p-p in the figure below.

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

T1: Due to AC Input Line

T2: Due to Switching

Ripple-Noise [mVp-p]

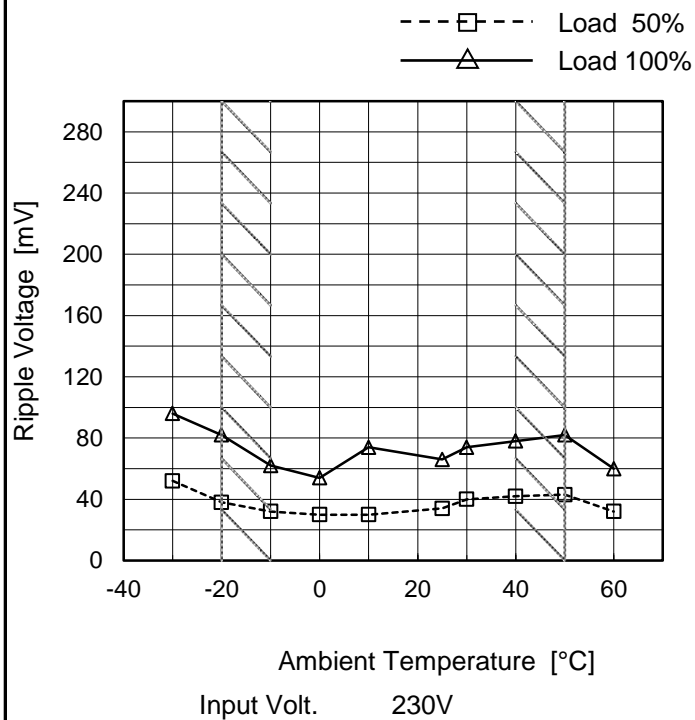
Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 180 [V]	Input Volt. 264 [V]
0.0	120	130
0.5	130	135
1.0	25	30
2.0	30	30
3.0	45	40
4.0	55	45
5.0	65	55
6.5	85	70
7.2	-	80
--	-	-
--	-	-

Model	WXA150H-24
Item	Ripple Noise (by Ambient Temp.)
Object	+24V6.5A

## 1.Graph



Measured by 20MHz Oscilloscope.

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

## Testing Circuitry Figure C

## 2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-30	52	96
-20	38	82
-10	32	62
0	30	54
10	30	74
25	34	66
30	40	74
40	42	78
50	43	82
60	32	60
--	-	-

Model		WXA150H-24																																																				
Item		Ambient Temperature Drift																																																				
Object		+24V6.5A																																																				
1.Graph		<div><div><div><div><div></div></div><div></div></div><div>Input Volt.</div><div>180V</div></div><div><div><div><div></div></div><div></div></div><div>Input Volt.</div><div>230V</div></div><div><div><div><div></div></div><div></div></div><div>Input Volt.</div><div>264V</div></div></div> <div>Output Voltage [V]</div> <div>Ambient Temperature [°C]</div> <div>Load 100%</div> <div>Note: Slanted line shows the range of the rated ambient temperature.</div>																																																				
2.Values		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 180[V]</th><th>Input Volt. 230[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>-30</td><td>24.014</td><td>24.015</td><td>24.013</td></tr><tr><td>-20</td><td>24.037</td><td>24.038</td><td>24.035</td></tr><tr><td>-10</td><td>24.063</td><td>24.058</td><td>24.055</td></tr><tr><td>0</td><td>24.081</td><td>24.075</td><td>24.072</td></tr><tr><td>10</td><td>24.087</td><td>24.088</td><td>24.084</td></tr><tr><td>25</td><td>24.106</td><td>24.103</td><td>24.100</td></tr><tr><td>30</td><td>24.108</td><td>24.107</td><td>24.104</td></tr><tr><td>40</td><td>24.114</td><td>24.113</td><td>24.109</td></tr><tr><td>50</td><td>24.126</td><td>24.122</td><td>24.118</td></tr><tr><td>60</td><td>24.129</td><td>24.128</td><td>24.123</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 180[V]	Input Volt. 230[V]	Input Volt. 264[V]	-30	24.014	24.015	24.013	-20	24.037	24.038	24.035	-10	24.063	24.058	24.055	0	24.081	24.075	24.072	10	24.087	24.088	24.084	25	24.106	24.103	24.100	30	24.108	24.107	24.104	40	24.114	24.113	24.109	50	24.126	24.122	24.118	60	24.129	24.128	24.123	--	-	-	-
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		Testing Circuitry Figure A
Model	WXA150H-24	
Item	Output Voltage Accuracy	
Object	+24V6.5A	

### 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 : -20 - 50°C

Input Voltage : 180 - 264V

Load Current : 0 - 6.5A

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

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

### 2. Values

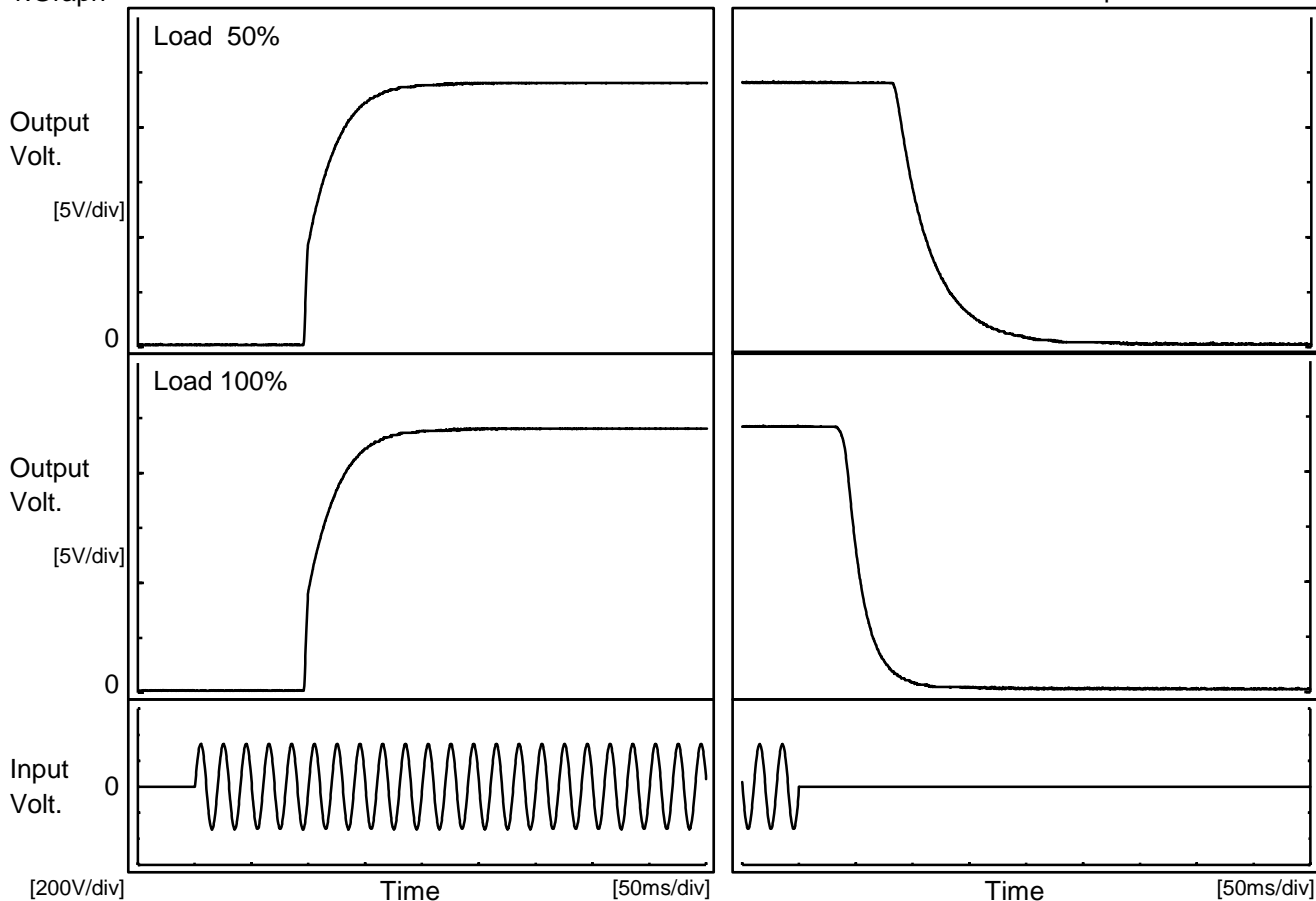
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	50	230	0	24.152	±59	±0.2
Minimum Voltage	-20	264	6.5	24.035		

Model		WXA150H-24		Temperature25°C Testing CircuitryFigure A
Item		Time Lapse Drift		
Object		+24V6.5A		
1.Graph				2.Values
<div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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Model	WXA150H-24	Temperature 25°C Testing Circuitry Figure A
Item	Rise and Fall Time	
Object	+24V6.5A	

## 1.Graph

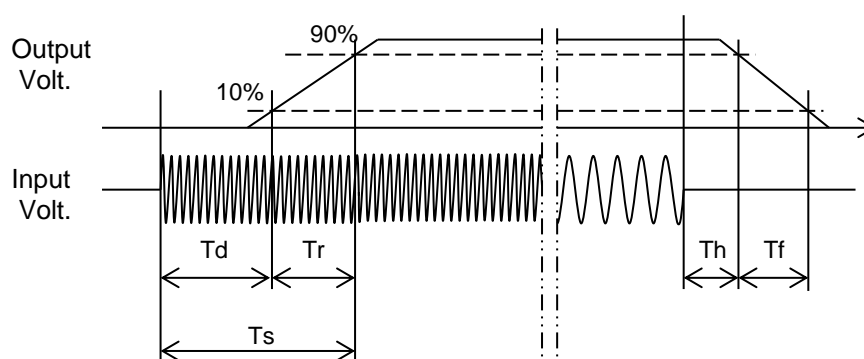
Input Volt. 230 V

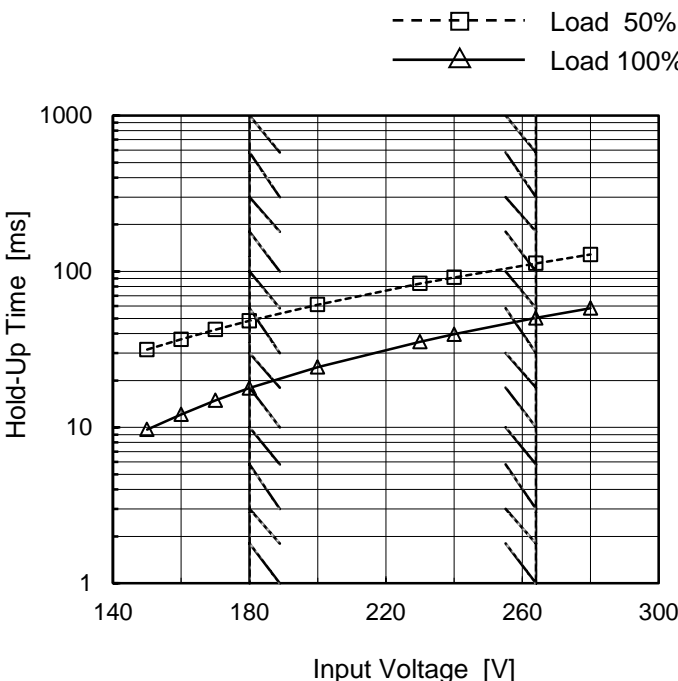


## 2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	97.0	47.8	144.8	87.5	67.5
100 %	97.0	48.3	145.3	40.8	35.5



Model		WXA150H-24	Temperature 25°C Testing Circuitry Figure A																																
Item		Hold-Up Time																																	
Object		+24V6.5A																																	
1.Graph		<div><div><div><div></div><div></div></div><div>Load 50%</div></div><div><div><div></div><div></div></div><div>Load 100%</div></div></div>  <p>Hold-Up Time [ms]</p> <p>Input Voltage [V]</p>	2.Values																																
		<table><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><tr><td>150</td><td>32</td><td>10</td></tr><tr><td>160</td><td>37</td><td>12</td></tr><tr><td>170</td><td>42</td><td>15</td></tr><tr><td>180</td><td>48</td><td>18</td></tr><tr><td>200</td><td>61</td><td>24</td></tr><tr><td>230</td><td>84</td><td>35</td></tr><tr><td>240</td><td>92</td><td>40</td></tr><tr><td>264</td><td>113</td><td>50</td></tr><tr><td>280</td><td>128</td><td>58</td></tr></table>		Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	150	32	10	160	37	12	170	42	15	180	48	18	200	61	24	230	84	35	240	92	40	264	113	50	280	128	58
Input Voltage [V]	Hold-Up Time [ms]																																		
	Load 50%	Load 100%																																	
150	32	10																																	
160	37	12																																	
170	42	15																																	
180	48	18																																	
200	61	24																																	
230	84	35																																	
240	92	40																																	
264	113	50																																	
280	128	58																																	
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.																																			

Model		WXA150H-24	Temperature 25°C Testing Circuitry Figure A																																																			
Item		Instantaneous Interruption Compensation																																																				
Object		+24V6.5A																																																				
1.Graph		<div><div><div>—△—</div><div>Input Volt. 180V</div></div><div><div>- - -□- - -</div><div>Input Volt. 230V</div></div><div><div>- · -○- · -</div><div>Input Volt. 264V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p>	2.Values																																																			
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 180[V]</th><th>Input Volt. 230[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.5</td><td>346</td><td>561</td><td>747</td></tr><tr><td>1.0</td><td>177</td><td>286</td><td>304</td></tr><tr><td>2.0</td><td>93</td><td>152</td><td>196</td></tr><tr><td>3.0</td><td>57</td><td>101</td><td>133</td></tr><tr><td>4.0</td><td>45</td><td>69</td><td>98</td></tr><tr><td>5.0</td><td>30</td><td>57</td><td>74</td></tr><tr><td>6.5</td><td>17</td><td>37</td><td>54</td></tr><tr><td>7.2</td><td>-</td><td>32</td><td>45</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. 180[V]	Input Volt. 230[V]	Input Volt. 264[V]	0.0	-	-	-	0.5	346	561	747	1.0	177	286	304	2.0	93	152	196	3.0	57	101	133	4.0	45	69	98	5.0	30	57	74	6.5	17	37	54	7.2	-	32	45	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
	Input Volt. 180[V]	Input Volt. 230[V]	Input Volt. 264[V]																																																			
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6.5	17	37	54																																																			
7.2	-	32	45																																																			
--	-	-	-																																																			
--	-	-	-																																																			



Model		WXA150H-24		Temperature Testing Circuitry	25°C Figure A
Item		Overcurrent Protection			
Object		+24V6.5A			

1.Graph

Input Volt. 180V

Input Volt. 230V

Input Volt. 264V

Output Voltage [V]

</





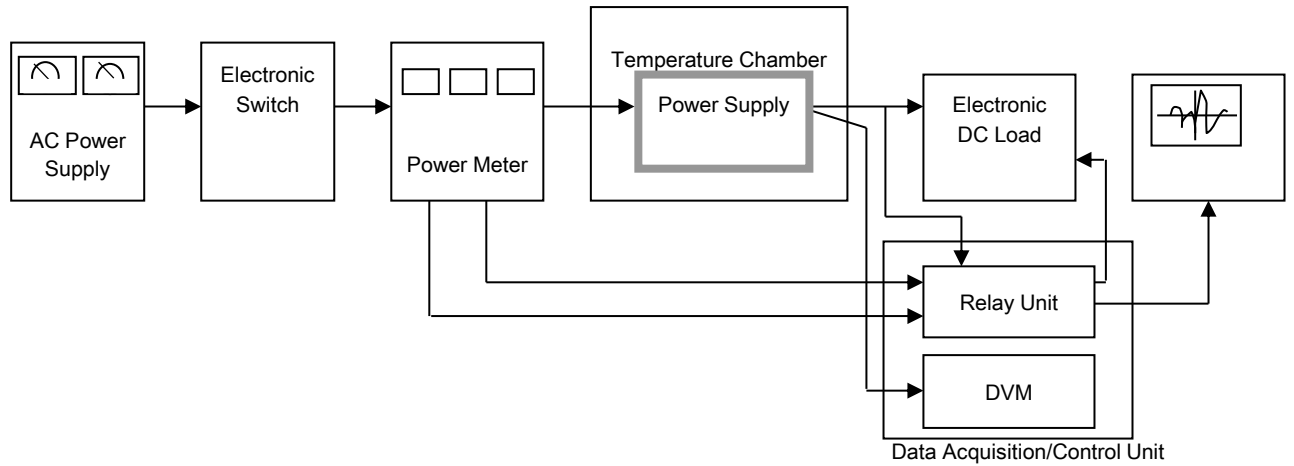


Figure A

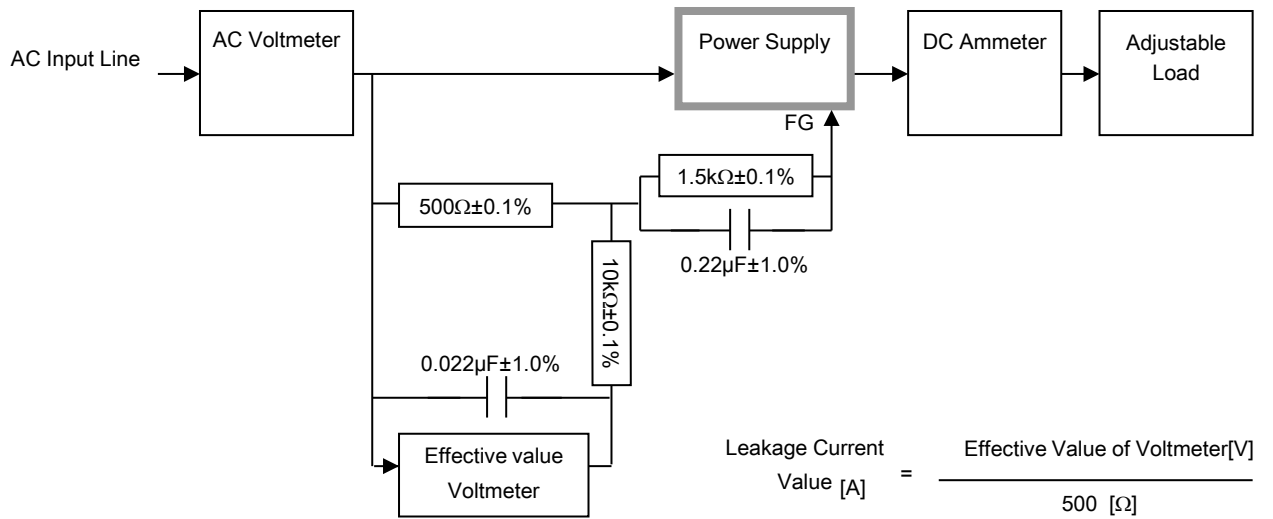


Figure B ( IEC60950-1 )

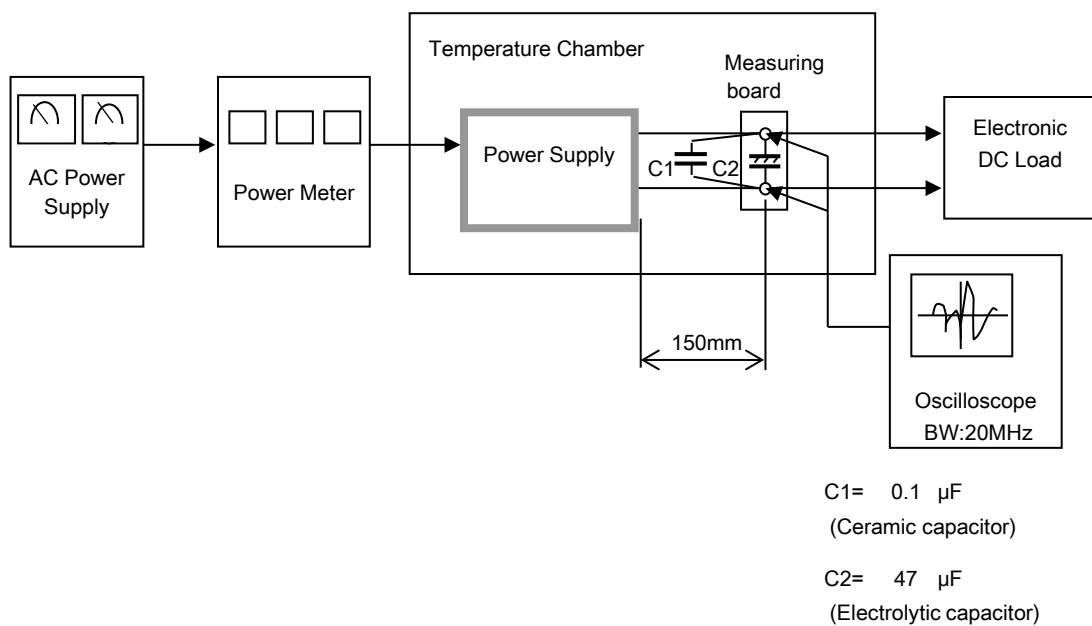


Figure C