Revelo®

Unparalleled Edge Intelligence and Analytics

Landis+Gyr

Landis+Gyr's Revelo platform is unmatched in the industry, introducing the first IoT grid sensing electric meters with waveform data technology. Revelo's high-powered computing capabilities enable superior edge intelligence and analytics. Supporting grid and consumer-side apps, Revelo enables utilities to optimize grid management and improve consumer engagement. It provides an app development platform and community of partners to create an ecosystem of edge apps that address new use cases.

Secure by Design

Revelo's future-proof core metrology design facilitates architectural evolution, allowing utilities to benefit from future technology improvements. This design also ensures security, through hardware-isolated metrology, IoT communications, and a grid edge computing platform.

Metrology Engine

The hardware-isolated metrology engine provides the highest reliability for measurement and billing operations, providing meter-to-cash protection, and reducing the potential for client billing issues. Relevant firmware is isolated from edge computing apps and communications firmware.

IoT Communications Interface

The Revelo IoT communications interface provides the highest reliability for transmission of billing data. It features backward compatibility with previous-generation app technology, and ensures reliable and secure transmission of energy data.

Edge Computing Platform

A sandboxed environment for app execution protects the metrology engine from any app computing impact, while providing direct access to Wi-Fi for consumer applications.

Benefits of the Revelo Platform

The energy grid has been described as the "world's largest machine." In order to effectively serve evolving energy needs, it is critical that the machine support:

- Distributed energy resource adoption
- Demand management
- Grid reliability
- Consumer engagement

Revelo provides the platform for utilities to address these issues, supporting two-way flows of energy and taking advantage of redundancy to improve DER integration. At the same time, Revelo is built on Landis+Gyr's established record of delivering security and reliability, with proven technologies for preventing failure of existing infrastructure, and handling machine intermittency.
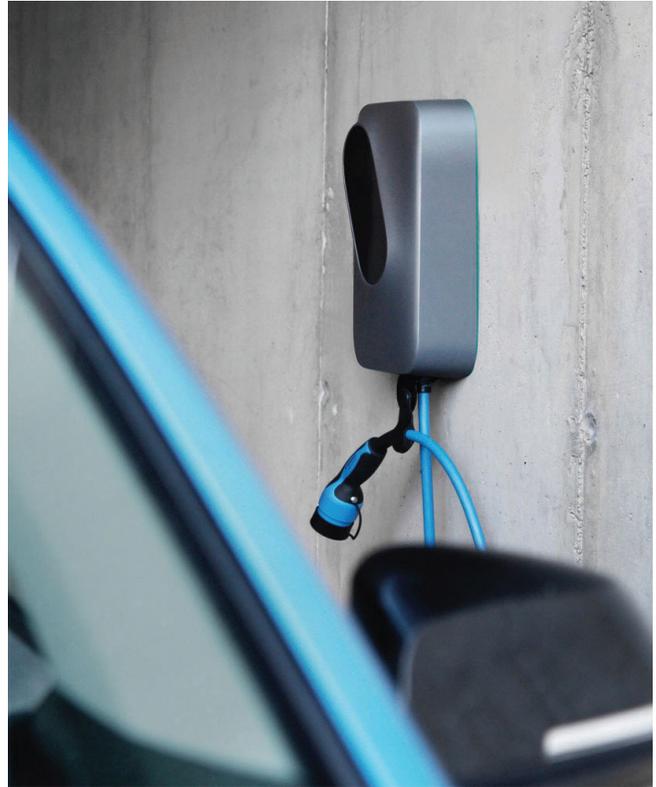
FEATURES

- High resolution current and voltage streaming to an integrated Edge Intelligence Card

- Gridstream® Connect App OS-enabled sensor

- Communications flexibility

- E360 available in 200 amp and 320 amp disconnect to address residential load growth due to EV chargers, heat pumps, etc.

- E660 available in wide voltage (120-480V) without a disconnect switch for C&I use

- Millisecond resolution to aid in phase and grid anomaly detection

- Micro arc sensing for early detection of hot socket conditions

- Wi-Fi Certified and internet enabled open application ecosystem

- High-resolution billing system (ready for the future of transactive energy)

- Wi-SUN certified to enable the future of Wireless Smart Utility Network interoperability

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Product Specifications

GENERAL

Metering Features	• Standard Active and Reactive Metrics
	• Time-of-Use with Perpetual Calendar
	• Load Profile
	  – 2 independent recorders
	  – 16 channels per recorder, 32 channels total
	  – 2MB of interval memory with configurable allocation between recorders
	  – Energy, demand, and PQ channel sources
	• Tamper Detection Features
	  – Cover removal switch
	  – Magnet tamper sensor
	  – Meter removal and insertion detection
	  – Meter inversion detection
	• Safety Related Features
	  – Multi-sensor temperature monitoring
	  – Micro-arc sensor
	  – Meter orientation change detection
	  – Form 2S virtual neutral for improved load-side voltage monitoring

E360 SERVICE DISCONNECT SPECIFICATIONS

200 Amp Disconnect	• 10,000 operations at 200 Amps – 5,000 open/close cycles (10,000 operations) • Available Forms: 1**S**, 2**S**, 12**S**, 25**S**
320 Amp Disconnect	• 6,000 operations at 320 Amps – 3,000 open/close cycles (6,000 operations) • Available Forms: 2SE

PERFORMANCE SPECIFICATIONS

Accuracy Class	ANSI C12.1 Class 0.2%
Voltage Accuracy	+/- 0.2% typical
Frequency	Rated accuracy across 50Hz and 60 Hz +/- 5%
Starting Load	• Class 20: 5 mA • Class 200: 40 mA • Class 100: 20 mA • Class 320: 80 mA
Operating Temperature	-40C to +85C under the cover
Humidity	Up to 95% relative humidity, non-condensing
Design Life	20+ years
Over Voltage Withstand	Temporary (1/2 sec) 150% rated voltage Continuous (5 hours) 130% rated voltage
Voltage Burden	< 5.0 W max

AVAILABLE FORMS

	Revelo E360 Residential	Revelo E660 C&I

Operating Voltage	120V or 240V fixed voltage power supply
	• Self-contained:
	  – 1**S-SD** CL100
	  – 2**S-SD** CL200 and 2**SE-SD** CL320
	  – 12**S-SD** / 25**S-SD** CL200
		120-480V auto-ranging power supply
		• Self-contained:
		  – 1**S** CL200
		  – 2**S** CL200 and 2**SE** CL320
		  – 12**S** / 25**S** CL200 and 12**SE** / 25**SE** CL320
		  – 14**S** / 15**S** / 16**S** CL200 and 14**E** / 15**SE** / 16**SE** CL320

	Revelo E360 Residential	Revelo E660 C&I

Forms		• Transformer Rated:
		  – 3**S** CL20
		  – 3**SC** CL20
		  – 4**S** CL20
		  – 6**S** / 8**S** / 9**S** / 29**S** / 36**S** / CL20
		  – 5**S** / 45**S** CL20

Service Disconnect Switch	All Forms	No
Arc Sensor	Yes	Yes

COMMUNICATIONS

Revelo Meters for Cellular communications are also available.
Learn more at LandisGyr.com/Cellular-Revelo

	Technology	Speeds	Output Power
Series 6 RF	IEEE 802.15.4-2015 900 MHz FSK/OFDM	50–2400 kbps	500 mW Max
Wi-Fi Certified	Certification ID: WFA118337	Up to 72.2 Mbps	32mW Max
Optical Port	ANSI C12.18	9600–38400 bps	N/A

EDGE INTELLIGENCE

Operating System	Landis+Gyr Linux with App OS sandbox environment
Streaming Sensor Data	• 14.6 kHz sampled voltage and current waveform data • 100ms aggregate metrology and sensor data

SECURITY

Encryption	256-bit AES
Wi-Fi	WPA2 & WPA3
Digital Image Signing	Signature validation for all firmware and application images
Physical Hardening	Port security and Data at Rest Encryption

APPLICABLE STANDARDS

ANSI C12.1	Code For Electricity Metering
ANSI C12.10	Physical Aspects Of Watthour Meters - Safety Standard
ANSI C12.18	Protocol Specification for ANSI Type 2 Optical Port
ANSI C12.19	Utility Industry End Device Data Tables
ANSI C12.20	American National Standard for Electricity Meters—0.1, 0.2, and 0.5 Accuracy Classes
UL 2735	UL Standard for Safety Electric Utility Meters

GET IN TOUCH.

For more information and nationwide warranty terms, visit us at landisgyr.com or call us at 888-390-5733.

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