





# S100A Single Phase Universal Protection Relay Test Set



S100A is a type of relay tester controlled by SCM. It is portable and easy to use. The tester can apply to the tests not only on operating value and operating time of AC/DC relays, but also on complex voltage blocking directional over current, zero sequence over current, low-frequency load shedding and other protection functions of low voltage line micro-processor based protection relay and whole group transmission of high voltage line micro-processor based protection relay, and on starting value, quick-break value, the 2<sup>nd</sup> harmonic blocking value and manual synchronization of micro-processor based transformer differential protection relay.

## Product Features

- Free adjustment of amplitude, phase angle and frequency
- 100A current source
- Dedicated mA level AC/DC current source
- Auxiliary DC power supply
- Provide 3 phase voltage sources
- Locally with color LCD



## Test functions

- Check picking up and timing value for AC/DC relay
- Check directional over current and df/dt
- Check pick-up, instant tripping, 2<sup>nd</sup> harmonic restraint of differential relay
- Check line protection scheme performance

Auto reclose test      Action value/trip time test      Source selection      Variable

Instant Fault      Act Value  
Cont. Fault      Trip Time  
Fault Time      End Freq  
Trigger      DI/Dt  
Others      Operate Freq

Other tests-  
harmonic block  
test, current test  
and voltage test

Under frequency test      AC/DC selection

Step 1: select test item      Step 2: select parameters      Step 3: start test

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## Panels

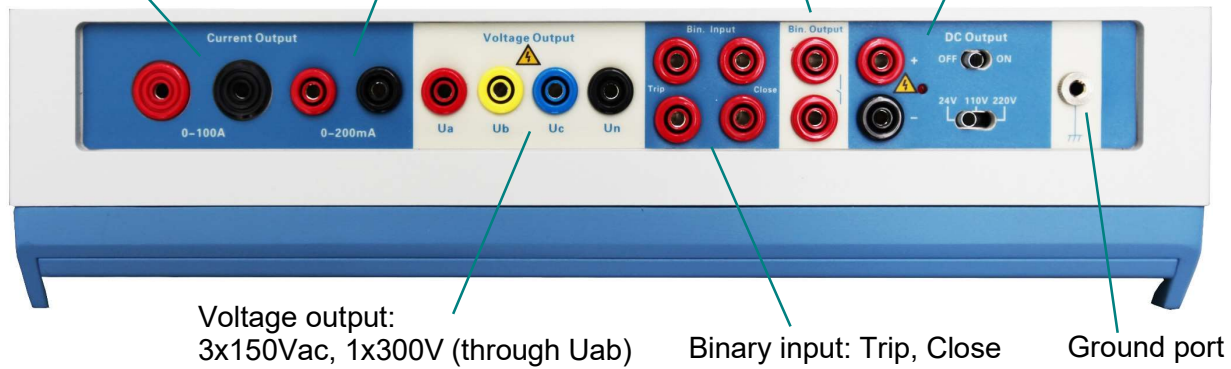
### ➤ Top panel

Current output:  
1x100Aac, 1x10Adc

Current output:  
1x200mA AC/DC

Binary output

Auxiliary DC output:  
OFF/ON (24V/110V/220V)



### ➤ Front panel

#### Short-cut key for test module

Auto reclose (Instant Fault, Constant Fault, Fault Time, Triger),

Active Value + Trip Time,

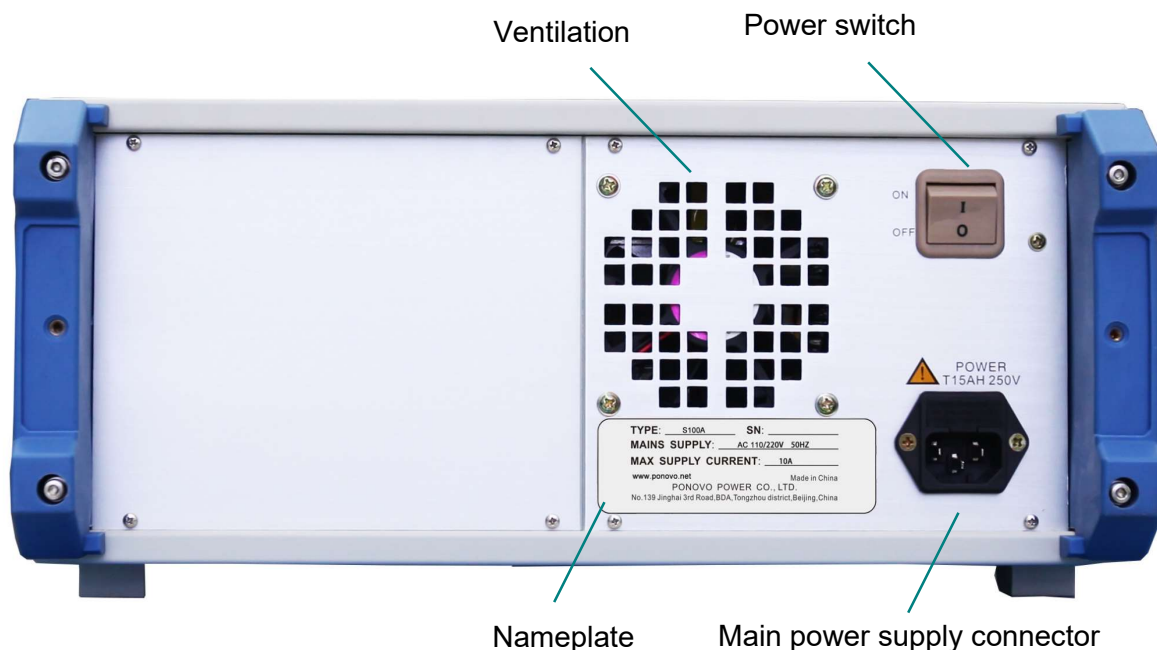
Low frequency (End Frequency, Df/Dt, Operation Frequency),

Others (Harmonic test, Current Test, Voltage Test)



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## ➤ Rear panel



## S100A Local Relay Test Set Software

Colored LCD with local control system makes S100A portable and easy to use. There are **Actual Value and Trip Time** test modules, **Auto reclosing** test module, **Low frequency** test module and **Harmonic** test, **Current** test and **Voltage** test modules.



## ➤ Act Value Test

- ❖ Can output 3-phase AC voltages and 1-phase AC current or 1 channel DC voltage and 1 channel DC current.
- ❖ Can manually control the AC amplitude, phase angle, frequency and DC amplitude by step size.
- ❖ Current range can be 1 phase AC 0-100A, DC 0-10A or 1 phase AC/DC 0-200mA.

Act Value Test			60.00Hz
Ua	57.74V	0.0°	Pick-up Drop-off Factor
Ub	57.74V	-120.0°	
Uc	57.74V	120.0°	
I	2.00A	-60.0°	
I	002.00 A		

Act Value Test		DC
Uab	100.00V	Pick-up
I	0.00A	Drop-off
		Factor
Uab	100.00V	

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## ➤ Trip Time Test

❖ The AC/DC trip time can be tested here.

Trip Time Test-A			60.00Hz
Ua	57.74V	0.0°	Ttrip
Ub	57.74V	-120.0°	
Uc	57.74V	120.0°	
I	5.20A	-60.0°	
I	005.20A		

Trip Time Test-A			DC
Uab	100.00V		Ttrip
I	0.00A		
Uab	100.00V		

## ➤ Auto Reclosing Test

❖ Including instant fault and constant fault states.

Instant Fault			60.00Hz
Ua	08.35V	0.0°	Ttrip
Ub	57.74V	-120.0°	Tclose
Uc	57.74V	120.0°	
I	5.00A	-60.0°	
Tmaxfault	1.00s		

Cont. Fault			60.00Hz
Ua	08.35V	0.0°	Ttrip
Ub	57.74V	-120.0°	Tclose
Uc	57.74V	120.0°	
I	5.00A	-0.0°	
Tmaxfault	1.00s		Taccel

## ➤ Under Frequency (df/dt) Test

❖ The trip value, trip time, df/dt, voltage blocking, current blocking can be tested.

Low-frequency Test			60.00Hz
Ua	50.00V	0.0°	Fend
Ub	50.00V	-120.0°	46.00Hz
Uc	50.00V	120.0°	df/dt
I	0.00A	0.0°	2.00Hz/s
Ttrip	0.634s		Fset
			48.00Hz

## ➤ Harmonic Blocking Test

❖ The 2<sup>nd</sup>, 3<sup>rd</sup> and 5<sup>th</sup> harmonic blocking test on differential relay can be done here.

Harmonic Test		60.00Hz
Ia1st	2.00A	Inf/If 20.000%
Ia2nd	0.40A	
Ia3nd	0.00A	
Ia5nd	0.00A	

## ➤ Current Test

❖ The pick-up, drop-off and factor will be tested here.

Current Test		F1↑↓	AC
From	0.00A		Pick-up
To	10.00A		Drop-off
Step	0.10A		
Step time	0.1s		
I	000.00A		Factor

Current Test		F1↑↓	DC
From	0.00A		Pick-up
To	10.00A		Drop-off
Step	0.10A		
Step time	0.1s		
I	000.00A		Factor

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## ➤ Voltage Test

❖ The pick-up, drop-off and factor of voltage will be tested here.

Voltage Test		F1↑↓	AC
From	0.00V	Pick-up	Factor
To	100.00V		
Step	1.00V		
Step time	0.1s		
Uab 000.00V		Drop-off	

Voltage Test		F1↑↓	DC
From	0.00V	Pick-up	Factor
To	100.00V		
Step	1.00V		
Step time	0.1s		
Uab 000.00V		Drop-off	

## Specifications

### Range

Frequency	40Hz~60Hz
Phase angle	0~359.9°
AC voltage	3×0-150V
AC current	Source 1: 0-100A Source 2: 0-200mA
DC voltage	0-300V (through Uab)
DC current	Source 1: 0-10A Source 2: 0-200mA
Auxiliary DC	24V/110V/220V
Response time for V and I	<100us

### Output power

AC Voltage	Max. 60VA
AC Current	Max. 800VA
Auxiliary DC	110W at 220V

### Binary output

Number	1
Type	Dry contact
Break capacity AC	Vmax: 250V (AC) / Imax: 0.5A
Break capacity DC	Vmax: 250V (DC) / Imax: 0.5A

### Dimension and weight

Aluminum casing	
364 mm×155.5 mm×415mm (W×H×D)	18kg

**Power supply** 110/220V±15% 50/60Hz 10A

### AC voltage

Range	0V~1V	1V~2V	2V~150V
Accuracy	±5mV	±0.5%	±0.2%

### AC current

Range	0-200mA (source 2)	0A~1A	1A~2A	2A~100A
Accuracy	±0.4mA	±5mA	±0.5%	±0.2%

### DC voltage

Range	0V~5V	5V~300V
Accuracy	±20mV	±0.5%

### DC current

Range	0-200mA (source 2)	0.2A~1A	1A~10A
Accuracy	±0.2mA	±5mA	±0.5%
Auxiliary DC accuracy	±1%		
Phase angle accuracy	<0.2°		
Frequency accuracy	±2mHz		

### Binary inputs

Number	2
Type	15V-250V(DC) or potential free
Sample rate	5KHz
Resolution	1ms
Debounce time	20ms
Isolation	Independent galvanic isolation

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