

HZJB-1700
Hand-held Three-phase Relay
Protection Tester

USER MANUAL

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I. System Overview

1.1 System Overview

The secondary defect elimination tester HZJB-1700 is controlled by single chip microcomputer, which is simple in function and convenient to carry. It can be used to test the action value and time of AC relay. It can also test the protection functions of the low voltage microcomputer line protection, such as re-pressurization blocking direction overcurrent, zero sequence overcurrent, low cycle load reduction, and the whole transmission of the high voltage microcomputer line protection. It can also be used to test the start value, quick break value and second harmonic inrush blocking value of differential protection of microcomputer transformer.

1.2 Test Function

- Manual Test: The manual test can output three AC voltages and three AC currents, and the amplitude, phase, frequency and sequence component of the AC quantity can be controlled manually by step size.
- State Sequence Test: Status can be carried out action time test, multi-state simulation of failure, up to 5 states can be set, can be simulated after re-closing acceleration, can also be combined with the company's wechat analog circuit breaker for backup self-firing test.
- Low Cycle Load Shedding Test: The unit can perform fixed point test for low cycle load shedding action value, action time, slip lock value, voltage lock value, current lock value.
- Concurrent Test: The unit can test the relevant indicators of the test concurrent device
- Harmonic Unit: The unit can be used for the second harmonic inrush current blocking test of transformer differential protection.
- Cross Sampling Test: This unit is mainly used to measure the sampling accuracy of the AC sampling device.
- Remote Test: The unit can quickly open two pairs of nodes, the intermediate interval time can be freely set, the minimum resolution of 1ms.
- Millisecond Meter: The unit can cooperate with the scene to do some open quantity, flip timing.

The specific functions are described as follows:

Manual test functions	Can arbitrarily set the AC amount of various voltages, current amplitude, phase, and set various fault types of parameters
	Test the electrical performance of relays and protection with AC voltage (including phase voltage, line voltage, zero sequence voltage, positive sequence voltage, negative sequence voltage), AC current (including phase current, line current,) amplitude, phase, frequency, impedance and other variables.
	The step size can be manually controlled, and the step size can be changed by any setting variable
	Changes in output can be controlled
	Monitor changes in the input volume
	Action time can be tested
Multiple continuous state tests	Provides a variety of state sequence settings
	Provide a variety of time control, input control, manual trigger for state switching
	Can set various types of faults, including single grounding, two-grounding, interphase short circuit, three-phase short circuit. Fault type Instantaneous fault, permanent fault, transformational fault, and can control the fault transition time
	Can provide constant current, constant impedance and other test methods
	It can simulate the opening and closing time of the short-circuit device
	Can provide a separate voltage output as zero sequence voltage or line extraction voltage As zero sequence voltage can be set to $\pm 3U_0$ or $\pm \sqrt{3}U_0$; The amplitude and phase of the voltage can be set at will when the line extraction voltage is tested
	Can check the opening, opening and logical relationship of the action behavior of relays, protection and safety automatic devices
	The amplitude and phase of voltage and current can be set arbitrarily
	Can set the status parameters of various faults
	Can control each switching quantity separately
Dedicated test function	Low cycle load shedding
	Concurrent test
	Harmonic test
	AC sampling test
	Millisecond timing function
	Remote test

1.3 Panel Introduction



HZJB-1700 Product Photo

Keys description:

Run/Stop: Start test/stop test

Back delete key: When the cursor is in the current or voltage position, press the back delete key to move the cursor left or right.

▲▼: Move the cursor to change settings

+ -: Matching variables set increasing or decreasing values.

Fn: Special function key, click to change the variable selection.

Fn+1: Adjust the opening volume node 1 to carry out the action of close and disconnect.

Fn+2: Adjust the opening volume node 2 to carry out the action of close and disconnect.

3: Key trigger function in status sequence

Fn+4: Initial value

Fn+5: Short circuit calculation (This function is only available on HZJB-1700)

Fn+6: Setting key

Fn+7: Quick constant amplitude shortcut button

Fn+8 Fn+9: Quickly set Angle positive and negative order.

ESC: Exit the experiment menu to the main menu.

“.”: Enter “. ”when the cursor is on the amplitude. When the cursor is in phase, the output is“-”.

1.4 Technical Parameters

Product Model	HZJB-1700
AC voltage output	4 channels: 0-130V continuously adjustable 6 6 V by default
Output precision	Accuracy: 0~5V Accuracy error $\leq \pm 2$ mV, 5V~120V Accuracy error $\leq \pm 0.1\% \pm 2$ mV; Resolution: 1mV
Carrying capacity	≥ 30 VA/phase
Response time	Voltage 5V~130: THD% $\leq 0.5\%$, The voltage rise and fall time is less than 100 μ s
Phase	0-360° continuously adjustable; Accuracy 0.2°; Resolution 0.1°
AC current output	3 channels: 0-10A
Output precision	Accuracy : 0.2~0.5A, Error ≤ 2 mA , 0.5 ~ 10A Accuracy error $\leq 0.1\% \pm 2$ mA; Resolution: 1mA
Current output time	T330 current output time calculation formula is as follows: $(I_a \cdot I_a + I_b \cdot I_b + I_c \cdot I_c) \cdot t = 600$ seconds Typical current setting output time is as follows: $I_a = 1A, I_b = 0A, I_c = 0A$ output time is 600 seconds $I_a = 1A, I_b = 1A, I_c = 1A$ output time is 200 seconds $I_a = 5A, I_b = 5A, I_c = 5A$ output time is 90 seconds $I_a = 10A, I_b = 10A, I_c = 10A$ output time is 6 seconds
Carrying capacity	≥ 20 VA/phase
Response time	Current 0.5A~Imax: THD% $\leq 0.5\%$; The current rise and fall time is less than 100 μ s
Phase	0-360° Continuously adjustable; Accuracy 0.2°; Resolution 0.1°
Output frequency	0-650Hz, It can simulate 11 harmonics
Accuracy	Frequency range : 10-65Hz Accuracy < 1 mHz; 65 Hz ~250Hz Accuracy < 10 mHz
Opening & Closing volume	Opening volume: 2 channels Isolation voltage is 500V, the null contact is compatible with 32V~250V potential, and the polarity is automatically recognized; Closing volume: Type of 2 channels closing volume: optocoupler opening, time resolution is 0.1ms.
Adapter	DC 16.8V 5A
Built-in battery & Endurance	Built-in 20 amh lithium battery; Normal use of 8 hours

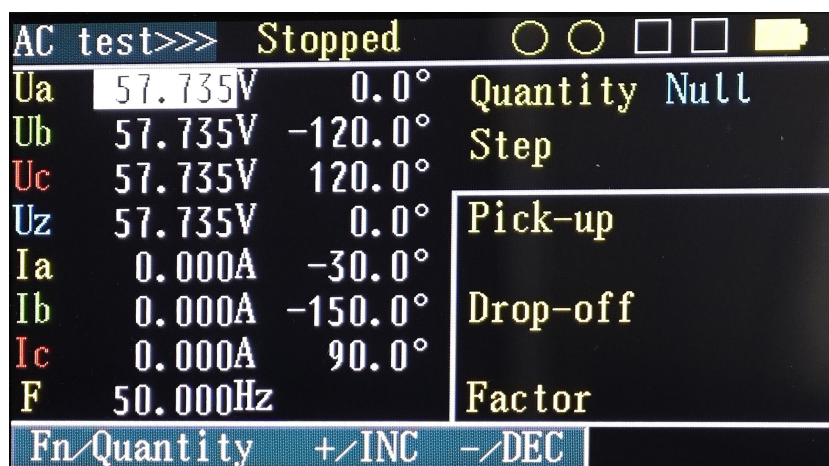
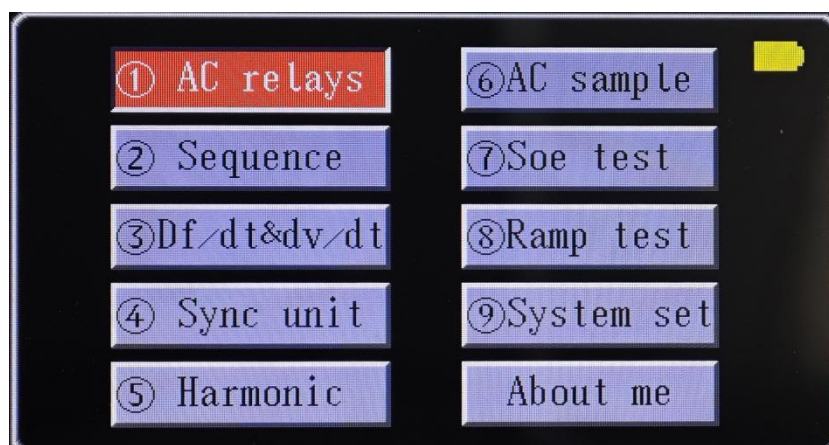
Instrument size &
Weight

Less than 2.75kg (hand-held) size: 255x210x78 (mm)

1.5 Operation Instruction

1.5.1 How to choose the test project

Software functions: manual test, status sequence, low cycle load shedding, concurrent unit, harmonic test, cross-mining test, remote signal test, millisecond timing. Press the up or down key to select the test menu, press the OK key to enter the menu (press the corresponding number key to enter the corresponding test unit).



1.5.2 How to select variables

After entering the manual test unit, press the up and down key to select the current and voltage amplitude, Angle frequency, etc. that need to be modified, which can be modified directly with the numeric keys on the keyboard. You can also move the cursor to the variable position by pressing the up or down key, and press the Fn key to select the variable that needs to be modified.

1.5.3 How to set parameters

Press Fn key to select the variable and then set the step size.

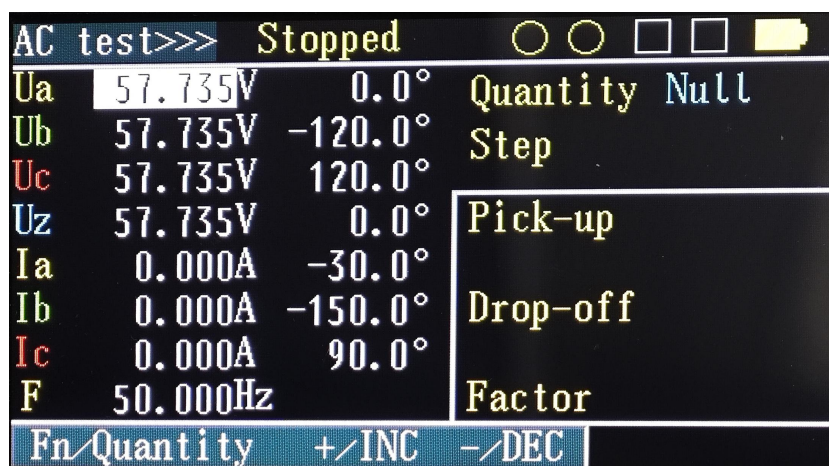
Setting of action value unit parameters:

1. Before starting the test, you can set the corresponding parameters by selecting variables;
2. After starting the test, you can press the add or subtract button to change the output of the variable.
3. Other units cannot change the parameter Settings after starting the test.
4. Variable minimum adjustable step size: 0.001v or 0.001A.
5. When the T330 output 130V AC voltage, first set the instrument to the main interface → system parameter Settings → Move the cursor to the maximum voltage → press Fn button to switch to 130V. (Note: Each restart restores to energy saving mode, i.e. 66V gear).

II. Manual Test

2.1 Overview

The unit can output four AC voltages and three AC currents, and can realize the amplitude, phase, frequency and manual step size control of the AC quantity.



2.2 Operation instruction

1. Select test item

Press OK or digital key 1 to enter the manual test unit.

2. Set the voltage and current values

- Press **up** or **down** to move the cursor and select the AC value to be set;

- Move the cursor over the variable and press the Fn key to select the amount you want to change;
- The cursor is moved over the step again, and the desired step can be changed directly by pressing the number keys.

3. Description of the test process

After setting the parameters according to the requirements, press the Run/Stop key to carry out the test. In the middle, you can press the add/subtract key to change the required variables until the protection action test stops. Record the action value and return value that need to be recorded.

Note: The manual test menu cannot test the action time. Test in state sequences if needed.

2.3 Test example

Test items: current action value of overcurrent II section in low voltage blocking direction, low voltage blocking value, power direction action zone, sensitive Angle.

1. Protection setting: overcurrent setting 4A; Overcurrent delay 0.5s; Low voltage blocking value 60V (line voltage); The direction is set to $-90^{\circ} \sim 30^{\circ}$ (90° wiring); The most sensitive Angle -30° .

The 90° connection is set as the phase of Ubc ahead of Ia, which is converted into the phase of Ia ahead of Ua: $-120^{\circ} \sim 0^{\circ}$, and the most sensitive Angle is -60° .

2. Test wiring: correctly connect the three-phase voltage and connect the A-phase current to the protection. The protected operating contact is connected to the tester trip opening amount. Exit the overcurrent section I and Section III, so as not to affect the section II test during the test.

3. Test process

(1) Current action value

Press up and down to move the cursor: select Ia amplitude variable Settings; Step length 0.1A;

Press the **amplitude** key: Select the current amplitude as the variable and set the initial current value to 3.5A (less than the action value);

Press the **start** test button, the tester starts output according to the set value;

Press the **add** or **subtract** button: increase or decrease the current value until the protection action contact turns over, and the tester records the action value.

Note: When changing the current value close to the operating current, each step length should be maintained for a certain time greater than the exit delay.

(2) Voltage blocking value

Move cursor to variable selection press **Fn** key: Select three-phase voltage amplitude as variable;

Set the current size to exceed a certain value,

Press +/- to reduce the three-phase voltage until the line voltage is less than the operating voltage value, and record the operating value of the blocking voltage.

(3) Directional action area

Move the cursor to select the Ia phase according to Fn variable: set the initial phase φ (I) $= -125.0^\circ$ in the non-action area;

Press the **start test** button, the tester starts output according to the set value, and the protection is not moved.

Press the + button to increase φ (I) to the action area until the protection action finds the boundary I, and the tester records the boundary. Restore the protection device. Then press the - key to reduce φ (I) until the protection action finds boundary II, the tester stops the test recording boundary II and automatically calculates the maximum sensitivity Angle.

(4) Action time test

Press the **start test** button, the tester starts output according to the set value, and the protection is not moved.

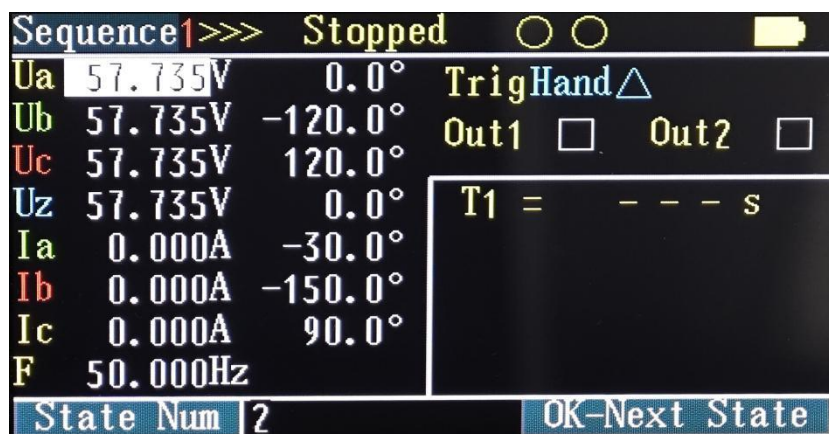
Move the cursor to the voltage, current position, change any current, voltage value, press the **OK** key, the device starts timing, when there is an incoming signal to the device, the timing stops. The device displays the time.

III. State Sequence

3.1 Overview

The unit can perform multi-state fault simulation, high voltage line protection distance protection, zero sequence protection, fiber differential, whole group transmission, ready to

self-throw, acceleration time test after re-closing.



The cursor moves to the total number of states which can be changed directly by entering the number of states

Press the +/- key to switch from 1 to 5.

Trigger conditions: manual trigger, time trigger, opening volume 1 flipping trigger, opening volume 2 flipping trigger;

3.2 Operation Instruction

1. Select test item

Press ▲ ▼ key to move the cursor to the status sequence press OK key to enter the menu or press number key 2 to enter the menu, press OK key to turn the page to set 1 to 5 status output analog, press Fn+1 or Fn+2 to adjust the output of normally open and normally closed nodes.

Move the cursor to trigger condition, Press Fn to modify the trigger condition.

2. Set the fault voltage and current value

Move the cursor without pressing OK to freely modify the voltage and current value to be set.

3. Test process description

Press the **Start test** button, the tester starts to output the first state according to the set value, follow the trigger conditions to output states one by one, until the end of the fifth state, stop the test.

Select time trigger: Start the test state start the timing start, set the end of the time, immediately cut to the next state, until the end of all.

Manual trigger: You need to press 3 keys. After the test starts, press 3 keys to enter the next state.

Triggered by switch quantity: An external open node needs to be introduced. If an external open node exists during the running of this state, it can enter the next state and record the rollover time.

3.3 Test Example

Test item: Test high voltage line acceleration after zero sequence reclosing

1. Protection setting value: Zero sequence II overcurrent set 4A; Overcurrent delay 1s; Single weight time 0.8s; Zero sequence after acceleration set at 2.5A

2. Test wiring: correctly connect the three-phase voltage and connect the A-phase current to the protection. The protected operating contact is connected to the tester trip opening amount. Exit the main protection, distance protection, etc., only put the zero sequence protection plate reclosing plate to avoid affecting the test.

3. Test process

The first state: There is no voltage and no current, and the triggering condition is 28s, which is used to protect the whole group of recharging (energy storage) when the TV is disconnected. Open 1 close for the protection device closing position (field switch closing may not open).

The second state: Fault state, phase A voltage drops, fault current I_a greater than zero sequence value. The status time is longer than the action time (it is recommended to set the time to be 100ms longer than the fault time to avoid single-hop failure and three-hop failure.)

The third state: The coincidence state, which simulates the protection action after the switch jumps, the fault phenomenon disappears, the bus voltage recovers, the fault current disappears, according to the requirements can be a coincidence. Coincidence time 0.8S. (Set 0.9s to ensure reliable coincidence)

The fourth state: The post-acceleration state, which coincides with the fault line. The guard will speed up and jump away.

Note: The above cases can also be used for logic tests such as self-investment. To test the protection trip and closing times, change states 2 and 3 to the switch turnover

trigger.

3.4 Test Example

Test item: line distance protection experiment

The first state: There is no voltage and no current, and the triggering condition is 28s, which is used to protect the whole group of recharging (energy storage) when the TV is disconnected. Open 1 close for the protection device closing position (field switch closing may not open).

Second state: Fault state. After entering the second state, press Fn+5 (Calculation) key to enter the short-circuit calculation menu, enter the short-circuit calculation value, and press OK key to complete the setting of the fault state. Short circuit calculation page as shown below

AC test>>> Stopped			Fault CALC	
Ua	57.735V	0.0°	Z	1.000Ω
Ub	57.735V	-120.0°	Phase	90.0°
Uc	57.735V	120.0°	Type	A Ground
Uz	57.735V	0.0°	Current	5.000 A
Ia	0.000A	-30.0°	Multiple	1.00
Ib	0.000A	-150.0°	Mode	KL
Ic	0.000A	90.0°	AMP	0.670
F	50.000Hz		Phase	0.0°
			OK	Cancel

IV. Low Cycle Load Shedding Unit

4.1 Overview

The unit can test the action value, action time, slip lock value, voltage lock value and current lock value of low cycle load.

Df/dt>>> Stopped			○○ □□ ■	
Ua	57.735V	0.0°	F-Start	50.000Hz
Ub	57.735V	5.0°	df/dt	0.100Hz
Uc	57.735V	120.0°	F-time	48.000Hz
Uz	57.735V	0.0°	F-end	45.000Hz
Ia	0.000A	-30.0°	F-pickup	48.051Hz
Ib	0.000A	-150.0°	T-pickup	----- s
Ic	0.000A	90.0°		
Fn-dfdt/dvdt				

4.2 Operation instruction

1. Select test item

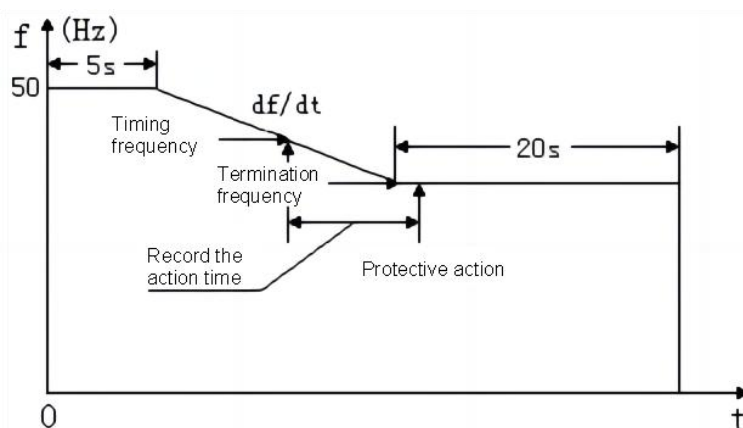
Move the cursor under the main menu and press the OK key to enter the low-cycle load shedding test unit.

2. Set parameters

- The method of setting the amplitude and phase of voltage and current is the same as before.
- Press ▲▼ key to move the cursor and press the number key to set the start frequency and end frequency;
- Press ▲▼ key to move the cursor press the number key to set the slip
- Press ▲▼ to move the cursor and press the number keys to set the frequency.

3. Test process description

- Press the start test button, the tester output the set voltage and current value, the frequency is 50Hz, the time is fixed as 5s;
- 5s time, the voltage and current frequency from 50Hz to the set frequency slip to the termination frequency decrease, and when the frequency drops to the set frequency, the tester starts the timing;
- If the protection act (the amount of the action contact to the trip opening), the tester stops the meter and displays the action time;
- If the protection does not act, the test is terminated after the stop frequency is lowered and held for 20 seconds.



4.3 Test Example

Test items: frequency action value, action time, slip blocking value, voltage blocking value of low cycle protection.

1. Protection setting value

Action value: 49 Hz 、 action time setting value: 2s, slip blocking setting value: 2 Hz/s, line voltage blocking value: 60V, current blocking value: 1A

2. Test low cycle frequency action values

(1) Fixed-point test: $f=48.99\text{Hz}$, whether the low-cycle load shedding is operated

Set the stopping frequency 48.99Hz: lower than the low cycle frequency set value to make the low cycle reliable operation;

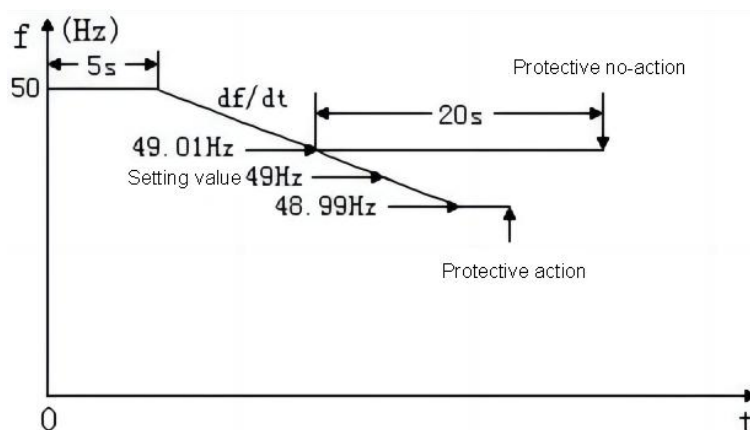
Set frequency slip 1Hz/s: less than slip lock set value open low cycle load shedding outlet;

Set frequency set value 49Hz: the frequency at which the tester starts timing, which can be the setting low frequency set value or the measured operating frequency;

Set voltage 57.74V: greater than the low voltage lock set value open low cycle load shedding outlet;

Set current value (if feed current lock) 1.2A: Open low cycle load shedding outlet greater than low current lock setting.

Test results: low cycle load shedding action, record low cycle protection action set value and time. If you need to accurately test the low cycle protection action value, set the low cycle termination frequency to 48.95Hz.



3. Test low cycle motion time

Set the stopping frequency 48.8Hz: lower than the low cycle frequency set value to make the low cycle reliable operation;

Set frequency slip 1Hz/s: less than slip lock set value open low cycle load shedding outlet;

Set frequency set value 49Hz: the frequency at which the tester starts timing, which can be the setting low frequency set value or the measured operating frequency; Set voltage 57.74V: greater than the low voltage lock set value open low cycle load shedding outlet;

Set current value (if feed current lock) 1.2A: Open low cycle load shedding outlet greater than low current lock setting.

Test process: Press the **start test** button, and the rated voltage, 1.2A current and frequency of the tester will be 50Hz. After 5s, the frequency of voltage and current will decrease from 50Hz to 48.8Hz from 1Hz/s. When the frequency drops to 49Hz, the tester will start timing, and the tester will switch on the tripping input to the protection action signal stop meter and display the action time.

4. Fixed point test slip locking value

(1) Fixed-point test: when $df/dt=1.9\text{Hz/s}$, whether the low-cycle load reduction action

Set frequency slip 1.9Hz/s: less than slip lock set value open low cycle load shedding outlet;

Set the stopping frequency 48.8Hz: lower than the low cycle frequency set value to make the low cycle reliable operation;

Set frequency set value 49Hz: the frequency at which the tester starts timing, which can be the setting low frequency set value or the measured operating frequency;

Set voltage 57.74V: greater than the low voltage lock set value open low cycle load shedding outlet;

Set current value (if feed current lock) 1.2A: Open low cycle load shedding outlet greater than low current lock setting.

Test result: low cycle load shedding act

(2) Fixed-point test: When $df/dt=2.1\text{Hz/s}$, whether the low-cycle load shedding is operated

Set frequency slip 2.1Hz/s: greater than the slip lock set value to lock the low cycle load shedding outlet;

Set the stopping frequency 48.8Hz: lower than the low cycle frequency set value to make the low cycle reliable operation;

Set frequency set value 49Hz: the frequency at which the tester starts timing, which can be the setting low frequency set value or the measured operating frequency;

Set voltage 57.74V: greater than the low voltage lock set value open low cycle load shedding outlet;

Set current value (if feed current lock) 1.2A: Open low cycle load shedding outlet greater than low current lock setting.

Test result: low cycle load shedding does not act

- Fixed-point test conclusion: Under the condition that the outlet condition is satisfied at the low frequency and the outlet is open for both voltage lock and current lock, 1.9Hz/s low-cycle load shedding is operated and 2.1Hz/s low-cycle load shedding is not operated, indicating that the slip lock value is between 1.9 and 2.1Hz/s.。

5. Test the line voltage blocking value at a fixed point

(1) Fixed-point test: when the three-phase line voltage is 62V, whether the low-cycle load reduction is operated

Set the stopping frequency 47Hz: lower than the low cycle frequency set value to make the low cycle reliable operation;

Set frequency slip 1Hz/s: less than slip lock set value open low cycle load shedding outlet;

Set frequency set value 49Hz: the frequency at which the tester starts timing, which can be the setting low frequency set value or the measured operating frequency;

Set the three-phase phase voltage to 35.8V (line voltage =62V) : greater than the low voltage lock setting value to open the low cycle load shedding outlet;

Set current value (if feed current lock) 1.2A: Open low cycle load shedding outlet greater than low current lock setting.

Test result: low cycle load shedding act

(1)Fixed point test: When the three-phase line voltage is 58V, whether the low-cycle load shedding is operated

Set the stopping frequency 47Hz: lower than the low cycle frequency set value to make the low cycle reliable operation;

Set frequency slip 1Hz/s: less than slip lock set value open low cycle load shedding outlet;

Set frequency set value 49Hz: the frequency at which the tester starts timing, which can be the setting low frequency set value or the measured operating frequency;

Set the three-phase phase voltage to 33.5V (line voltage =58V) : less than the low voltage lock set value to lock the low cycle load shedding outlet;

Set current value (if feed current lock) 1.2A: Open low cycle load shedding outlet greater than low current lock setting.

Test results: low cycle load reduction does not act

- Fixed-point test conclusion: Under the condition that the low frequency meets the outlet condition, slip lock and current lock value are all open at the outlet, 62V low-cycle load shedding action and 58V low-cycle load shedding no action, indicating that the voltage lock value is between 62V and 58V.

Note: The output is closed when the frequency is set during the low cycle load shedding unit test

V. Harmonic Unit

5.1 Overview

The unit can perform the second, third and fifth harmonic inrush current blocking test of transformer differential protection.

Harmonic>>> Stopped		Quantity Null	
Ua	57.735V	Step	
Ub	57.735V		
Uc	57.735V		
Uz	0.000V		
Ia	1.000A		
2nd	0.000A	THD 0.000%	
3rd	0.000A		
5th	0.000A		

5.2 Operation instruction

1. Select test item

Press ▲ ▼ key to select test item, press OK key to enter harmonic test.

2. Set parameters

- Move the cursor to set the fundamental or harmonic current amplitude;
- Harmonic coefficient = (RMS of second harmonic/RMS of fundamental wave) × 100%.

5.3 Test Example

Test item: second harmonic brake coefficient of transformer differential protection.

1. Protection setting value: transformer differential protection threshold value 1.5A, second harmonic braking coefficient 15%.

2. Setting of test parameters

Set fundamental current 2A: greater than the threshold of differential protection action;

Set the second harmonic current to 0.4A: the proportion of the second harmonic to the fundamental wave is 20%.

3. Test process

Press **Start Test** button, the composite current of fundamental wave and second harmonic is output by the tester, in which the proportion of the second harmonic to the fundamental wave is 20%, which is greater than the braking coefficient of the fixed value of the second harmonic is 15%.

Select the second harmonic current as the variable.

Press +/- to reduce the second harmonic current amplitude until the differential protection action;

The tester displays the second harmonic coefficient at the time of action.

VI. Concurrent Test

6.1 Overview

The unit can be used to test automatic quasi-synchronous devices in power plants.



6.2 Operation Instruction

1. Select test item

In any state:

- Move the cursor and press the OK key to enter the unit selection;

2. Set parameters

- U_{sys} connects to the system side voltage, U_z connects to the standby side voltage.
- Move cursor and press Fn key to select variable U_z phase, step size 3°.

3. Test process description

Press the **start test** button → The tester output according to the set starting value, and give the closing pulse on site. Adjust the phase of the U_z on the parallel side at constant speed. Make it slowly enter the closing range $\pm 30^\circ$.

6.3 Test Example

Test item: automatic quasi-synchronous device closing Angle test.

1. Relay setting value: closing Angle $\pm 30^\circ$,
2. Test wiring: U_{sys} access system side voltage, U_z access standby side voltage.

3. Test process

Press **start test** button → The tester output according to the set starting value, and give the closing pulse on site. Adjust the phase of the Uz on the parallel side at constant speed. Make it slowly enter the closing range $\pm 30^\circ$.

VII. Cross Sampling Test

AC Sample>>>		Stopped		
Ua	57.735V	0.0°	Pa	0.000 W
Ub	57.735V	-120.0°	Qa	0.000 Var
Uc	57.735V	120.0°	Pb	0.000 W
Uz	57.735V	0.0°	Qb	0.000 Var
Ia	0.000A	-30.0°	Pc	0.000 W
Ib	0.000A	-150.0°	Qc	0.000 Var
Ic	0.000A	90.0°	ΣP	0.000 W
F	50.000Hz	3P4L△	ΣQ	0.000 Var
0C	0.5C	0.866C	1.0	0.866L
				0.5L
				0L

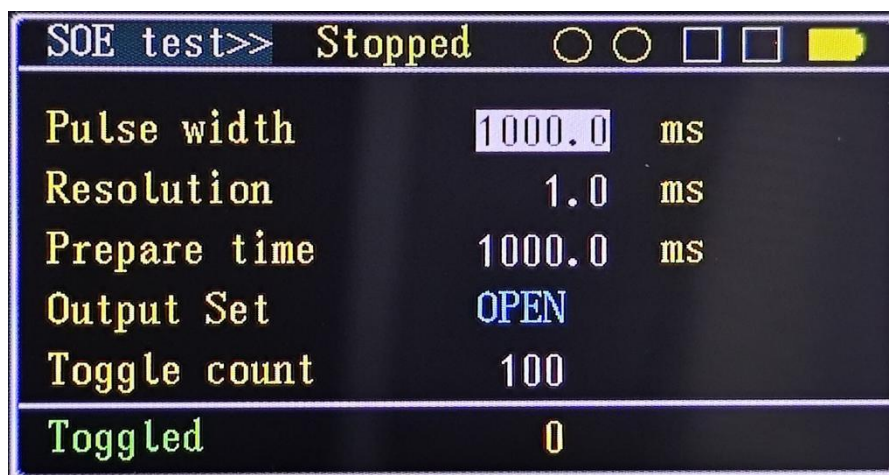
The unit is similar to the manual unit, but the unit is mainly used to measure the sampling accuracy of the AC sampling device, the amplitude phase frequency of the 4-phase voltage and the 3-phase current can be set, and the 3-phase calculation mode and 4-phase calculation mode are supported. The actual output active and reactive power calculation values of each phase and the total active and reactive power values of the three phases are displayed on the right side of the interface.

At the bottom of the interface are some commonly used power factors. You can switch the corresponding power factors by pressing "+" and "-". The output phase of the current will change according to the power factor value.

VIII. Remote Test

8.1 Overview

The unit can output two pairs of open nodes, and according to the setting can be repeated in order and set the interval time, which is very useful for SOE test, the shortest interval time is 1ms.



8.2 Operation Instruction

1. Select test item

- Move cursor enter SOE test.

2. Set parameters

- Pulse width setting: Influences the number of reversals.
- Resolution: minimum interval can be set 1ms,
- Variation frequency: set by the user at will.
- Preparation time: After starting the test, dosage 1 and 2 are turned successively after the set time.
- Opening initial state: can be set before the start of opening volume 1 and 2 on and off.