



CONPROVE

Since 1984

CE-7012



Microprocessed Compact Test Set for Substation Systems (Primary and Secondary Application) with Total Support to Standard IEC-61850

TECHNICAL SPECIFICATIONS

The CE-7012 is a versatile tool that encompasses several features in one equipment. This portable instrument, ideal for both field and laboratory, is capable of testing and calibrating the most diverse types of equipments in secondary and primary levels.

In primary level it performs tests on: Current Transformers (CT), Voltage Transformers (VT), Switches, Sectionalizers, Circuit Breakers, Groundings and Power Transformers.

In secondary level it tests protection relays: eletromechanical, static or digital relays.

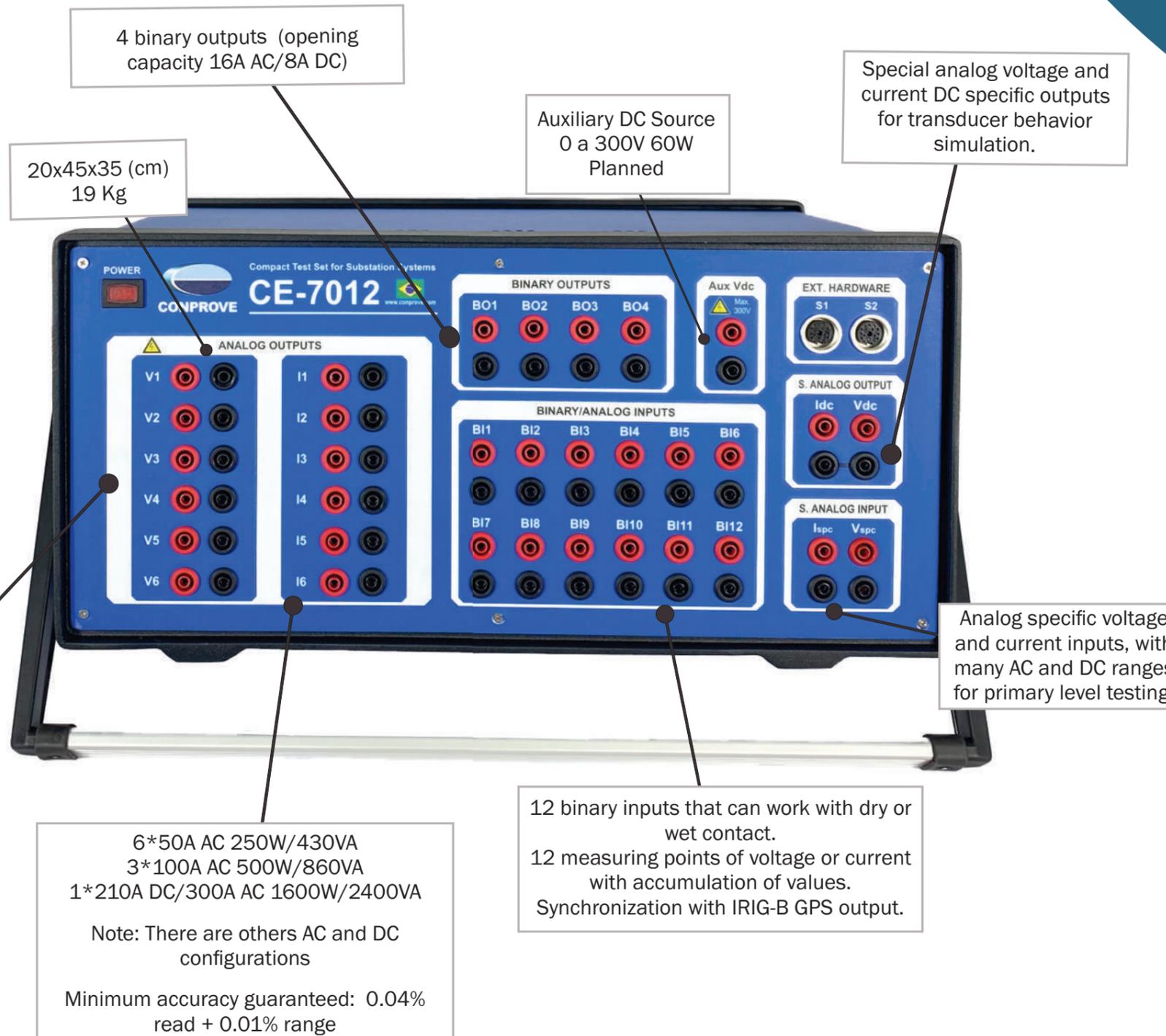
Due to its high accuracy on generation and aquisition of signals, CE-7012 can be used to calibrate transducers and qualimeters, besides CB oscillographies.

The CE-7012 has 6 current channels and 6 voltage channels to perform many types of electrical testes. Totally controlled by software (virtual instrumentation), it is able to perform manual and automatic tests. It still uses Digital Signals Processing (DSP) to create waveforms, allowing to configure frequencies up to 3kHz continously.

The equipment performs tests of Transformation Ratio (TTR), Winding Resistance, Contact Resistance (Microhmometro) and Voltage Withstand (Megaohmmeters). It sets up CTs Saturation Curve and verify the its Polarity automatically.

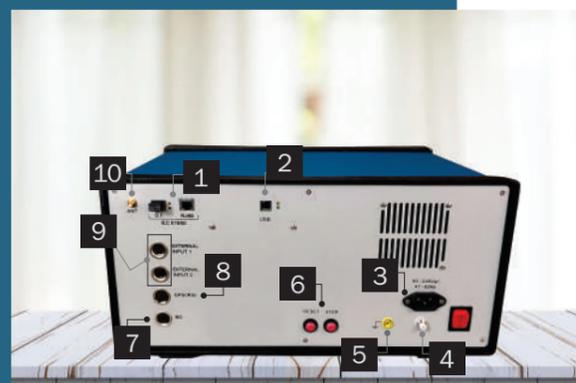
Software solutions for testing many different types of protection functions: Overcurrent, Differential, Distance, Directional, Negative Sequence, Over and Undervoltage, etc. Automatic creation of tests reports and comparison with its characteristics to indicate if the results are approved.

Performs IED tests with the IEC 61850 standard receiving and sending GOOSE and Sampled Value (SV) messages. It compares the times between the traditional contact (hard copper wiring) and sending the event via Ethernet GOOSE messages allowing the test of any protection function through GOOSE messages. Evaluate possible differences between analog signal and SV messages.



Subtitle:

- 1** - Specific interface for IEC 61850 Temporal Synchronization (PTP);
- 2** - USB Communication 2.0 / High Speed / Plug and Play;
- 3** - Power supply 90-240 V / 47-63 Hz;
- 4** - Thermalmagnetic Mini Circuit-Breaker;
- 5** - Grounding;
- 6** - General stop / general reset of amplifiers and firmware update;
- 7** - Transistor binary outputs (open collector) IRIG-B / PPS;
- 8** - CE-GPS Aecessory Interface;
- 9** - Specific interface for working as amplifier or master / slave mode.
- 10** - Integrated GNSS ;



ADDITIONAL FEATURES

APPLICATION

Tests on Eletromechanical Relays (1100VA available);
 Tests on Static Relays;
 Tests on IEDs;
 Tests on IEC-61850-9-2 (Sending/Receiving of GOOSE and SV messages);
 End-to-End Tests with CE-GPS (Conprove GPS accessory);
 End-to-End Tests with Substations GPS systems.

Generation of short-circuit with DC component;
 Simulation of Power Swing Trajectories and Loss of Synchronism;
 Reproduction of COMTRADE and ATP files;
 Tests on arflash relays with generation of both current and flash;
 Tests on relays with non-conventional inputs.

Multimeter with 12 channels for V, I, f, S, P, Q, cos Φ , etc;
 Accumulation function (qualimeter) RMS module and angle up to 50th harmonic with statistic treatment.
 Energy analyser.

Ideal for use in Factory Acceptance Test (FAT) and Operational Acceptance Test (SAT).

PRODUCT DIFFERENTIALS

Sufficient power for testing relays of any technology (Eletromechanical, Static and Digital);
 Tests on primary level with automatism, reliability and hardiness;
 Totally included software (26 applications, including with features for IEC-61850-9-2 standard);
 Software with Multiuser license;
 There is no need for license renewal;
 No charge for upgrades;
 Specialized technical support and application;
 Maintenance in reduced time;
 Calibration by software.

GET TO KNOW OUR PRODUCT LINE

EQUIPMENTS

CONPROVE is a reference in the Latin American market for electrical test equipment. See also:

- CE-6710 is a secondary level testing specialized equipment (protection relays, transducers, meters and qualimeters);
- CE-7024 works with tests both in secondary level and primary (CTs, VTs, Circuit Breakers, Transformers, Sectionalizers and Grounding meshes).

We also develop and commercialize software: PSSIMUL (modeling of power systems and electromagnetic transient solution); SIMULGOOSE (software for sending and receiving GOOSE messages of standard IEC 61850) and MULTIMSV (software for receiving messages Sampled Value of the standard IEC 61850).

TRAININGS

We offer specialized courses in:

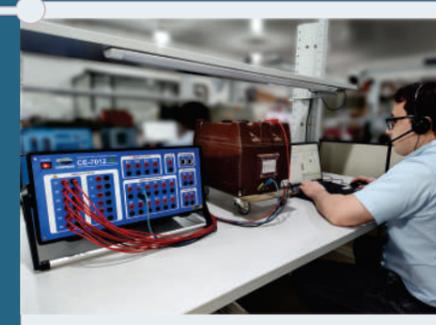
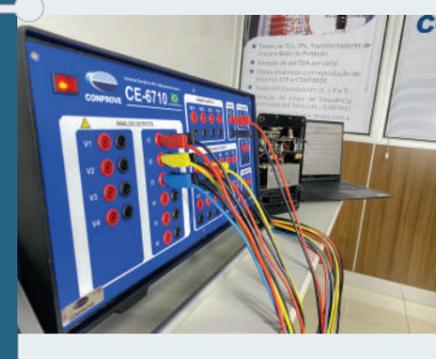
- **Protection, control and automation** of electrical power systems;
- **Electrical Installations and inspections;**
- **Equipment - fundamentals** for design, operation, maintenance and commissioning;
- **Equipment - maintenance and commissioning tests;**
- **Electrical studies.**

TECHNICAL SUPPORT

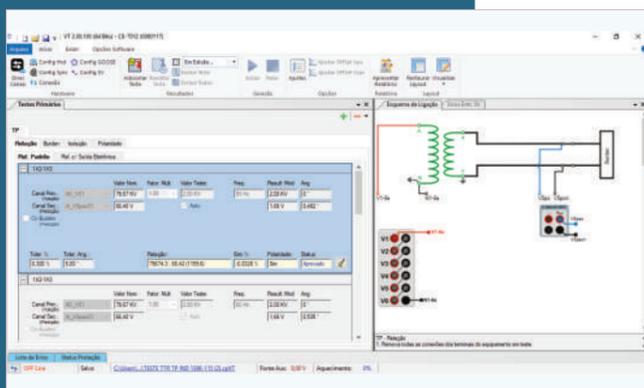
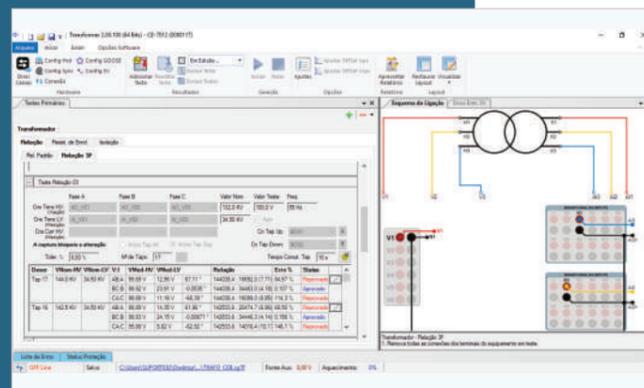
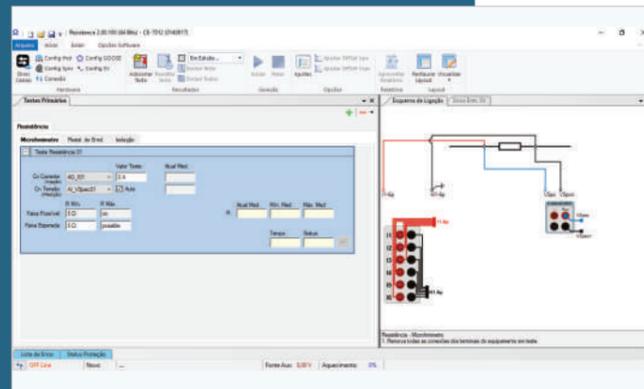
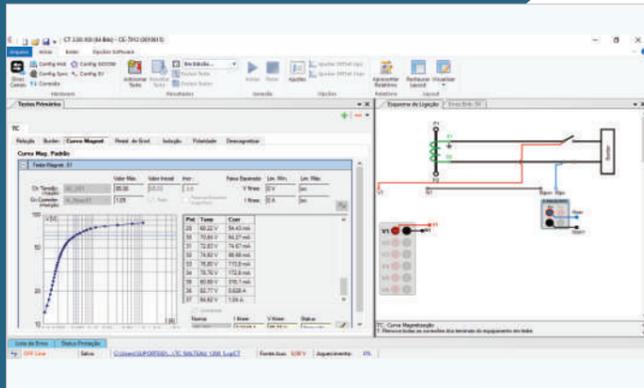
We have an immediate and free technical support for our clients. Our team is made up of engineers who are experts in the power system and are always looking for solutions to meet the needs of our users.

ACCESSORIES

- **CE-GPS** - Accessory that allows temporal synchronization via GPS for application of end-to-end tests;
- **CE-FLASH ARC 1** - Accessory that allows to test arc relays, synchronizing current generation with flash emission;
- **CE-CSB1** - An accessory that allows you to test relays with low power (LPIT or rogowski coils);
- **CE-RBOX** - Accessory that allows you to expand the binary outputs from 4 to 8;
- **CE-OSU1** - Accessory that picks up consumption pulses of kWh or kVArh, measuring billing meters.



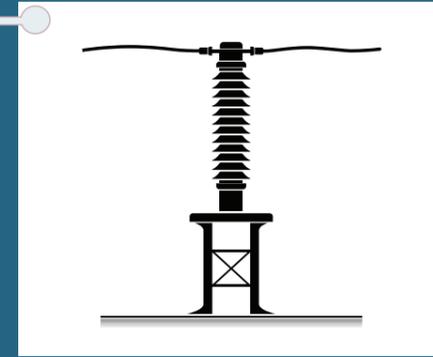
ADVANTAGES AND TYPES OF PRIMARY TESTS



- Multifunctional equipment that accomplish primary level tests (CT, VT, CB, Transformer, etc) and secondary level tests (relays, transducers, meters and qualimeters);
- Suppression of induction for testing on energized environments;
- Preparing tests without connecting to the test set (offline);
- Automatic and customize reports;
- Connection diagrams extremely simple and intuitive, guiding the user on the construction of tests;
- Light equipment, compact and robust;
- Kit of specific cables for tests regarding high voltage and high current;
- Audio and visual signaling during tests on high voltage and high current, increasing the safety during the procedures;
- Prepared equipment for tests on IEC-61850-9-2 with sending/receiving of GOOSE and Sampled Values messages.

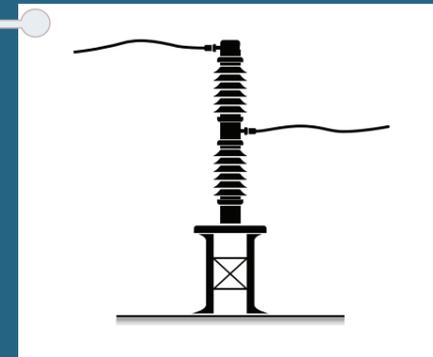
CURRENT TRANSFORMER

- Tests of Transformation Ratio, Polarity and Burden (by primary current injection and special measurement);
- Tests of Transformation Ratio, Polarity and Burden (by primary current injection and clamp measurement);
- Excitation curve measurement;
- Winding Resistance Measurement;
- Dielectric Supportability verification with voltage (2kVac);
- Test of Transformation Ratio with voltage;
- Tests of Transformation Ratio and Polarity of Rogowski Coils;
- Tests of Transformation Ratio and Polarity of Low Power Current Transformers.



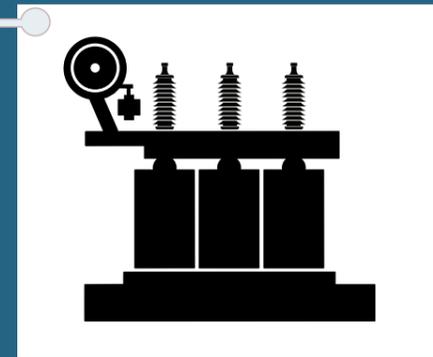
VOLTAGE TRANSFORMER

- Tests of Transformation Ratio and Polarity (by primary voltage injection and special measurement);
- Test of Burden;
- Dielectric Supportability verification with voltage (2kVac);
- Tests of Transformation Ratio and Polarity of Non-conventional Electronic Voltage Transformer.



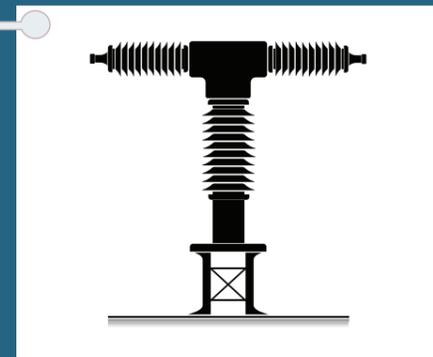
POWER TRANSFORMER

- Test of Single-phase Transformation Ratio, verifying the angular lag between high and low sides;
- Test of Three-phase Transformation Ratio, verifying the angular lag between high and low sides, with the possibility of automatic commutation of taps;
- Winding Ohmic Resistance Measurement;
- Dielectric Supportability verification with voltage (2kVac).



CIRCUIT BREAKER

- Verification of the opening and closing times of poles and auxiliary contacts on routines: OC, CO, OCO, COC, etc;
- Contact Resistance.





CONPROVE

Since 1984

Conprove Indústria

Since 1984, CONPROVE has been working in the area of testing and training solutions for power system. This pioneerism has placed us in a leading position in the market for electrical tests in Brazil.

We have state-of-the-art products and innovative softwares that allow the application of primary and secondary tests, included in a single equipment. All our solutions have led us to conquer a portfolio of renowned clients covering the transmission, generation and distribution of electric power, industries, service providers and universities. With the purpose of helping our clients and strengthening partnerships, CONPROVE offers the best after sales with a team of highly qualified professionals and modern structure.



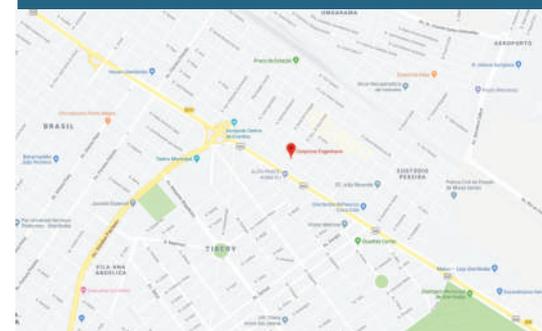
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