HVEX
Driving innovation

CIRCUIT BREAKERS

CIRCUIT BREAKER TIMING ANALYZER — 12 CHANNELS

12 contact channels · Speed and travel · Coil current and resistance · 6 to 270 V DC supply

Reference standards
IEC 62271-100 / ABNT NBR IEC 62271-100 (mechanical operation tests)

12
CONTACT CHANNELS



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Circuit Breaker Timing Analyzer — 12 Channels

Description

The HVEX Timing Analyzer measures the opening and closing times of medium- and high-voltage circuit breakers, simultaneity between phases and between breaks, bounce, contact speed and travel, and coil current — the parameters that reveal the mechanical condition of the breaker.

It serves vacuum, SF6, bulk-oil and minimum-oil breakers of different voltage levels, with linear, rotary, universal or laser travel transducers.

Operating principle

The instrument drives the trip or close coil with its internal DC supply (6 to 270 V DC) or receives an external trigger, and simultaneously records the 12 contact channels, the coil current and the travel transducer signal.

At the end of the operation, times, phase differences, bounce, speeds and travel and current curves are shown on the screen of the embedded industrial computer and stored for the report.

Features

- 12 contact channels: 6 main and 6 auxiliary;
- Time from 0.1 ms to 200 s, with resolution down to 0.01 ms;
- Speed from 0.001 to 25 m/s, depending on the transducer;
- Coil current up to 20 A and coil resistance up to 2000 Ω;
- Adjustable internal DC supply from 6 to 270 V DC.

Measurements

- Opening and closing times;
- Discrepancy between phases and between breaks of the same phase;
- Bounce time and count;
- Opening and closing speed and average speed over a defined segment;
- Total travel, contact travel, overtravel and rebound.

Benefits

- Embedded industrial computer, with screen and 2 USB ports;
- Expandable memory for up to 30,000 tests;
- Anti-interference circuit for use in substations up to 500 kV;
- Multifunction connector for quick connections;
- RS232 or Wi-Fi operation (optional).

Applications

- Commissioning of medium- and high-voltage breakers;
- Preventive and predictive maintenance in substations;
- Acceptance tests and tests after mechanism overhaul;
- Disconnector tests, with the dedicated module;
- Service providers and utilities.

12	0.01 ms	25 m/s	6–270 V DC
contact channels	time resolution	maximum measured speed	internal supply for coils

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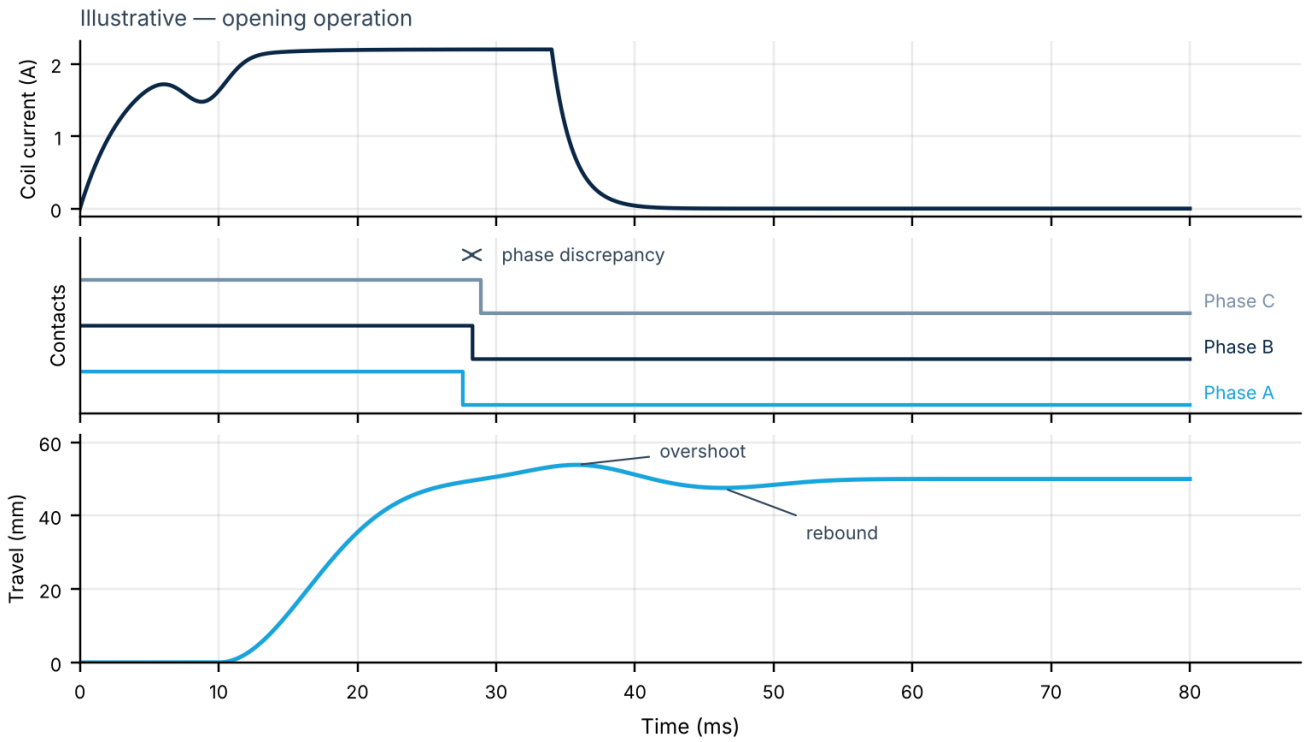
Quantities recorded in one operation



Illustrative opening operation: coil current, contact status of the three phases and moving-contact travel.

Time measuring ranges

Mode	Range	Resolution
Internal trigger	0.1 to 999 ms	0.01 ms
Internal trigger	1000 to 9999 ms	0.01 ms
Internal trigger	10,000 to 200,000 ms	1 ms
External trigger	0.1 ms to 200 s	—
Period difference	0.1 to 99 ms	0.01 ms

Accuracy: 0.05% ± 1 digit, up to 1000 ms.

Speed by transducer (optional)

Transducer	Speed range
1 mm transducer	0.01 to 25 m/s
0.1 mm transducer	0.001 to 2.5 m/s
345° rotary	0.01 to 25 m/s
Laser	0.01 to 15 m/s

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The instrument



Analyzer in its carrying case



Panel with measuring connectors and screen

Supply and trigger

- Adjustable DC supply from 6 to 270 V DC;
- 24 V DC up to 15 A and 220 V DC up to 20 A (short time);
- External trigger from 10 to 300 V AC/DC;
- Coil current up to 20 A, with 0.01 A resolution;
- Coil resistance from 0 to 2000 Ω.

Interface and records

- Embedded industrial computer;
- 2 USB ports, with mouse support;
- RS232 and Wi-Fi (optional);
- Memory for up to 30,000 tests;
- Data and graphs displayed at the end of the operation.

Disconnector module

- Adjustable 6 to 270 V DC output;
- Energizing time from 0.01 to 20 s;
- Acquisition up to 200 s;
- Closing and opening times, phase discrepancy and bounce;
- Dimensions: 215 × 130 × 60 mm.

Travel (optional transducers)

- 50 mm linear: 0 to 50 mm, 0.1 mm resolution;
- 345° rotary: 0.08° resolution, 15° dead zone;
- Rotary: preferred range from 160° to 200°;
- Universal (accelerometer): 0 to 300 mm, 0.1 mm resolution;
- Optional 3-way travel.

Circuit Breaker Timing Analyzer — 12 Channels

Technical Specifications

Time

Contact channels	12 (6 main and 6 auxiliary)
Internal trigger	0.1 to 999 ms (0.01 ms); 1000 to 9999 ms (0.01 ms); 10,000 to 200,000 ms (1 ms)
External trigger	0.1 ms to 200 s
Period difference	0.1 to 99 ms; 0.01 ms resolution
Accuracy	0.05% ± 1 digit (up to 1000 ms)

Speed and travel

Speed	0.001 to 25 m/s, depending on the transducer
Linear transducer	0 to 50 mm; 0.1 mm
Rotary transducer	345°; 0.08° resolution; 15° dead zone
Universal transducer	0 to 300 mm; 0.1 mm
Laser transducer	0.01 to 15 m/s

Coils and supply

Coil current	Up to 20 A; 0.01 A resolution
Coil resistance	0 to 2000 Ω; 0.01 Ω resolution
Internal DC supply	6 to 270 V DC, adjustable
Short-time capacity	24 V DC ≤ 15 A; 220 V DC ≤ 20 A
External trigger	10 to 300 V AC/DC

General

Power supply	220 VAC ± 10%; 50 Hz ± 10%
Dimensions	400 × 263 × 175 mm
Operating temperature	–20 °C to 50 °C
Relative humidity	≤ 90%

Standards

Application reference	IEC 62271-100 / ABNT NBR IEC 62271-100

The standards listed identify the equipment's field of application and do not constitute certification of the test object. Weights and dimensions are approximate. Specifications subject to change without notice. Rev. 11/2026.

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