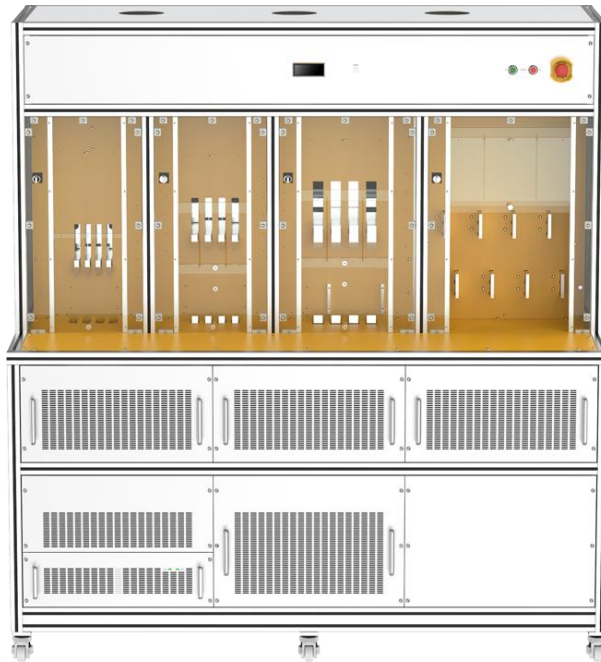


# TK8100 Calibrator for Low-voltage Circuit Breakers



## 1. Summary

TK8100 is a comprehensive calibration device for power metering, communication protocol, alarm and other functions of intelligent low-voltage circuit breakers. The device consists of a three-phase precision AC power source, a high-grade three-phase standard energy meter (built-in), a calibration platform, a computer and special software. It is suitable for the establishment of a comprehensive test platform for intelligent low-voltage circuit breakers of D level and below in the fields of electric power, manufacturing, and scientific research.

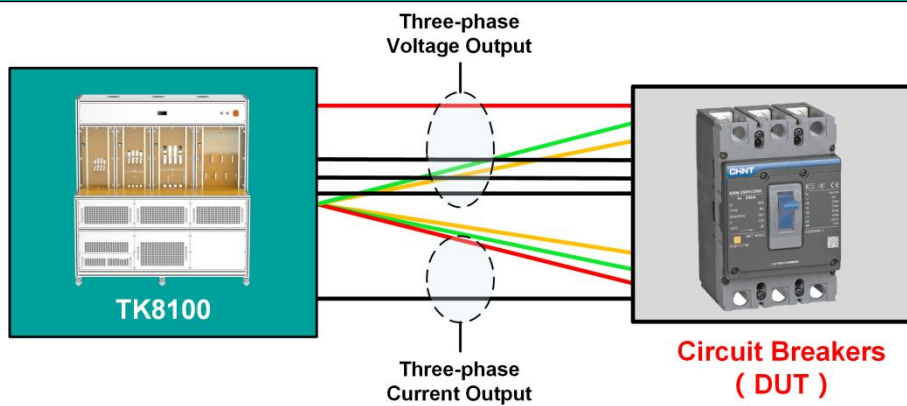
## 2. Feature

- Three-phase voltage standard source: 24 V~528 V.
- Three-phase current standard source: 10 mA~480 A / 960 A / 1200 A.
- Power/energy accuracy up to Class 0.05.
- Frequency Range: 40 Hz~80 Hz.
- Adjustable Frequency and Phase; Virtual Power Output.
- Harmonic function/ AC power meter pulse test function.
- Special test software (option).

### 3. Application



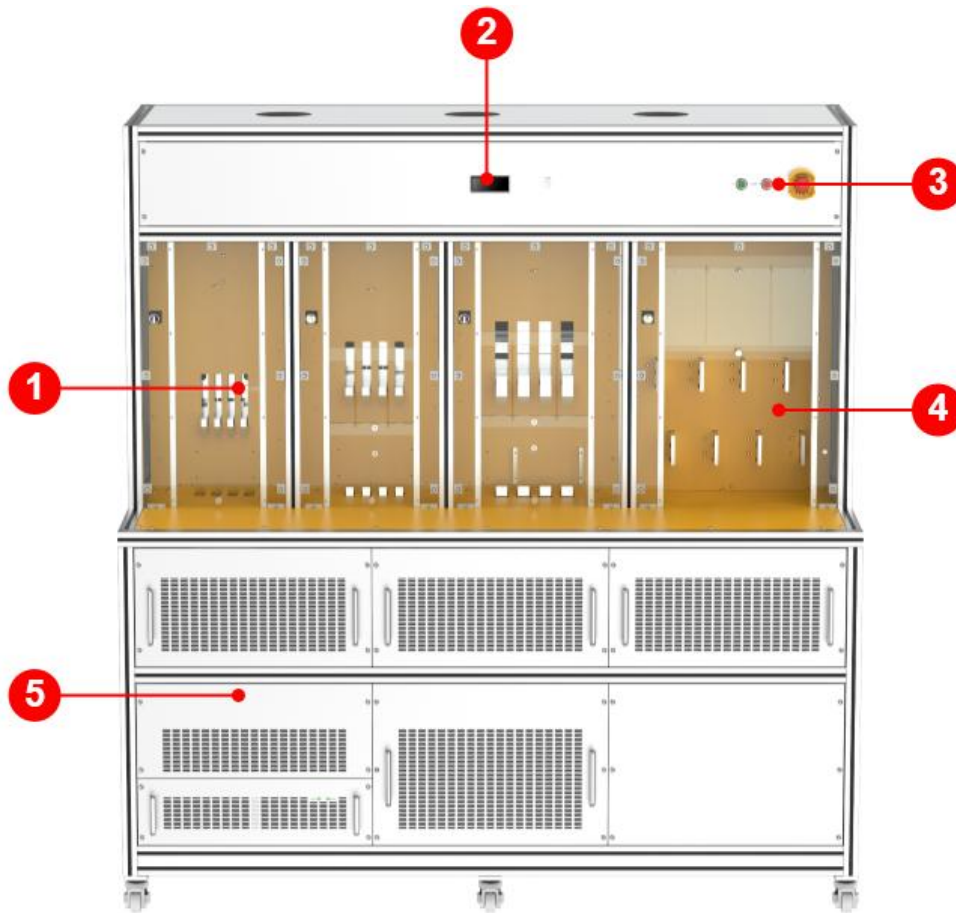
#### ☆ Calibrating Circuit Breakers



- **Three-phase voltage standard source ( ACV ):** 24 V~528 V
- **Three-phase current standard source ( ACI ):** 10 mA~480 A / 960 A / 1200 A
- **Three-phase power standard source:** The virtual power standard source is composed of three-phase voltage and current independent output and phase adjustable.
- It is suitable for calibrating miniature circuit breakers, molded case circuit breakers, etc. of class 0.2 and below.

## 4. Instrument Appearance

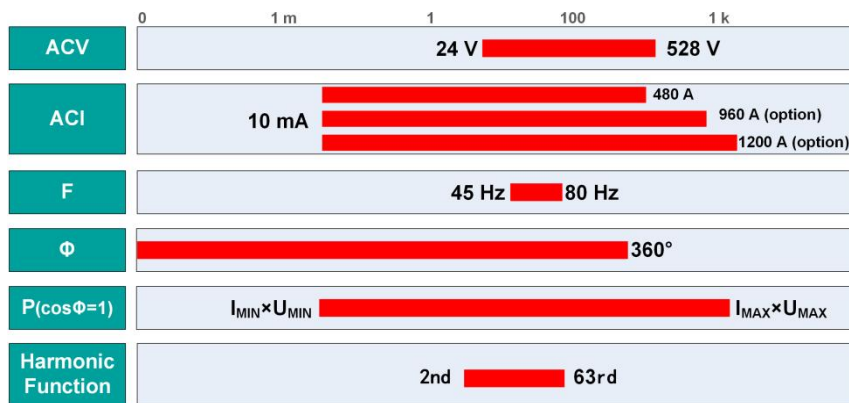
### ☆ Overall Instrument



Number	Function
1	Circuit breaker test positions, from left to right, can be used to test circuit breakers of 200 A/400 A/800 A specifications.
2	The small display screen displays information such as electric energy.
3	The power switch and the emergency stop button are used to control the opening and closing of the power supply of the device, and directly cut off the power supply in case of emergency.
4	The device is traceable to the test positions, and can be connected to a standard meter to calibrate the signal source output by the device.
5	Built-in standard signal source, located inside the device, including voltage signal source and current signal source.

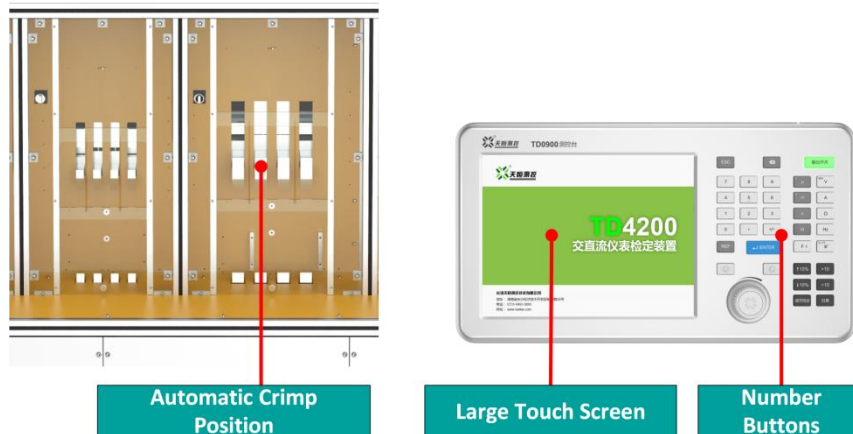
## 5. Characteristics

### ☆ Wide Range



- The ability to output a wide range can cover the calibration of molded case circuit breakers commonly used in power systems.

### ☆ Easy Operation

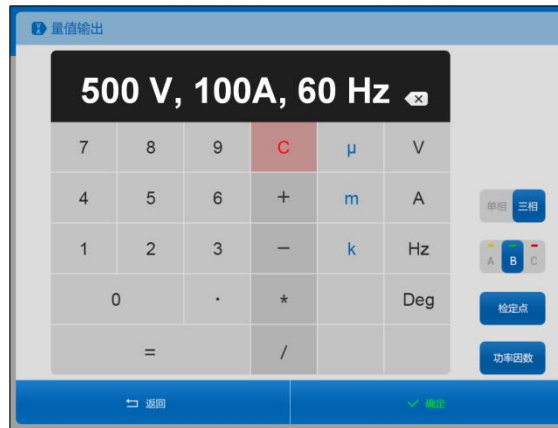


- **Automatic Crimping Position:** It is suitable for automatic crimping of circuit breakers of different specifications, which is convenient for users to operate during meter inspection.
- **Measurement Console:** Large-size full-color LCD screen with clear picture quality, support touch operation, comprehensive functions, simple and quick.
- **Digital Programmable Button:** Realize multiple input methods such as fixed-point output, digital knob, and step adjustment, and the operation is convenient and fast;
- **Advantage:** This combined operation method effectively improves the convenience of operation to adapt to various application scenarios.

## ☆ Multiple Output Methods



Number Buttons on the Console Panel

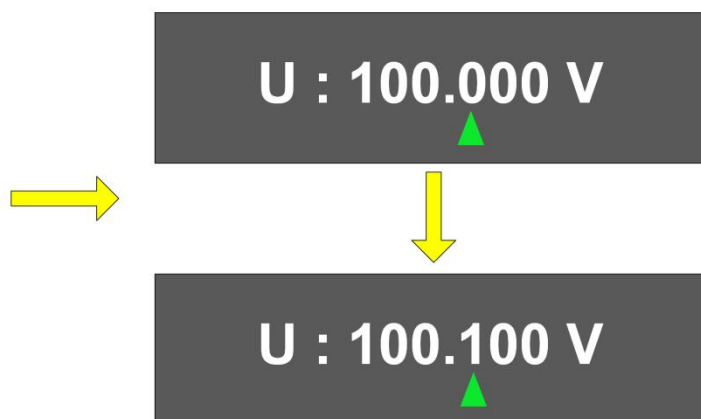


Value Output Interface on the Touch Screen

- The instrument has a "fixed-point output" mode. Through the digital buttons on the measurement console or by clicking the touch screen, you can directly set the required output value, and the instrument will automatically switch to the best range output, which makes it very convenient to calibrate the digital instrument.
- Especially when setting the power, directly input the voltage value, current value and phase.
- When setting three-phase electricity, select three-phase unified adjustment or separate phase adjustment on the main interface.



Number Knob

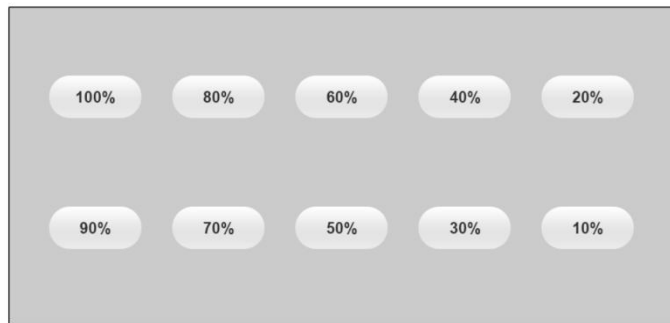


- The operating area is equipped with a "digital knob", which can be rotated clockwise or counterclockwise to increase or decrease the value output.

## ☆ Multiple Output Methods



"Percentage" Test Point Output Button



"Percentage" Test Point Interface on the Touch Screen



100% Range Output



90% Range Output



80% Range Output

...

- When calibrating electrical measuring instruments, it is usually necessary to select calibration points according to the ratio of each range of the meter under test.
- The user can easily select the calibration point of the tested meter through the "percentage verification point" on the touch screen of the instrument.

## 6. Specifications

### 6.1 Three-phase Voltage/Current Output

Voltage Range	Resolution	Short-term Stability (%/min)	Uncertainty (k = 2) (ppm*RD+ppm*RG) <sup>[1]</sup>
240 V	1 mV	0.01	120 + 80
480 V	1 mV	0.01	120 + 80

Note 【1】 : RD is the reading value, RG is the range value, the same below.

Current Range	Resolution	Short-term Stability (%/min)	Uncertainty (k = 2) (ppm*RD+ppm*RG) <sup>[1]</sup>
100 mA	1 μA	0.01	200 + 100
200 mA	1 μA	0.01	200 + 100
500 mA	1 μA	0.01	200 + 100
1 A	10 μA	0.01	200 + 100
2 A	10 μA	0.01	200 + 100
5 A	10 μA	0.01	200 + 100
10 A	100 μA	0.01	200 + 100
20 A	100 μA	0.01	200 + 100
50 A	100 μA	0.01	200 + 100
100 A	1 mA	0.01	200 + 100
200 A	1 mA	0.01	200 + 100
400 A	1 mA	0.01	200 + 100
800 A <sup>[2]</sup> 1000 A <sup>[2]</sup>	1 mA	0.01	200 + 100

Note 【2】 : 800 A / 1000 A is optional

- Voltage Range: 24 V~528 V, Current Range: 10 mA~480 A / 960 A / 1200 A
- Symmetry: <0.2%, Distortion: <0.5% (Resistive Load)
- Maximum Output Power: 200 VA @voltage, 600 VA @current
- Protection Function: short circuit protection, open circuit protection, overload protection, overheating protection.



## 6.2 Frequency / Phase / Harmonics

Frequency	Adjustment Range	45.000 Hz~80.000 Hz (When I>600A, Frequency Range 40 Hz~60 Hz)
	Adjust Fineness	0.01 Hz
	Uncertainty (k=2)	0.01 Hz
Phase	Adjustment Range	0.000°~359.999°
	Adjust Fineness	0.005°
	Uncertainty (k=2)	0.02°
Harmonics	Harmonic Order	2nd~63rd
	Amplitude Adjustment Range	0~30%
	Phase Adjustment Range	0~359.99°

## 6.3 Power / Energy

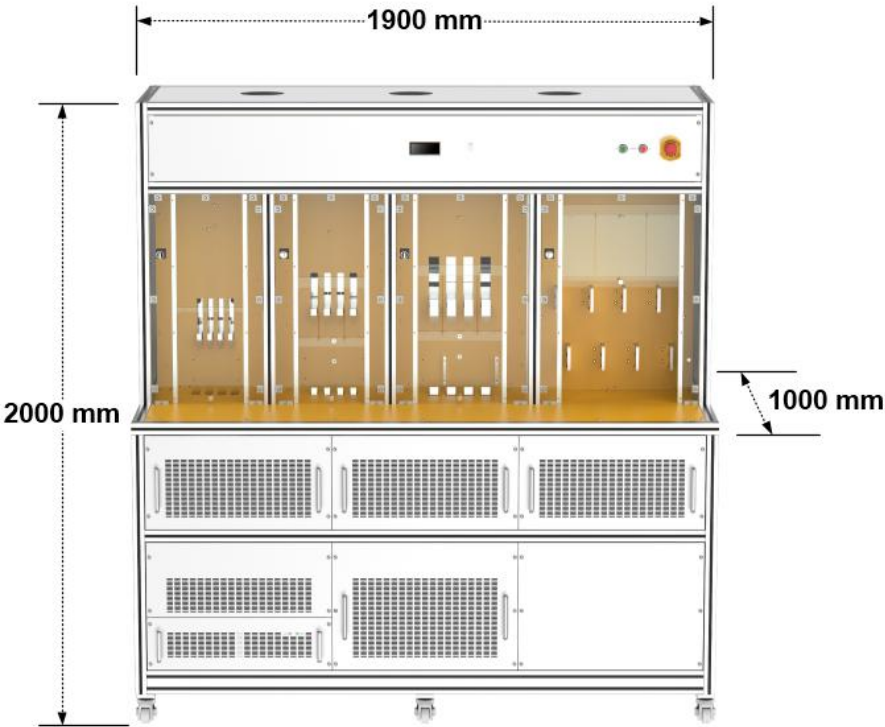
Range	Short-term Stability ( %/min )	Uncertainty ( k = 2 ) ( %*FS) <sup>[3]</sup>
Active Power $ \cos \varphi  \geq 0.5$	0.02	0.05
Reactive Power $ \sin \varphi  \geq 0.5$	0.02	0.05
Apparent Power	0.02	0.05
Power Factor	0.02	0.05

Note 【3】 : FS=voltage range value × current range value, the same below.

- Power factor setting range:-1.000 0...0.000 0...1.000 0
- When outputting high-frequency pulses, the full-scale value corresponds to 60 kHz; when outputting low-frequency pulses, the full-scale value corresponds to 6 Hz;
- Energy Pulse Input: frequency ≤ 100 kHz, voltage: 0~3.3 V...24 V



## 8. General Specifications

<b>Power supply</b>	AC ( 220 ± 22 ) V, ( 50 ± 2 ) Hz
<b>Maximum Power</b>	2000 VA
<b>Warm-up time</b>	10 minutes
<b>Temperature Performance</b>	Operating temperature: 0°C~45°C; Storage temperature: -20°C~70°C
<b>Humidity Performance</b>	Working humidity: < 80% @ 30°C, < 70% @ 40°C, < 40% @ 50°C Storage humidity: (20%~80%) R·H, non-condensing
<b>Altitude</b>	< 3000 m
<b>Communication Interface</b>	RS232、LAN
<b>Dimensions</b>	1900 mm(W) × 1000 mm(D) × 2000 mm(H)
	 <p style="text-align: center;">*1000 A specification dimensions as an example</p>

## 9. Ordering Information

**TK8100** -  -

Maximum Current Range	
Code	Note
<i>400A</i>	400 A
<i>800A</i>	800 A
<i>1kA</i>	1 kA

Meter Position	
Code	Note
<i>Empty</i>	Single Position
<i>3</i>	Three Position

**Example: TK8100-400A** means that the maximum current range is 400A, single meter position.