Circuit Breaker Analyzer & Timer CAT64

- Simple & easy to operate
- Timing and motion measurement
- 6 Channels (3x2) for main contacts
- 3 Channels for auxiliary inputs
- Resistance measurement of pre-insertion resistors
- 4 Analog Inputs + 1 Transducer Input
- Supports both digital and analog transducers
- Results printed on 80 mm thermal printer
- Detailed analysis of test results using DV-Win software

Description

Circuit Breaker Analyzer & Timer CAT64 is a standalone or a PC-controlled digital instrument for condition assessment of circuit breakers. The timing channels record closing and opening of main contacts, resistor contacts, and auxiliary contacts. CAT64 records graphs of both Open and Close coil currents and displacements of HV and MV circuit breaker moving parts. Main contact channels can also measure resistance value of pre-insertion resistors (if present in the circuit breaker). Test results are printed on an 80 mm thermal printer in tabulated and graphical form.

An alphanumeric keypad is used for entering Breaker data, Test data and Control functions.
CAT64 provides easy selection of different operational modes: Open (O), Close (C), Open-Close (O-C), Close-Open (C-O), and Open-Close-Open (O-C-O). Multiple operations, such as Open-Close and Open-Close-Open, can be initiated by using predefined delay time or by sensing breaker's contact position. The breaker can be operated remotely using External trigger.

Auxiliary inputs are used to monitor auxiliary (52a and 52b) contacts. External trigger input can be used as a third auxiliary input.

Two analog channels measure and record the coil currents simultaneously (OPEN and CLOSE), up to 35 A DC. Results are printed in both diagram and table form on a built-in printer.

Two additional analog channels, high voltage (±60 V or ±300 V AC/DC) and low voltage (±1 V or ±5 V AC/DC), are used for monitoring circuit-breaker substation battery voltage, connection of current clamps for "The first trip" monitoring test or any other type of analog signal that may be relevant.

The transducer channel is intended for measuring circuit breaker stroke, contact wipe, over-travel, rebound, and average velocity. Either analog or digital transducer can be connected to this universal channel.

DV-Win software provides full control of all CAT64 functions from a PC, acquisition and analysis of test results. Graphical presentation of variety of measurements and timing test results uses cursors and powerful zoom functions for detailed analysis. Colors, grids, scales and positioning of the test data are all controlled by the user. DV-Win supports automatic unit conversion. (e.g.: cycles to seconds or mm to inches). Test records can be exported in .dwc file format for further analysis.

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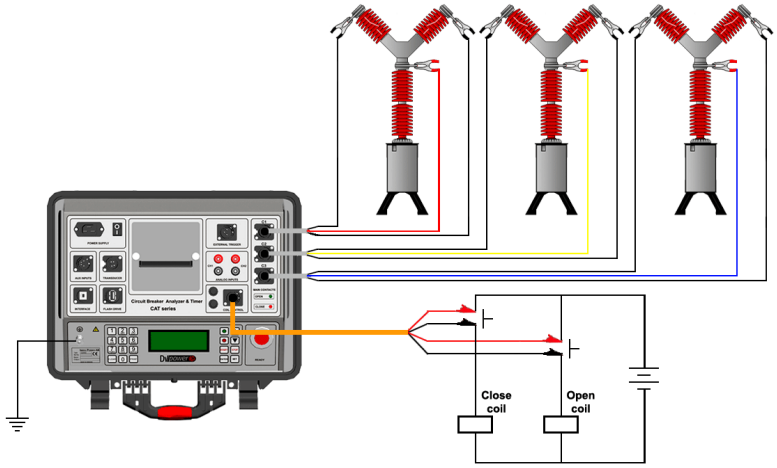
Application

Typical application is:

- ✓ Simultaneous measurement of 6 Main contacts (2 break per phase) and 3 auxiliary contacts, including pre-insertion resistors (if present in the circuit breaker),
- ✓ Resistance measurement of pre-insertion resistors (if present in the circuit breaker),
- ✓ Evaluation of the synchronization between the circuit breaker poles,
- ✓ Measurement of coil currents, simultaneously for both coils,
- ✓ Evaluating the state of the substation's batteries by graphically showing the voltage value,
- ✓ Measurement of contact wipe, over-travel, rebound and average velocity of breaker's moving parts,
- ✓ "First trip" test available
- ✓ Display and print test results, both numerically and graphically.

Connecting a test object to CAT64



Features

Mains power supply input
90 V – 264 V AC;50 Hz – 60 Hz

Thermal printer *(built-in 80 mm wide)*
Graphic and numeric printout of contact wave form

External Trigger input
Used for remote activation of CAT64

Transducer input
Intended for measuring displacement of circuit breaker's moving parts

Main contacts inputs
Used for timing of main and pre-insertion resistor contacts, and for resistance measurement of pre-insertion resistors

Auxiliary inputs
Used for timing of dry or wet auxiliary contacts

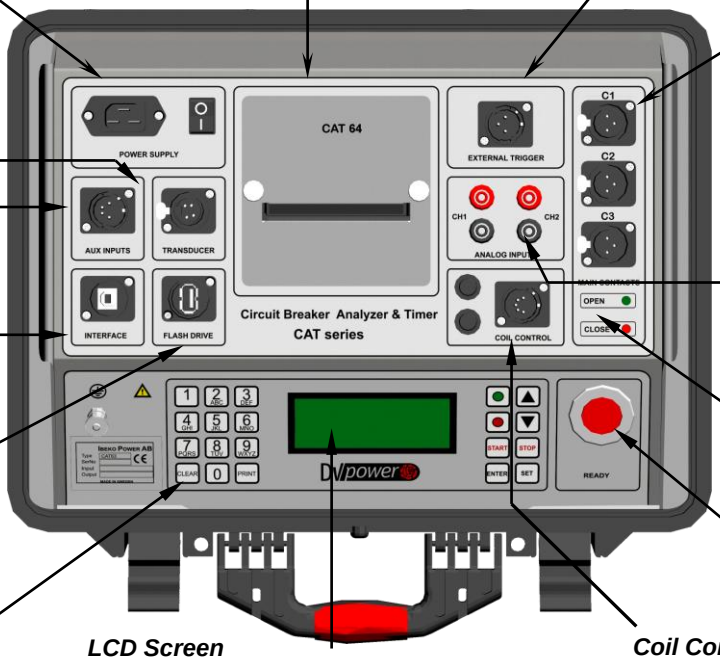
Analog channels inputs
Used for measurement of any type of analog signal that may be relevant.

PC communication
USB interface

Breaker state indicator
The state of circuit breaker is indicated

Flash drive
Used for direct download of test results on a USB memory stick

READY button
Prepares the instrument for start of the test

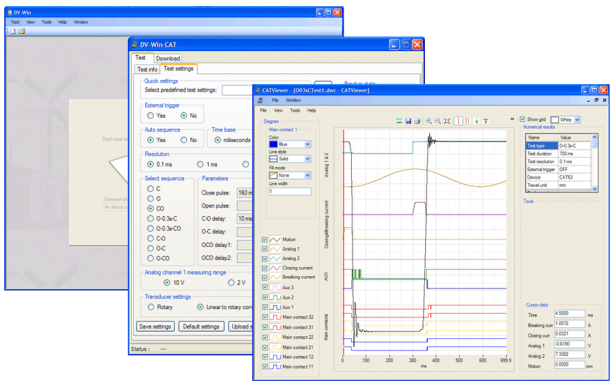


Alphanumeric keypad
Used for entering Breaker data, Test data and Control functions

LCD Screen
20 Characters by 4 Lines; LCD display with backlight, viewable in bright sunlight.

Coil Control inputs
Used for operating of circuit breaker's OPEN and CLOSE coil

DV-Win software



DV-Win software has the following features:

- *Full control of CAT functions from PC.*
- *Download test results from the instrument.*
- *Acquisition and analysis of test results.*
- *Test results can be viewed, edited, saved, printed and exported.*
- *Viewing and overlaying several graphs, for an easy test result comparison.*
- *Two cursors select measurement points and intervals.*
- *Zoom and pan graph feature.*
- *Set up your own test sequence.*
- *Customized configuration of test result graphs.*
- *Measurement by using rotary digital or linear analogue transducers, along with linear to rotary converter accessory.*
- *Creation of predefined test plans for easy and quick field testing.*

Ordering information:

Art.No.	Description
CAT6400-N-00	CAT64 device with ground cable, USB cable and CD with software
CM-10-60C3A2	Main Contacts Cables set 10 m with alligator clamps*
CE-05-00C4B1	External Trigger Cable 5 m with banana plugs*
CO-05-00C5B1	Coil Control Cable 5 m with banana plugs*
CA-05-00C4B1	Auxiliary Contacts Cable 5 m with banana plugs*

**The above cables are also available in several lengths and terminations. Please contact IBEKO Power for more information.*

Art.No.	Description
DRT-250-C605	Digital rotary transducer with 5 m connection cable
LAT-225-C305	Linear Analog Transducer 225 mm with 5 m connection cable*
CURR-CLAMPS	Current clamps
SAT30AA-N-00	Coil Analyzer SAT30A
UTM-KIT-0000	Universal transducer mounting kit

**The above linear analog transducers are available in several lengths. Please contact IBEKO Power for more information.*

Main contacts cables set

External trigger cable

Coil control cable

Auxiliary contacts cable

Linear analog transducer

Digital rotary transducer

Current clamps

Coil Analyzer SAT30A

The SAT30A is ideal power supply at test with CAT series circuit breaker analyzers, where substation battery is not connected or available.
SAT30A supplies and measures current and resistance of circuit breaker coils, and can power spring-charging AC or DC motors
Weighs only 8kg.

Technical Data

Main Contact Inputs

- Number of contact inputs: 6 (3 x 2), 2 per phase. Each channel detects Main and Pre-insertion resistor contacts.
  Closed ≤ 10 Ω,
  Resistor contacts range 10 Ω to 10 kΩ,
  Open ≥ 10 kΩ
  Open circuit voltage: 20 V DC
  Short circuit current 50 mA
- Each channel measures resistance of pre-insertion resistors
- Each input group is isolated with respect to the others

Time Measurement

Time measurement resolution:

- 0,1 ms for 2 s test duration;
- 1 ms for 20 s test duration;
- 10 ms for 200 s test duration;

Time accuracy 0,05% of the reading ± resolution

Coil Operation

- Number of channels: 2 (Open and Close coil)
- Two separate outputs for coil triggering
- Driver characteristics: 300 V DC max, 35 A DC max

Breaker Operation

- Close (C),
- Open (O),
- Close-Open (C-O),
- Open-Close (O-C),
- Open-Close-Open (O-C-O)

User can select any desired test sequence

External Trigger

- Trigger input voltage: 10 V – 300 V AC/DC

Printer (optional)

- Thermal printer
- Graphic and numeric printout of contact and travel wave form
- Paper width 80 mm

Mains Power Supply

- Connection according to IEC/EN60320-1; UL498, CSA 22.2
- Mains supply: 90 V - 264 V AC; 50-60 Hz

Electromagnetic Compatibility (EMC)

- CE conformity: EMC standard 2004/108/EC

Auxiliary inputs

- Number of channels: 3, galvanically isolated (external trigger input can be used as a third auxiliary input)

- Contact sensing (dry):
Open circuit voltage 24 V DC,
Short circuit current 5 mA

- Voltage sensing (wet):
Working voltage 300V DC, 250V AC
Low activation mode ± 5V
High activation mode ±10V

Current Measurement

- Current measurement for Open and Close coil, 2 channels, Hall-Effect sensor
- Range ±35A DC to 5 kHz
- Accuracy 1%
- Graphic presentation: currents waveform is displayed with resolution of 0,1 ms

DV-Win software

- User friendly software
- Complete control of CAT64 during the testing
- Complete analysis of tests results
- Internal memory for pre-defined Test plans
- Database for managing and analysis of all testing

Analog inputs

- 2 channels – Coil current measurement
- 1 channel – Voltage channel: ±1 V or ±5 V AC/DC
- 1 channel - Voltage channel: ±60 V or ±300 V AC/DC
- The analog inputs are isolated with respect to all other circuits

Dimensions and Weight

- Dimensions: 410 mm x 180 mm x 320 mm
  16,14 in x 7,08 in x 12,59 in
- Weight: 7 kg / 15,4 lb

Transducer Input

- Digital transducer inputs: 1
- Analogue transducer inputs: 1

Safety Standards

- European standards: EN 61010-1;LVD 2006/95/EC
- International standards: IEC 61010-1;
  UL 3111-1
  CAN/CSA-C22.2 No 1010.1-92

Environmental conditions

- Operating temperature: -10 ºC - + 50 ºC / 14 ºF - +122 ºF
- Storage & transportation: -40 ºC - + 70ºC / -40 ºF - +158 ºF
- Humidity 5 % - 95 % relative humidity, non condensing

All specifications herein are valid at ambient temperature of + 25 °C and recommended accessories.
Specifications are subject to change without notice.