



T1000 Primary Injection Test Set

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T1000 Primary Injection Test Set



T1000 Primary Injection Test Set is designed for easy and safe test of different type of relays. The powerful 1000A current source can be used to test all kinds of current relays, including high burden relay and CT. The AC current and AC/DC voltage sources allow amplitude to be adjusted smoothly. The kit uses advanced switching power amplifier to replace the traditional transformer, thus avoiding the dangerous high voltage across the current output.

Features

- Relay & CT tester function, ratio, secondary impedance, polarity, etc.
- Multimeter function
- Easy to control
- PC report tool software
- Advanced high power constant current source with pulse width modulation technology for automated testing
- Continuously output 1000A for 2 minutes, continuously output 400A for more than 5 minutes



Panel Introduction



- ① AC current output: 2A~50A and 50A~1000A, mainly applied for CT test and relay test.
- ② DC voltage output: 10V~300V.
- ③ AC/DC voltage input: 0~600V, for measurement voltage.
- ④ Binary Output: one pair of relay contact.
- ⑤ Binary input: two pairs with no polarity. It can not only receive protection acting contacts, but be applied for timer test, with single channel and double channels for options.
- ⑥ AC voltage output: 10V~250V.
- ⑦ AC current input: 0~6A (0~2000A AC with external CT), it is for measurement and CT ratio.
- ⑧ Auxiliary DC power supply: 20V~240V. It's mainly used to provide power supply to protection or relay with the load of 0.5A. There is the on/off button to enable or disable the output.
- ⑨ CT polarity test.
- ⑩ Display screen.
- ⑪ Indicators for Run, Overheat, Overload, Open circuit
- ⑫ Menu selection, parameter setting and adjustment's output control areas.
- ⑬ USB port: it is applied for reading report and debugging the computer in high level.
- ⑭ Rotary knob, Coarse/fine button
- ⑮ Power socket: 220V/240Vac, 50~60Hz
- ⑯ Power On/Off
- ⑰ Grounding port
- ⑱ Emergency stop button

Introduction to Test Function

Software main interface

- ❖ Include Any test, Auxiliary DC, Relay test, Report view, CT test, System setting, Timer and PC control items.

T1000A Universal Tester		V1.0
Any test	Relay test	Auxiliary DC
CT test	Timer	Report view
		System Setting
		PC control

System setting interface

- ❖ Can set time, voltage, frequency and off delay time.
- ❖ Time can be represented by second or cycles.
- ❖ Off delay means when the tester receives a trip/reclose signal from relay, the tester will generate the voltage and current continually, until the delay time end.

System setting		F1 ↑
Time	<input checked="" type="checkbox"/> s <input type="checkbox"/> cycles	
Volt	057.74V	Fre 60.0Hz
Off delay	000.00ms	
Date	2008-05-16	14:19:23
F2-Time Set	F3-Time Save	

Auxiliary DC

- ❖ Mainly provide power supply for protection or relay.
- ❖ Set the output voltage value, press the Run button to output.
- ❖ The ON/OFF button on the panel can control the output voltage.
- ❖ The maximum output current is 0.5A.

Aux DC	F1 ↑
Aux DC:	020.00V
Press Run button to → Press ON/OFF button to control the output	

Any test

Any test

- ❖ Include Manual & Meter, Shot and Linear Ramp interface.

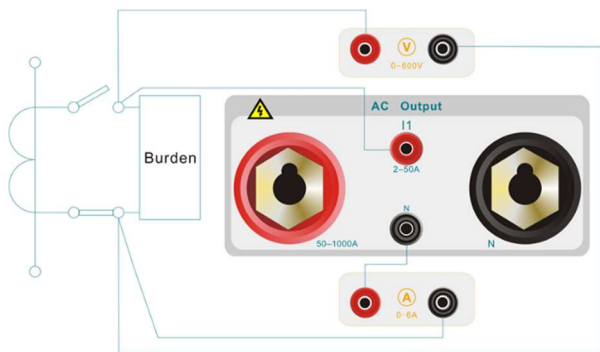
Any test	F1 ↑
Manual & Meter	
Shot	
Linear Ramp	

Any test - Manual & Meter

- ❖ Can output high power AC voltage / current, high power DC voltage.
- ❖ Can display the reading values of voltmeter and ammeter.
- ❖ Can realize manual control on the amplitude variable by the step.

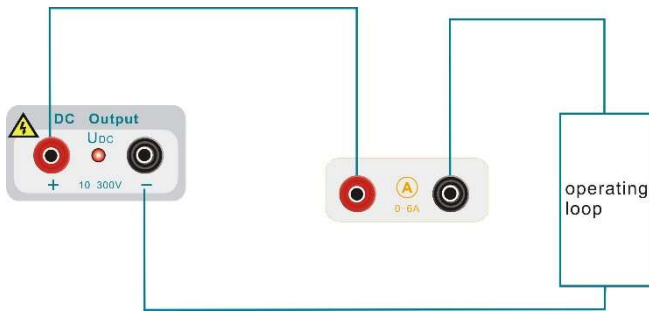
Manual & Meter	F1 ↑
I1-50A ▼	I1 0000.00A
	Ⓥ 000.000V
	Ⓐ 00.000A
	000.000Ω

Application examples 1 - CT secondary impedance test



Manual & Meter	F1 ↑
I1-50A ▼	I1 0000.00A
	Ⓥ 000.000V
	Ⓐ 00.000A
	000.000Ω

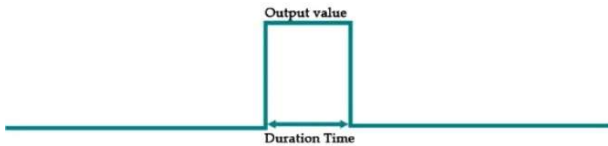
Application examples 2 - DC test of operating loop



Manual & Meter		F1 ↑
UDC ▼	UDC 220.00V	
	V	000.00V
	A	000.00A
		000.000Ω

Any test - Shot

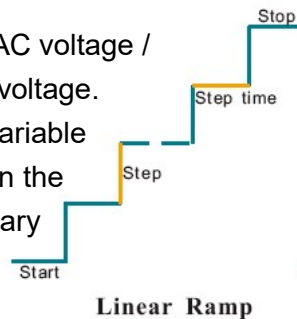
- ❖ Can output high power AC voltage / current, high power DC voltage.



Shot		F1 ↑
Shot	AC-I1-1000A ▼	
Start	0100.00A	
Duration	01.00s	

Any test - Linear ramp

- ❖ Can output high power AC voltage / current, high power DC voltage.
- ❖ When start output, the variable will gradually increase on the step. When receives binary input signal then record action value.



Linear Ramp		F1 ↑
Source	AC-I1-1000A ▼	Pick up
Start	0050.00A	Drop off
Stop	0060.00A	Ratio
Step	01.00A	
Step time	01.00s	

Relay test

Relay test

- ❖ Include pick up value test, trip time test, trip time + pulse length test and advanced test.

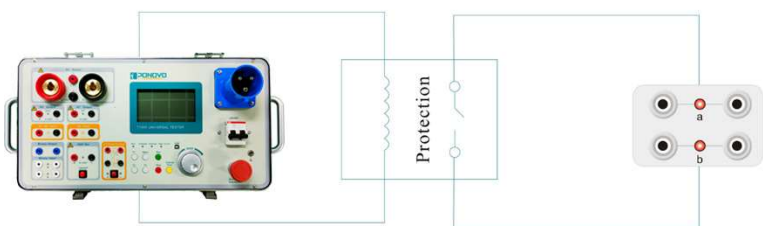
Relay test		F1 ↑
Pick up		
Trip time		
Trip Time + Pulse length		
Advanced		

Relay test – Pick up

- ❖ Can output high power AC current / voltage, high power DC voltage.
- ❖ Use the rotary knob adjust the output current / voltage value manually, can test pick up value, drop off value and calculated ratio automatically.

AC-I1		F1 ↑
Range	1000A▽	Pick up
I1	0100.00A	Drop off
		Ratio

Application examples - Trip value test



AC-I1		F1 ↑
Range	1000A▽	Pick up
I1	0100.00A	Drop off
		Ratio

Relay test – Trip time

- ❖ Can output high power AC current / voltage, high power DC voltage.
- ❖ When the tester receives the binary input of protection acting signal, the tester will record the action time.

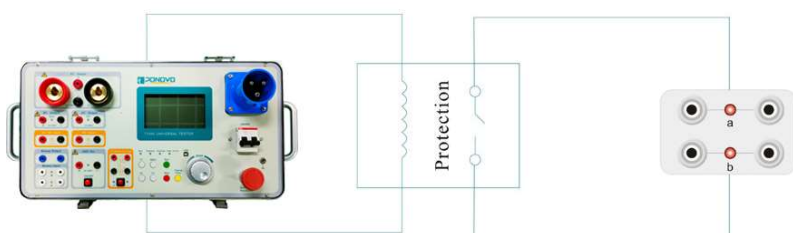
AC-I1		F1 ↑
Range	1000A▽	Time
Offset I1	0000.00A	
> Press Enter		
Test I1	0100.00A	

Relay test – Trip time + Pulse length

- ❖ Can output high power AC current / voltage, high power DC voltage.
- ❖ can test trip time and pulse time.

AC-I1		F1 ↑
Range	1000A▽	Time
Offset I1	0000.00A	Pulse
> Press Enter		
Test I1	0100.00A	

Application examples - Trip time test, Trip time + pulse length test



AC-I1		F1 ↑
Range	1000A▽	Time
Offset I1	0000.00A	Pulse
> Press Enter		
Test I1	0100.00A	

Relay test – Advanced

- ❖ Include reclosing test and motor overload test.

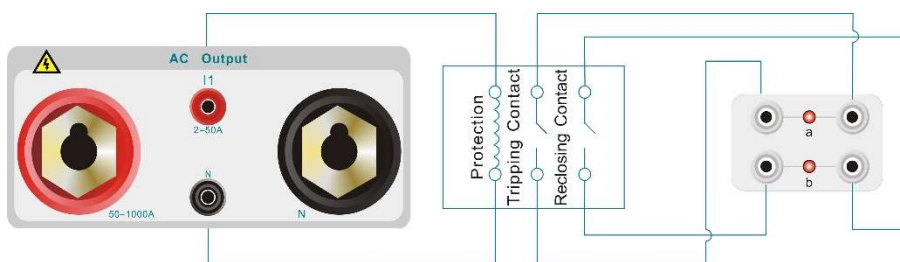
Advanced	F1 ↑
Reclosing Motor overload	

Relay test – Advanced – Reclosing

- ❖ Can set 6 times of faults at most and record 6 times of reclosing time.
- ❖ Can output high power AC current.
- ❖ Pick up denotes the time of first-time tripping. Reclosing denotes the time between binary input a and b after each fault.

Reclosing	F1 ↑
Number	6 ▼
Fault	I1-50A ▼ 0050.00A
Pick up	-a 001.069s
Reclosing	-b 000.667s
000.734s	000.653s 000.503s
000.529s	000.690s F3 Save

Application example - Reclosing test



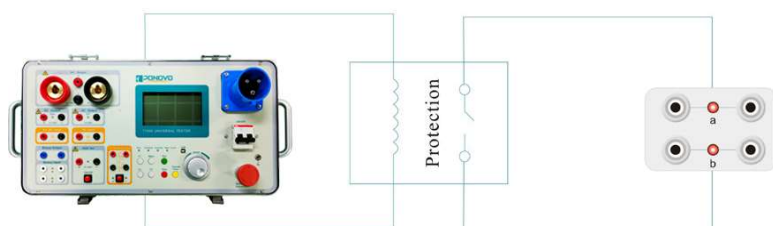
Reclosing	F1 ↑
Number	6 ▼
Fault	I1-50A ▼ 0050.00A
Pick up	-a 001.069s
Reclosing	-b 000.667s
000.734s	000.653s 000.503s
000.529s	000.690s F3 Save

Relay test – Advanced – Motor overload

- ❖ Can test trip time of motor.
- ❖ There are two ways to record the action time. Firstly, as soon as the tester receives a binary input from the relay under test; secondly, the current stop to output.
- ❖ The max output time of max output current is 40s.

Motor 1000A	F1 ↑
Offset	Time
I1 0000.00A	
Test > Press Enter	
I1 0300.00A	

Application example – Motor overload test



Motor 1000A	F1 ↑
Offset	Time
I1 0000.00A	
Test > Press Enter	
I1 0300.00A	

CT test

CT test - Ratio

- ❖ Can test CT ratio.
- ❖ Connect I1 output to the CT primary side and CT secondary side to the current measuring terminal.
- ❖ The tester will display the current it has measured and the ratio that has been calculated.

Ratio 1000A		F1 ↑
<input checked="" type="checkbox"/> 1A	<input type="checkbox"/> 5A	Ratio 200/1
I1 0050.00A Ⓐ 00.00A		

Application example – CT ratio test



Ratio 1000A		F1 ↑
<input checked="" type="checkbox"/> 1A	<input type="checkbox"/> 5A	Ratio 200/1
I1 0050.00A Ⓐ 00.00A		

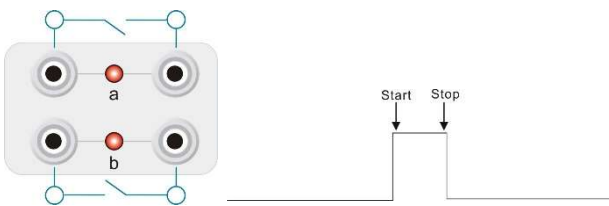
Timer

Timer

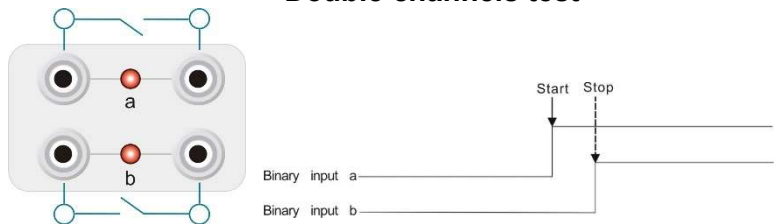
- ❖ Set single channel and/or double channels.
- ❖ The action time will be measured automatically before the test has ended.

Timer		F1 ↑
<input checked="" type="checkbox"/> Start Input a Stop Input a		Time 075.000ms
<input type="checkbox"/> Start Input a Stop Input b		

Single channel test



Double channels test



Report view can be view on local equipment and PC

Local view report

080406-181145	080206-121722
080406-181340	080118-175147
080406-181536	080212-092145
080405-181148	080309-141011
080406-181148	080403-151105
Pick up AC-I1	1/3
F1: ↓	F2: Delete all
	F3: Delete

PC report software



Report view on PC

T Series Relay Protector Tester Test Report		
Test Item Name	Time (YMD-HMS)	Test Result
Pick Up AC-Test	2023-03-28 11:59:30	Pick up: 12.000V Drop off: 11.000V Ratio: 0.917

Word Format

-----T Series Relay Tester Test Report-----

Pick Up
High Power AC-I1
2024-05-17 11:19:35
Pick up: 5.000A
Drop off: 4.000A
Ratio: 0.800

Txt Format

T1000 Primary Injection Test Set



Specification

High power AC current output (I1)

Range	2A~50A	50A~1000A
Accuracy	±0.5%	
Output voltage	20V	7V
Max Power	1000VA	7000VA
Load time	1000A 2min	

High power AC voltage output (U1)

Range	10~250V
Accuracy	±0.5%
Power	750VA (250V)
Load time	Continuous

High power DC voltage output (Udc)

Range	10~300V
Accuracy	±0.5%
Power	600W (300V)
Load time output	<1A Continuous >1A Max 60min

Auxiliary DC voltage output (Aux Udc)

Range	20~240V
Accuracy	±1%
Power	55W at 110V / 110W at 220V
Load time	Continuous at 0.5A

Ammeter

Range	0~6A AC direct measurement 0~2000A AC with external CT
Accuracy	±1%

Voltmeter

Range	0-600V AC/DC
Accuracy	±1%

Binary inputs

Number	2 (auto detection)
Input characteristic	±30~±250VDC or potential free
Time resolution	1ms (0.001-1 s) ±0.1% (1 -9999.999s)
Max. measuring time	9999.999s

Binary output

Number	1
Type	Potential free relay contact
Break capacity AC	Vmax 250V AC / Imax 8A / Pmax 2000VA
Break capacity DC	Vmax 250V DC / Imax 8A / Pmax 150W

Power supply

Nominal input voltage	220V / 240Vac
Permissible input voltage	-20%~+15%
Nominal frequency	50-60Hz
Permissible frequency	45-65Hz

Certificates

EMC (Emission)	IEC-61000-3-2/3
EMC (Immunity)	IEC 61000-4-2/3/4/5/6/11
Safety	IEC 61010-1

Others

Operation temperature	-5 ~+50° C
Operation humidity	5-95%, non-condensing
Weight	30Kg
Dimensions(W×H×D)	260×330×500 mm
PC connection	USB
Ground Socket (earth)	4 mm banana socket; front side
Emergency button	emergency push button keylock (optional)

Professional Solution Provider For The Power World

Since 2001, Ponovo Power has been focusing on providing professional solutions to over 5000 clients in the fields of intelligent testing and power quality control in China and aboard



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