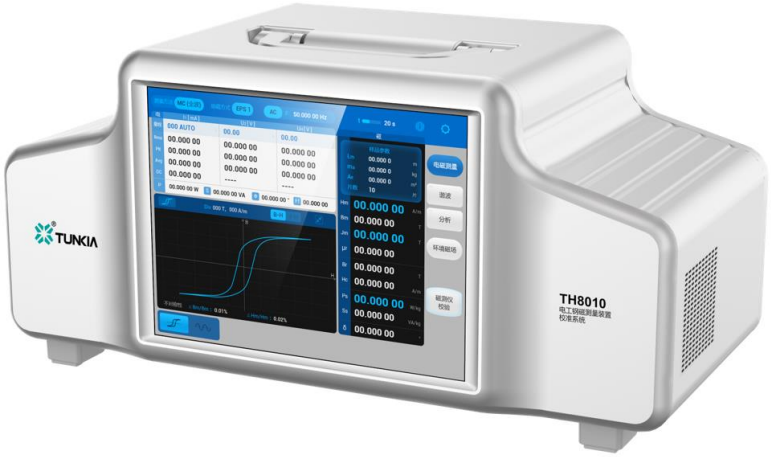
TH8010 Electrical Steel Magnetic Measurement Device Calibration System



1. Summary

TH8010 is an instrument specially used for traceability calibration of electrical steel magnetic measuring devices. Its absolute measurement uncertainty is at least 3 times higher than the accuracy of the current mainstream commercial magnetic measuring instruments in the world (excluding errors caused by SST and EPS).). The magnetic parameters can be traced back to basic electromagnetic physical quantities, and the performance of the electrical steel magnetic detector can be comprehensively analyzed.

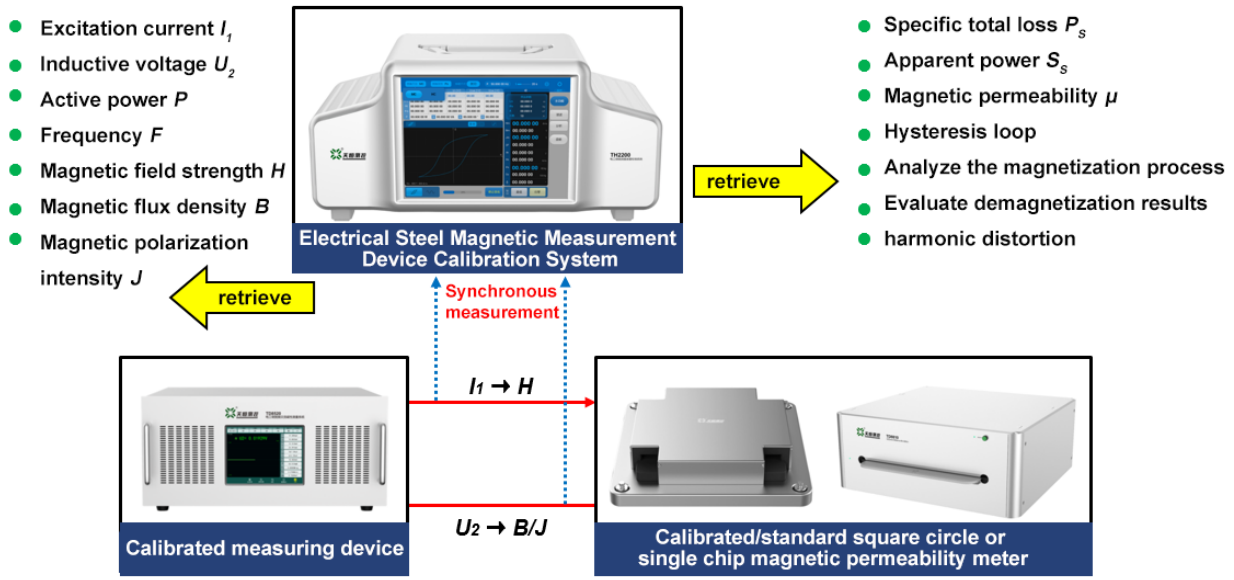
2. Features

- Supports various electrical parameter measurements within the frequency range of DC to 10 kHz.
- Supports three measurement modes: average, peak, and effective value.
- The voltage/current accuracy reaches ***class 0.01***, and the power reaches ***class 0.02***.
- It can also ensure accurate measurement of iron loss under high frequency, low power factor and high magnetic induction.
- Can measure H, B, J, Ps, Hc, Br, μ and other magnetic parameters.
- Supports the drawing of B-H, μ-H and other magnetic characteristic curves.
- It can analyze the magnetization process of the magnetometer being calibrated.
- It can evaluate the demagnetization effect of the magnetometer being calibrated.
- Supports measurement of DC ~ 64th harmonic and total harmonic distortion.

- Harmonic measurement bandwidth up to 200 kHz;
- Supports display of harmonic histogram and percentage of each harmonic.
- A three-axis fluxgate magnetometer is configured to measure the environmental magnetic field.
- It has data statistical analysis function and supports internal synchronization or external synchronization.
- Large-size LCD touch screen.
- Specialized calibration software is optional.

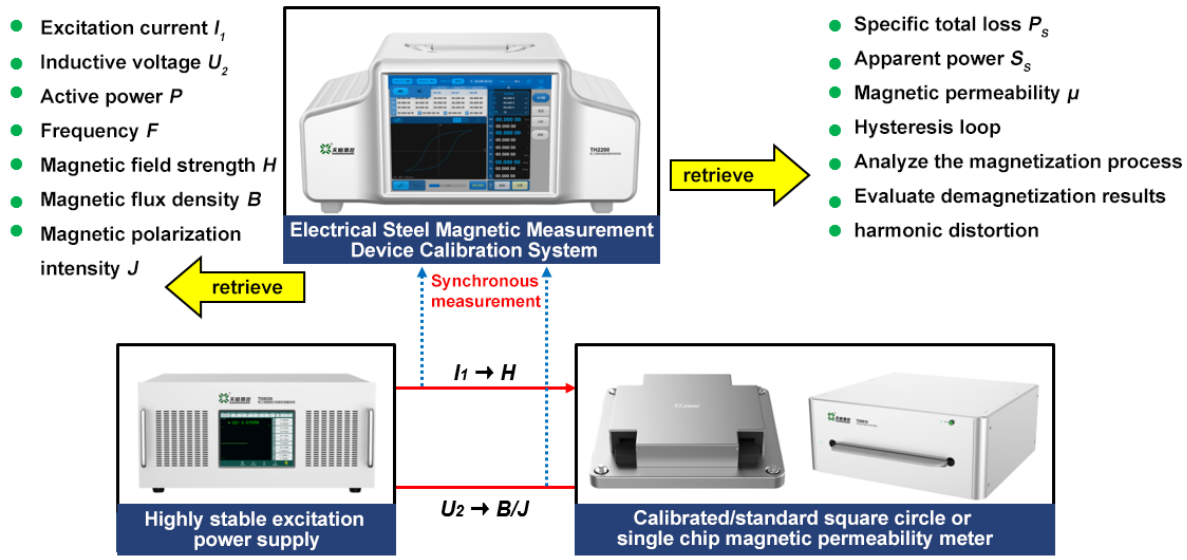
3. Application

☆ Calibrating magnetic measuring devices



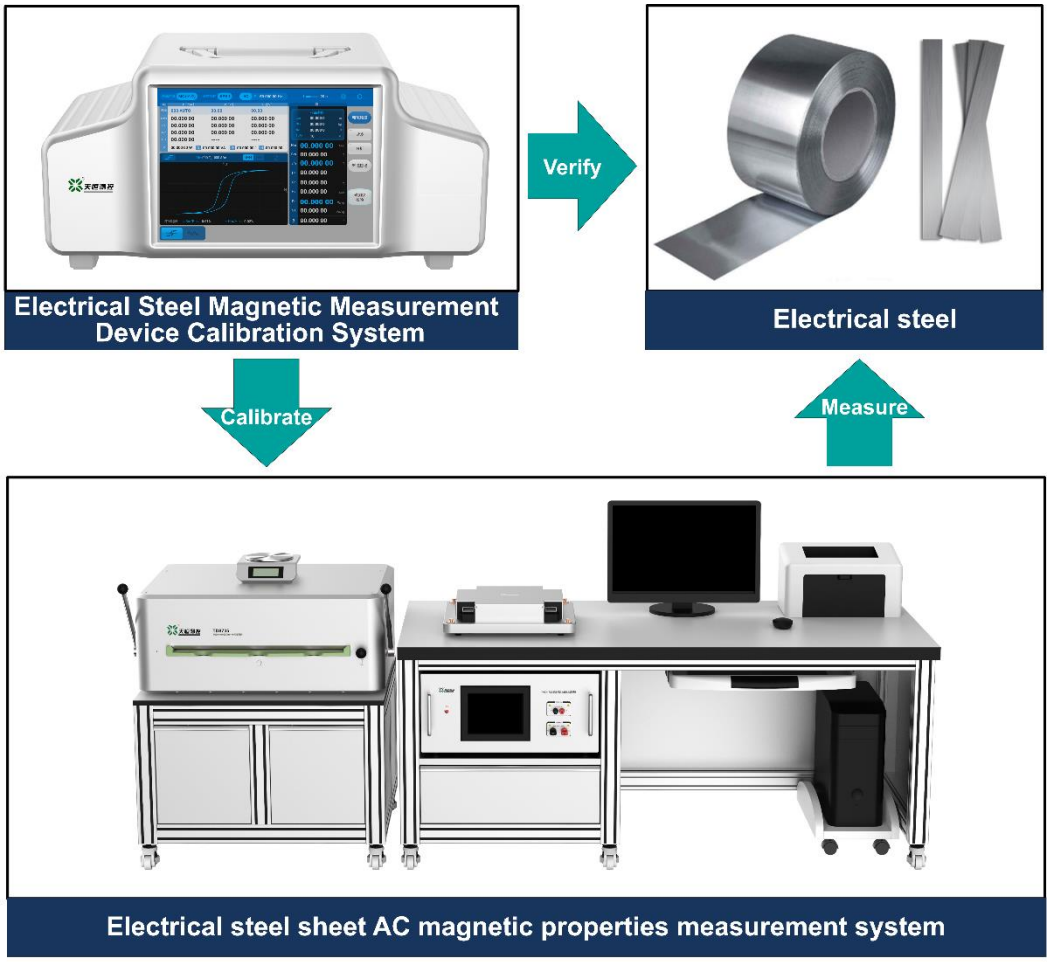
- Calibrate the magnetic measuring device using the square circle method or monolithic method manufactured on the principle of M.C method (current measurement method).
- Calibrate the electrical steel magnetic measurement device manufactured using the H-coil method (magnetic field coil method) principle.

☆ Establishing a high-precision magnetic measurement system



- Combined with a highly stable excitation power supply, to establish a high-precision magnetic measurement system.

☆ Measurement data confirmation



- Measurement data confirmation during new magnetic material product development, large product delivery and acceptance.

4. Specifications

4.1 Electrical Parameter Index

Measurement function	Current *I* measurement (corresponds to *H* of *M.C* method)	Voltage U_2 measurement (Corresponding to *B*, *J*)	Voltage U_H measurement (corresponds to *H* of *H-Coil* method)
Range	*1 mA*、*3 mA*、*10 mA*、*30 mA*、*100 mA*、*300 mA*、*1 A*、*3 A*、*10 A*、*30 A*	*0.6V*、*2 V*、*6V*、*20 V*、*60 V*、*200 V*	*0.2mV*、*0.6 mV*、*2 mV*、*6 mV*、*20 mV*、*60 mV*、*200 mV*、*600 mV*、*2V*、*6 V*
Measurement range (DC)	*0.2 mA～33 A*	*120 mV～220 V*	——
Measurement range (AC)	*0.2* mA_{rms}*～33* A_{rms} or *0.3* mA_{pk}***～50***A_{pk};	*120* mV_{rms}*～220* V_{rms} or *180* mV_{pk}*～330* V_{pk}	*50* μV_{rms}*～6.6* V_{rms} or 75 μV_{pk}***～10*** V_{pk}
Frequency	fundamental wave：*5 Hz～10 kHz*		fundamental wave：*10 Hz～1 kHz*
Phase	*0.0000°～359.9999°*		
Resolution	7-digit decimal display		

4.2 Accuracy Index

Frequency range (*Hz*)	Voltage and current effective value, measurement uncertainty(*A%*RD + B%*RG*)①	Power measurement uncertainty (*A%*RD + B%*FS*)②
DC	*0.006 + 0.004*	——
5 ≤ ***F*** *≤ 10*	*0.03 + 0.02*	*0.06 + 0.04*
10 < ***F*** *≤ 40*	*0.012 + 0.008*	*0.03 + 0.02*
40 < ***F*** *≤ 400*	*0.006 + 0.004*	*0.012 + 0.008*
400 < ***F*** *≤ 1 k*	*0.012 + 0.008*	*0.03 + 0.02*
1 k < ***F*** *≤ 5 k*	*0.03 + 0.02*	*0.06 + 0.04*
5 k < ***F*** *≤ 10 k*	*0.06 + 0.04*	*0.12 + 0.08*

- Power measurement range: combination of voltage range and current range
- Power factor range: -1.000…0.000…1.000

- Note: RD is the reading value, RG is the range value, FS = voltage range value × current range value

4.3 Environmental magnetic field measurement

Range (*mT*)	Resolution (*nT*)	Optimal Measurement Uncertainty （k=2）		Temperature Coefficient (*ppm*RG/°C*)
		Constant magnetic field	Alternating magnetic field	
± 0.1	*10*	*0.5%*RG*	*1.5%*RG*	*± 10*
± 0.5	*100*	*0.5%*RG*	*1.5%*RG*	*± 10*

- XYZ axis measurement range: 0～± 0.55 mT
- Display digits: 5-digit decimal display
- Frequency range: DC, AC 1 Hz ~ 400 Hz
- Typical noise: < 20nT/ √Hz

5. General Specifications

Power supply	AC (220 ± 22) V,(50 ± 2) Hz, Maximum power consumption: 80 VA
Preheat time	30 min
Temperature performance	Working temperature: 5°C~45°C; Storage temperature: -10°C~55°C
Humidity performance	Working humidity: < 80% @ 30°C, < 70% @ 40°C, < 40% @ 50°C Storage humidity: (20%~80%) R·H, no condensation;
Altitude	< 3000 m
Weight	Approx 9.9 kg
Communication interface	RS232, USB, LAN
Dimension	450 mm(W) × 215 mm(D) × 220 mm(H)