



# CONPROVE

*Since 1984*

## **CE-RNET4**



Communication Network Monitoring for Digital Substations.  
IEC-61850 / IEC-61869 standards.



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## TECHNICAL SPECIFICATIONS

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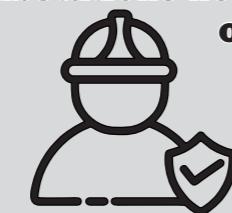
The CE-RNET4 is a versatile tool that includes several features in a single equipment for testing the electrical system. This portable test set is ideal for both the field and laboratory, and it's capable of publish and subscribe GOOSE and Sampled Value messages from the IEC 61850 Standard, in addition to detect, signal and monitor: packet lost, corrupted or duplicated.

The equipment allows temporal synchronism through the PTP Protocol (IEEE 1588). And in addition, the network analyzer is also able to monitor the PTP packets coming from the Network's Grandmaster and evaluate the synchronization of messages.

47,2(L) x 48,2(W) x 17,7(H) cm 11Kg - 4U



**Troubleshooting for Digital Substations network based on IEC 61850**



UCAlug certification: IEC 61850  
Safety and EMI certifications :

### GOOSE and SV

- Diagnostic of packages
- Error simulations
- Latency tests
- Time measurements
- Troubleshooting
- Network evaluation

## Troubleshooting for Digital Substations

- Tests protections functions using Sampled Values
  - Detects network overloads and packet loss
  - Monitors IEC 61850 and PTP messages
- Allows commissioning of IEC 61850 networks
  - Compare SCL Files with the network traffic
  - Process Bus Diagnostic

### Subtitle:

- 1 - 4 specific ports interface for IEC 61850;
- 2 - PTP synchronization port;
- 3 - Local communication and MMS;
- 4 - Ethernet port for remote support access;
- 5 - Redundant power supply, allowing AC/DC full range input: 125 to 250 Vdc and 100 to 264 Vac with frequency from 45 Hz to 65 Hz.



The CE-RNET4 provides variable magnitudes, phase angle and frequency for Sampled Value (SV) voltage and current outputs. Each phase is independently adjustable. The output signal is continuous and it's not interrupted by changes in the applied magnitudes. Therefore, the equipment allows tests in permanent and dynamic conditions, in addition to allowing timing measurements and monitoring functions.

Software applications for tests using IEC 61850 messages on most different protection relay functions: Overcurrent, Differential, Distance, Directional, Negative Sequence, Over and Under Frequency, Over and Under Voltage, among others. It automates the creation of test reports and it verify their characteristics in order to indicate if the result is approved.

Software applications for monitoring and commissioning digital substation networks based on IEC 61850 standard. The tool diagnoses the network traffic and identify the presence or absence of messages through comparison with the substation's SCL file. Furthermore, It also detects problems in the GOOSE, Sampled Value and PTP messages.



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## ADDITIONAL FEATURES

### CE-RNET4

#### APPLICATION

- Tests on IED's;
- Tests on switches and network equipments;
- Tests on Digital Substations;
- End-to-End Tests with synchronism;
- Import SCL files of IEC 61850 Standard;
- Publish and subscribe Sampled Value and GOOSE messages;
- Check IEC 61850 network communication;
- Verify the network traffic and evaluate its messages performance;
- Troubleshooting for digital substations;
- Performs statistical analysis of SV and GOOSE messages;
- Detect and flag packets that are different from the configuration files;
- Detect and flag the absence of expected messages;
- Detect and flag the presence of unexpected messages;
- Detect and flag problems in GOOSE, SV and PTP messages;
- Capture the network's data packets;
- Allows synchronization via PTP.

#### PRODUCT DIFFERENTIALS

- Control Software (CTC) for protections tests ( 26 applications);
- Network Diagnostic software for digital substations;
- Specialized technical and application support;
- Maintenance in reduced time;

## GET TO KNOW OUR PRODUCT LINE

#### EQUIPMENTS

CONPROVE is a reference in the Latin American market for electrical testing equipment. See also the models CE-6707 and CE-6710 that are focused on tests at secondary level and the models CE-7012 and CE-7024 that besides performing tests cited, allow testing equipment at primary level, such as CTs, VTs, circuit breakers, power transformers, disconnecting switches and grounding mesh.

We also develop and commercialize softwares: PSSIMUL (power system modeling and electromagnetic transients solution); SIMULGOOSE (software to publish and subscribe GOOSE messages of the IEC 61850 standard) and MULTIMSV (software to subscribe Sampled Value messages of the IEC 61850 standard).

#### TRAININGS

We also 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.**

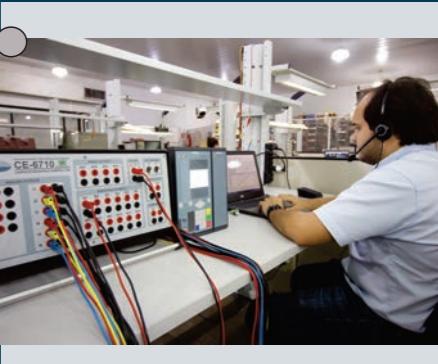
#### TECHNICAL SUPPORT

Dispomos de um suporte técnico imediato e gratuito para nossos clientes. Nossa equipe é formada por engenheiros especialistas no setor elétrico e que estão sempre em busca de soluções para atender as necessidades dos nossos usuários .

#### ACCESSORIES

**CE-GNSS** - Global Navigation Satellite System |  
TIME & FREQUENCY REFERENCE SYSTEM

**CE-SYNC NET** - BOUNDARY SYSTEM & MASTER /  
SLAVE CLOCK PTP: PTP Profile Converter and  
PTP to IRIG-B / 1PPS Converter





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## Conprove Industry

Since 1984, CONPROVE has been working on testing and training solutions for power systems. 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 of our solutions have led us to conquer a portfolio of renowned clients covering the transmission, generation and distribution of electric power systems, 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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