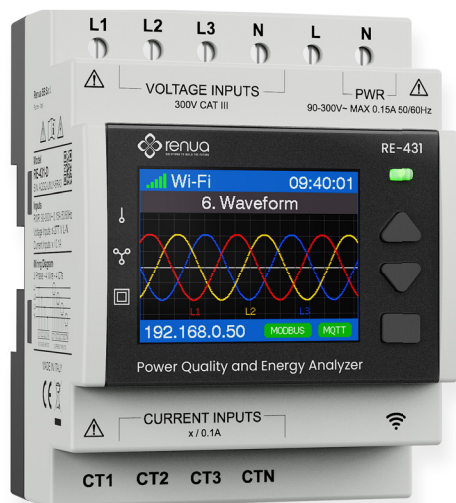




RE-431 Series

Three-Phase Power Quality and Energy Analyzer

Description

The **RE-431** Series is a highly accurate, fully integrated, multiphase energy and power quality monitoring DIN-Rail mount device.

Superior analog performance, powerful AI acceleration and reliable security features enable accurate energy monitoring and power quality analysis.

The **RE-431** Series offers complete power monitoring capability by providing total as well as fundamental measurements on rms, active, reactive, and apparent powers and energies.

Advanced features such as dip and swell monitoring, frequency, phase angle, voltage total harmonic distortion (VTHD), current total harmonic distortion (ITHD), and power factor measurements enable implementation of power quality measurements. The $\frac{1}{2}$ cycle rms and 10 cycle rms/12 cycle rms, calculated according to IEC 61000-4-30 Class S, provide instantaneous rms measurements for real-time monitoring.

The **RE-431** Series offers an integrated flexible waveform buffer that stores samples at a fixed data rate of 32 kSPS or 8 kSPS.

Applications

- Energy and power monitoring.
- Power quality monitoring.
- Machine health monitoring.
- Smart power distribution.
- Solar production monitoring.
- Energy usage and cost forecasting.
- Solar forecasting.

Benefits

- Simplify Power Quality.
- Avoiding downtime due to equipment failure.
- Preventing costly repairs.
- Reducing energy consumption by identifying areas where efficiency improvements could be made.

General Specifications

Type of network	1P + N 2P + N 3P + N WYE (Y)
Sampling rate	8 kSPS
Measurements	- Total and fundamental Active Power (W), ReactivePower (VAR), Apparent Power (VA), Active Energy (kWh), Reactive Energy (kVARh), and Apparent Energy (kVAh). - Total and fundamental IRMS, VRMS. - Total harmonic distortion (THD). - Power factor. - Supports active energy standards: IEC 62053-21 and IEC62053-22; EN50470-3; OIML R46; and ANSI C12.20. - Supports reactive energy standards: IEC 62053-23, IEC62053-24.
Display	2.0" active matrix TFT, 320 pixels x 240 pixels, 65K colors
Real Time Clock	NTP synchronized. Time accuracy: ± 1 ppm @ 25°C
Data and Event logging	Online and onboard realtime data and event logging

Power Inputs

Number of Inputs	2 Inputs, 1 Phase and Neutral
Voltage Range	90-300VAC
Frequency Range	50-60Hz
Max. Current	0.15A
Overcurrent Protection	Internal Fuse (1A 350V AC)
Overvoltage Protection	Internal MOV+GDT

Voltage Inputs

Number of Inputs	4 Inputs, 3 Phases and Neutral
Max. Voltage Input	300V L-N
Measurement Category	300V CAT III
Overcurrent Protection	Internal Fuse (1A 350V AC)
Overvoltage Protection	Internal MOV+GDT

Current Inputs

Number of Inputs	4 Inputs, 3 Phases and Neutral
Inputs Type	Current Transformers, Rogowsky Coil
Current Transformers	75A: 0.1A - Ø 10mm 150A: 0.1A - Ø 16mm 300A: 0.1A - Ø 24mm 600A: 0.1A - Ø 36mm 1200A: 0.1A - Ø 90mm 2500A: 0.1A - Ø 120mm
Rogowski Coils	1000A - Ø 120mm 2000A - Ø 190mm 3000A - Ø 300mm

Accuracy

Voltage	0.2%
Power factor	± 0.001
Active/Apparent Power	Class 0.2
Reactive power	Class 0.2
Frequency	0.05% from 45 to 65 Hz
Active energy	Class 0.2
Reactive energy	Class 0.2

Power Quality Analysis

Class	IEC 61000-4-30 Class S
Measurement	- VRMS ½, IRMS ½ rms voltage refreshed each half cycle 10 cycle rms/12 cycle rm - Voltage Unbalance - Current unbalance - Zero crossing - Phase angle
Anomalies Detection	- Dip and Swell monitor - Event waveform capture - Zero-crossing timeout
Line Frequency	One per phase
Harmonics Analysis	Individual harmonic magnitudes on voltage and current, up to the 63rd harmonic
Harmonics Distortion	- Voltage total harmonic distortion (VTHD) - Current total harmonic distortion (ITHD)
Waveform	Waveform capture on all Voltage and Current inputs(including Neutral)

Mechanical

Dimensions (LxWxH)	70mm x 91mm x 59mm
DIN-Rail Size	4M
Weight	0.210kg
IP degree of protection	- IP40 front panel: conforming to IEC 60529 - IP20 body: conforming to IEC 60529

Safety

General	CE as per IEC 61010-1 (double insulation)
Pollution Degree	2
Overvoltage Category	OVCIII (5000m)
Operating Altitude	Up to 5000m
RS485 Insulation	5.7 kV Reinforced insulation

Environment

Operating temperature	- 40 °C to 65 °C
Humidity rating	5 to 95% RH at 50 °C (non-condensing)
Pollution degree	2

Cybersecurity

Data Encryption	MQTT data transfer over TLS
Flash Encryption	AES-XTS-based flash encryption
User Access	Strong password enforcement
Events logging	Security events logging via Syslog
Secure Boot	RSA-based secure boot
Services	Disable Unused Services and ports
Wi-Fi	Protected Management Frames (PMF) support
Conformity	Compliant with the requirements of the EN 18031-1 standard and the Delegated Regulation (EU) 2022/30 (RED).

Communication & Current Inputs

	Wi - Fi	Bluetooth	MQTT	Modbus TCP/IP	Modbus RTU	LoraWAN	Ethernet	CT Split Core	Rogowski Coils	ZigBee
RE-431-D	●	●	●	●				●		
RE-431-D-RS485	●	●	●	●	●			●		
RE-431-D-LW	●	●	●	●		●		●		
RE-431-D-ETH	●	●	●	●			●	●		
RE-431-D-ROG	●	●	●	●					●	
RE-431-D-ZB	●	●	●	●				●		●