

RELAYS

TRANSFORMER PROTECTION THERMAL IMAGE RELAY



RELAYS

Description

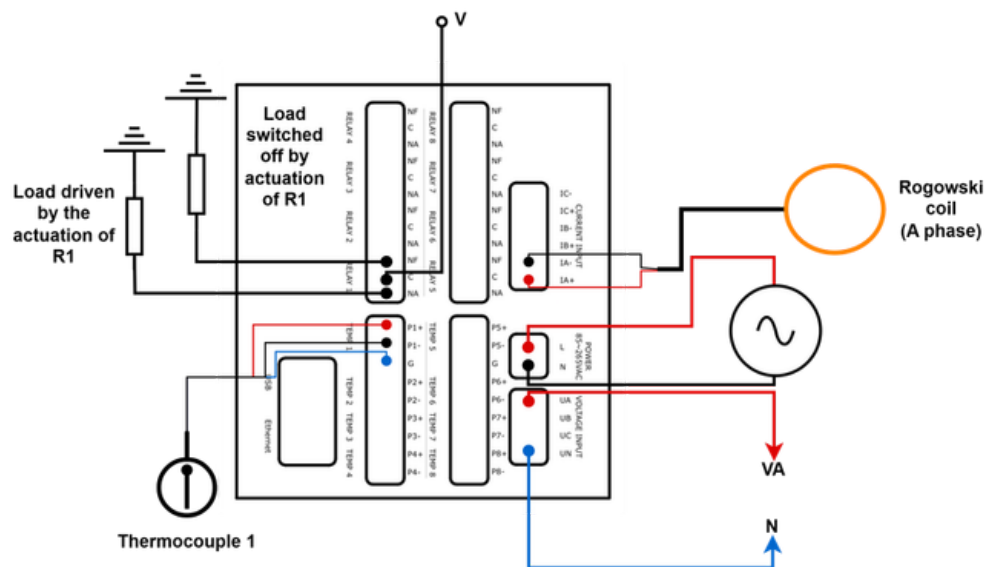
The thermal image relay for transformers protection was developed to integrate transformers with smart grids.

Through this system, important information from the network and the transformer is sent in real-time to the customer, enabling remote management of data such as: voltage, current, passing power, energy, temperature, overload, etc.

This information can also be processed to predict the asset's lifespan and assess technical and non-technical losses, in addition to having a relay module for product parameterization and operation as part of the protection system.

Features

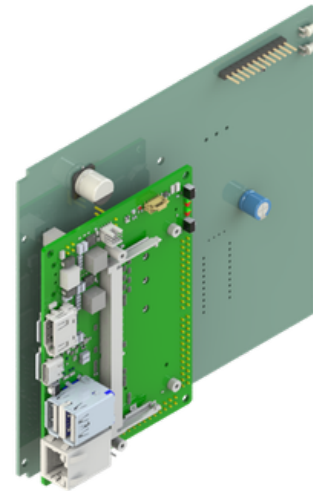
- Configurable relay module for integration into the protection system;
- Monitoring of transformer parameters (voltage and current);
- Internal temperature measurement;
- Analysis of transformer lifespan loss.



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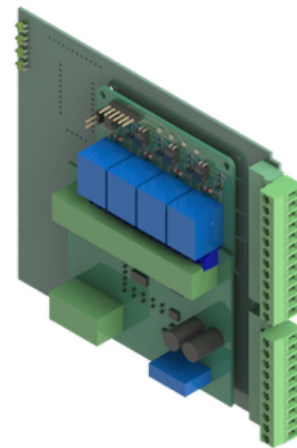
Processing module (CPU)

Responsible for integrating all other circuits, which are physically attached to this board, into a single system. The board receives all measurement data, processes it, and can send control commands according to the parameterization conditions. Additionally, it integrates the system's input and output communication interfaces to connect the equipment with the system.



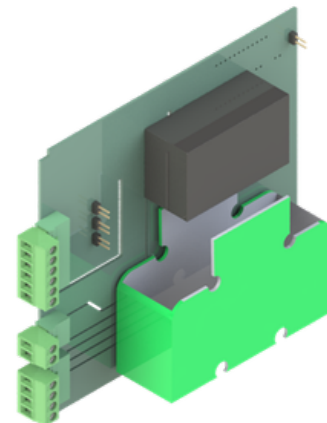
Relay and thermal measurement module

Featuring support for 4 to 8 relays on the temperature board, along with the signal inputs from the PT100 sensors, these relays can operate based on conditions parameterized via software through commands sent by the comparator of the main processing unit. These commands can trigger alarms or trips under specific conditions determined after protection studies.

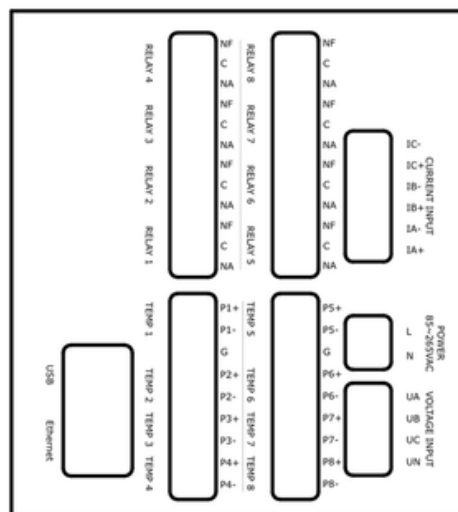
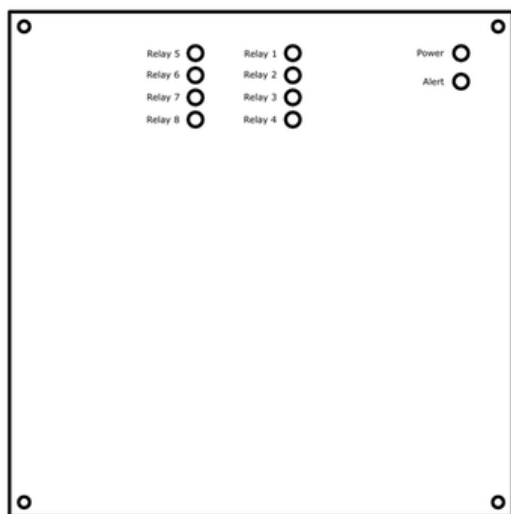


Electrical measurement module

Coupled to the processing circuit, the HVEX Acquisition board interfaces between the sensors and the measurement of electrical parameters (voltage and current), sending this data for processing.



RELAYS



POWER

Power supply

L

Power supply phase terminal

N

Power supply Neutral terminal

CURRENT INPUT

Current input identification

IA+, IB+, IC+

Current input terminals IA, IB, IC

IA-, IB-, IC-

Current input terminals IA, IB, IC

VOLTAGE INPUT

Voltage input identification

UA, UB, UC, UN

Voltage input terminals UA, UB, UC and neutral

TEMP 1, 2, 3, 4, 5, 6, 7, 8

Temperature sensors identification 1 to 8

P1+, P2+, P3+, P3+, P4+, P5+, P6+, P7+, P8+

PT100 sensors positive terminals 1 to 8

P1-, P2-, P3-, P4-, P5-, P6-, P7-, P8-

PT100 sensors negative terminals 1 to 8

G

PT100 sensor common grounding terminal

RELAY 1, 2, 3, 4, 5, 6, 7, 8

Relay terminals identification 1 to 8

NF

Corresponding relay Normally Closed contact

C

Corresponding relay Common contact

NA

Corresponding relay Normally Open contact

USB

USB port identification

Ethernet

Ethernet port identification

RELAYS

Web supervisory platform

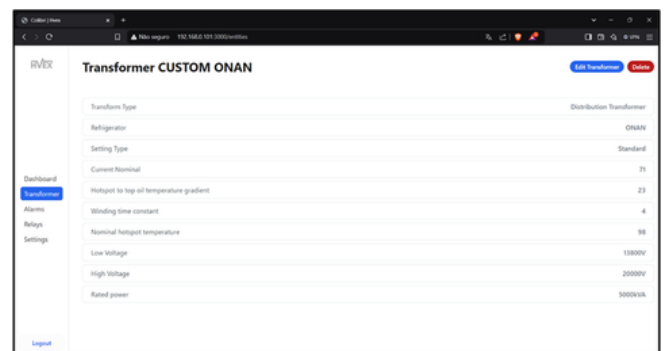
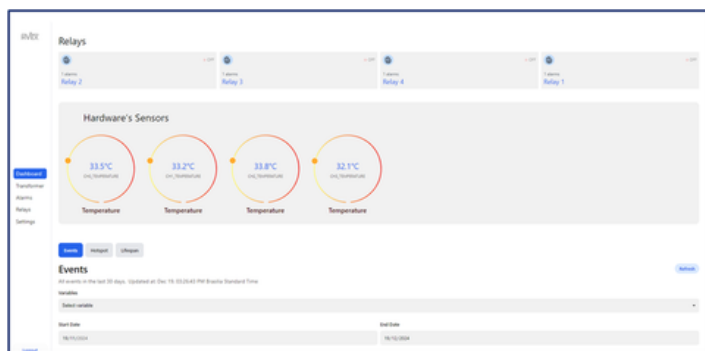
- Customer, user, and installation management;
- Intuitive interface, consolidating information for the administrator;
- BI tools;
- Platform for data monitoring and alarm/trip parameterization.

Benefits

- Low measurement cost;
- Improved analysis quality by reducing the sample space for data collection, clearly defining transformer overload, expected performance, and potential reallocation of productive resources;
- Configurable relays according to DNP3.0; Modbus TCP/IP variables assigned to meters, with control over conditioned alarms.

Through communication, it is possible to obtain technical data via a web interface for asset mapping. The online platform provides consolidated data in a graphical format to facilitate user analysis.

#	Identification	Status	Variable	Reading Value	Conditional
1	Test	ACTIVE	VARIABLE/CHO_TEMPERATURE	22.8	GREATER_THAN



Technical Specifications

Power supply	85 - 265 VAC
Voltage inputs	4
Voltage input range	30 ~ 600 VAC
Voltage measurement accuracy	2%
Measurement category	CAT III 1000V
Electrical safety	IEC 61010-1
Current input	3
Current sensor type	Rogowski coil
Current sensor ratio	333 mV / kA; 85 mV / kA (60 Hz)
Current measurement accuracy	0,5%
Temperature inputs	8
Temperature sensor type	PT100 resistance temperature detector (RTD)
Temperature input range	-50 ~ +450 °C
Withstand temperature	< 500 °C
Temperature measurement accuracy	1%
Relays	4 / 8
Relay contact types	NC / NO

Technical Specifications

USB ports	2
Ethernet ports	1
Communication protocol	DNP3.0; Modbus TCP/IP
Connection	Ethernet RJ45; Wi-Fi, LTE and Bluetooth depending on configuration. External router support.

Electromagnetic compatibility tests

Electrostatic discharge	IEC 61000-4-2
Radiated immunity	IEC 61000-4-3
EFT	IEC 61000-4-4
Surge immunity	IEC 61000-4-5
Conducted RF immunity	IEC 61000-4-6
Magnetic field immunity	0,5mT IEC61000-4-8

We provide solutions for improvement of eletrical energy generation, transmission and distribution efficiency, quality and reliability. With a highly specialized and experienced team in research, delvelopment and innovation, HVEX develops tailor-made solutions for brazilian and foreign markets. Wide range of products with solutions focused on signal transduction, measurement, monitoring and protection.



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