



Solution  
ecosystem

zillion



**zillion**  
GORLAN

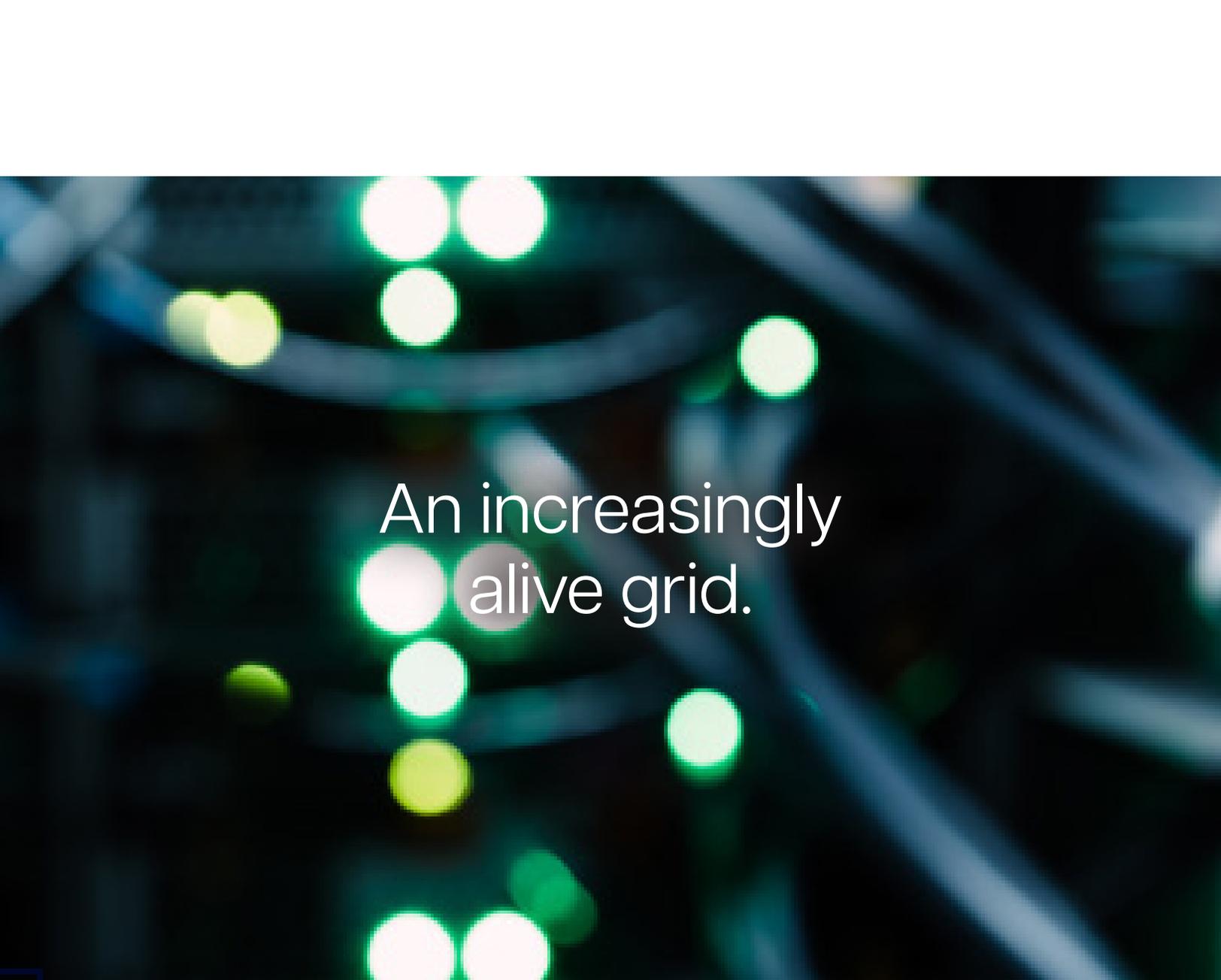
# Alive and Smart Grids by Gorlan



We transform static grids  
into alive systems that learn,  
anticipate, and evolve.

We are Zillion, the open ecosystem of solutions for alive and smart grids by Gorlan. We develop modular technology, protected by Pronutec and sensed by Merytronic, that connects seamlessly with IT/OT systems, facilitating access to energy intelligence and electrifying the future of our society.





# An increasingly alive grid.

Power grids are no longer static; they evolve and can become overloaded due to the sustained increase in electricity demand, the widespread adoption of electric vehicles, and distributed generation. All this, combined with the need to reduce energy losses, drives the continuous improvement of network efficiency.

Today, for energy to flow reliably and with high quality, the grid needs:

**Greater flexibility and  
resilience.**

**Insight into critical  
hotspots to optimize  
investments.**

**Intelligent management  
to enhance  
performance and safety.**

# Our solution

We integrate what already exists and connect it with what is to come, enabling phased growth and building new capabilities with the lowest barriers. We work flexibly to adapt to any context, designing solutions that evolve with our customers and enabling more precise and secure decisions.

## **We are a solution ecosystem**

A complete chain that spans from protection and distribution to sensing and monitoring, fully connectable to any IT/OT system. Pronutec and Merytronic collaborate closely at all levels to make this possible.

## **Modular by design**

Our solutions are modular by design, allowing technological deployment to scale according to each customer's needs.

## **Optimising network management**

We facilitate decision-making by providing continuous, real-time visibility that enables to orchestrate operations effectively.

## **Improving power quality**

We detect imbalances and voltage drops before they become incidents, stabilising voltage and continuity, and maintaining the pulse of the grid.

## **Fraud detection**

We provide the data needed to identify abnormal patterns and suspicious segments, enhancing security and enabling efficient energy management without driving up costs.

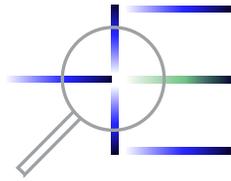
## **Transformer, feeder and phase monitoring**

Fixed and portable devices that enables monitoring at transformer, feeder, and phase level, providing full traceability and fast diagnosis.

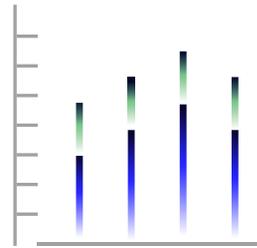
# Grow in phases

New capabilities with minimal barriers.  
Manage the network more efficiently, flexibly, and resiliently.

## Supervision



## Analytics



Real-time electrical measurements  
per feeder and phase

Measurement visualisation

Alarm generation  
and management

Alarms management and  
threshold settings

Power quality  
monitoring

Power quality in accordance with  
IEC 61000-4-30 and EN 50160

Oscillographies

Oscillography visualization

Transformer supervision

Network topology identification  
at feeder and phase level

Earth leakage measurement

Analysis of electrical losses  
based on energy balances

Tampered meters detection

# Solution ecosystem

We offer a modular solution ecosystem that adapts to your infrastructure, improving distribution network management-global, flexible, scalable, and fully integrable with existing distributor system operators (DSOs).

protected by

**pronutec**  
gorlan

#### WHO WE ARE

We are Pronutec, the protection and power distribution module of Zillion's ecosystem of solutions for alive and smart grids. We ensure low voltage so that operations are predictable and efficient.

#### WHAT WE DO

We design and manufacture protection and power distribution equipment to turn the grid into a reliable environment, ensuring stable operation so that advanced energy intelligence can be deployed with confidence.

sensed by

**merytronic**  
gorlan

#### WHO WE ARE

We are Merytronic, the sensing and monitoring module of Zillion's ecosystem of solutions for alive and smart grids. We provide real visibility at low voltage, measuring the pulse of the grid.

#### WHAT WE DO

We design and manufacture solutions for monitoring distribution power grids, transforming signals into useful information for operation. We make the invisible visible so that teams can make more precise decisions and energy flows efficiently.



## Protection and sensing

Solutions designed to integrate into any low-voltage panel configuration, combining switching, protection, and measurement.

We select the most suitable option for each use case, ensuring safety, accuracy, and scalability from day one.

---

## Processing and communications

Robust solutions that centralise low-voltage signals, apply local logic, and aggregate information to send it securely to your IT/OT systems.

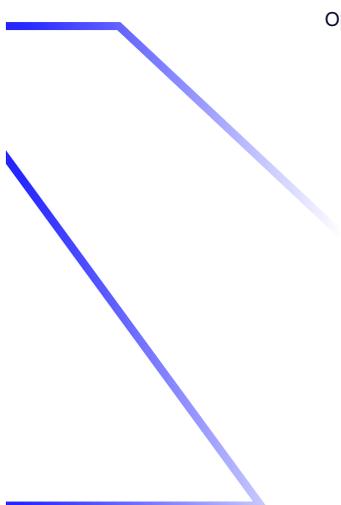
We work with standard protocols to ensure interoperability, cybersecurity, and agile deployment across any network architecture.

---

## Advanced analytics

A portable solution that brings monitoring and advanced analytics directly to the exact point of the network where it is needed.

It makes the invisible visible, detecting deviations and prioritising actions based on operational criteria, accelerating field diagnosis and improving service quality.



---

# Protection and sensing

01

We offer switching, protection, and sensing solutions designed to integrate into any low-voltage panel configuration, providing the most suitable option for each use case.

Our systems allow for the measurement of essential electrical parameters directly at the protection point, which simplifies the panel layout and enhances network visibility from the source. Sensors can be installed both at the top and bottom of fuse switches, and we offer products compatible with panels protected either by fuse switches or by automatic circuit breakers.

---

Additionally, some solutions do not require electrical shutdowns, making field installation easier without service interruptions.

---

The range includes both compact and modular versions, designed for easy integration into third-party equipment, offering maximum flexibility without compromising advanced technical performance.

## 01. Protection and sensing

### 01.1 SFS Smart Fuse Switch - Lower position solution

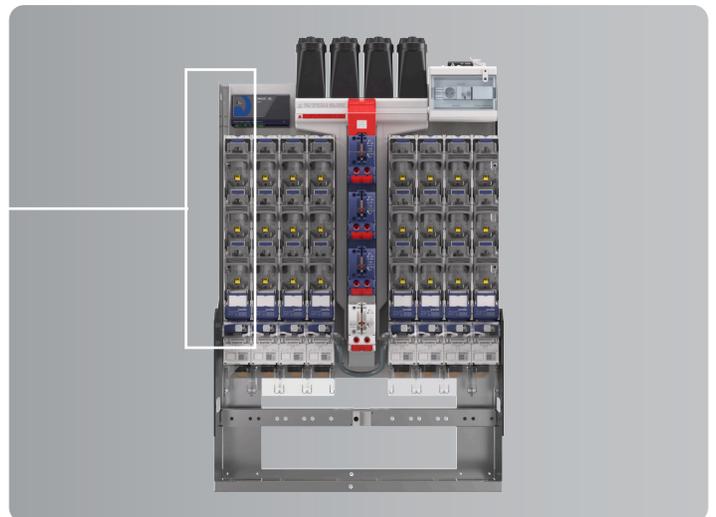
The SFS is an intelligent fuse switch that integrates current transformers and an electronic card to digitise the network's electrical parameters. This solution incorporates both the current transformers and a feeder meter in the lower part of the switch. Its compact design and minimal wiring simplify installation and operation, while ensuring reliable protection through NH fuses. The system allows the replacement of feeder meters under voltage (without requiring power shutdown) and can be retrofitted into existing panels.

#### FUNCTIONALITIES AND CHARACTERISTICS

- NH fuse switch disconnection and protection.
- Electrical signal acquisition directly at the protection point.
- Analogue signal digitisation for real-time monitoring.
- Compact architecture with reduced cabling for easier installation.
- Compatible with existing installations (retrofit-ready).
- Safe replacement of feeder meters under voltage, without power interruption.
- Three-phase supervisor per outgoing.
- Built-in current transformers and voltage taps.

#### KEY USE CASE

- Ideal for low-voltage distribution panels requiring compact protection and monitoring, with simplified wiring and enhanced operational continuity.
- Equipped as standard with SAL (Advanced Line Supervisor) and with TSA (Advanced Supervision Card).



# 01. Protection and sensing

## 01.2 SFS Smart Fuse Switch - Upper position solution

The SFS is an intelligent fuse switch that integrates current transformers, voltage connections, and a feeder meter within an upper position configuration. This compact and space-saving design makes it ideal for distribution panels where installation space is limited, offering seamless integration without compromising safety or functionality.

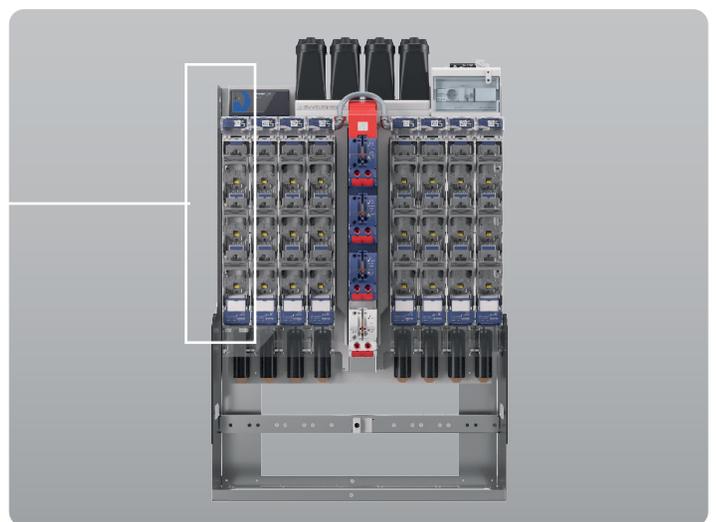
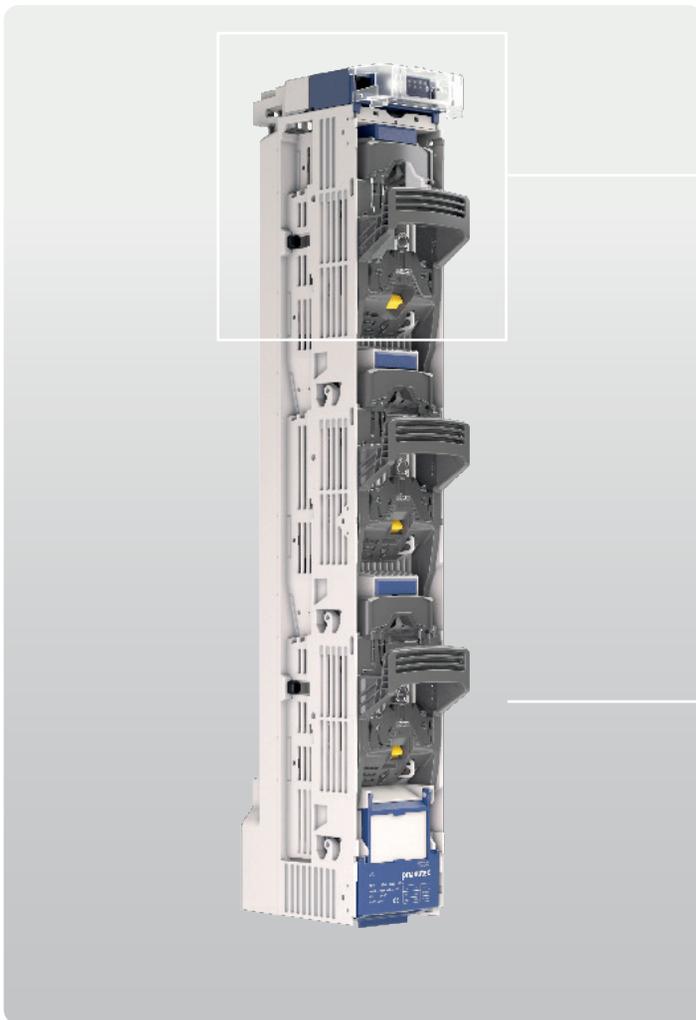
It ensures reliable protection through NH fuses and enables the replacement of feeder meters under voltage (without the need for power shutdown). The unit combines protection, measurement, and monitoring in a single, easily installable solution that can also be retrofitted into existing low-voltage panels.

### FUNCTIONALITIES AND CHARACTERISTICS

- NH fuse switch disconnection and protection.
- Electrical signal acquisition directly at the protection point.
- Analogue signal digitisation for real-time monitoring.
- Compact architecture with reduced cabling for easier installation.
- Compatible with existing installations (retrofit-ready).
- Safe replacement of feeder meters under voltage, without power interruption.
- Three-phase supervisor per outgoing.
- Built-in current transformers and voltage taps.

### KEY USE CASE

- Ideal for low-voltage distribution panels where installation space is limited, requiring compact protection and monitoring with simplified wiring and enhanced operational continuity.
- Equipped as standard with SAL (Advanced Line Supervisor) and with TSA (Advanced Supervision Card).



# 01. Protection and sensing

## 01.3 SAL – Advanced Line Supervisor

The SAL (Advanced Line Supervisor) is a compact measurement device designed to capture electrical signals through integrated current transformers and voltage connections for each phase. It provides accurate electrical data directly from the fuse switch, enabling precise monitoring and diagnostics across the low-voltage network.

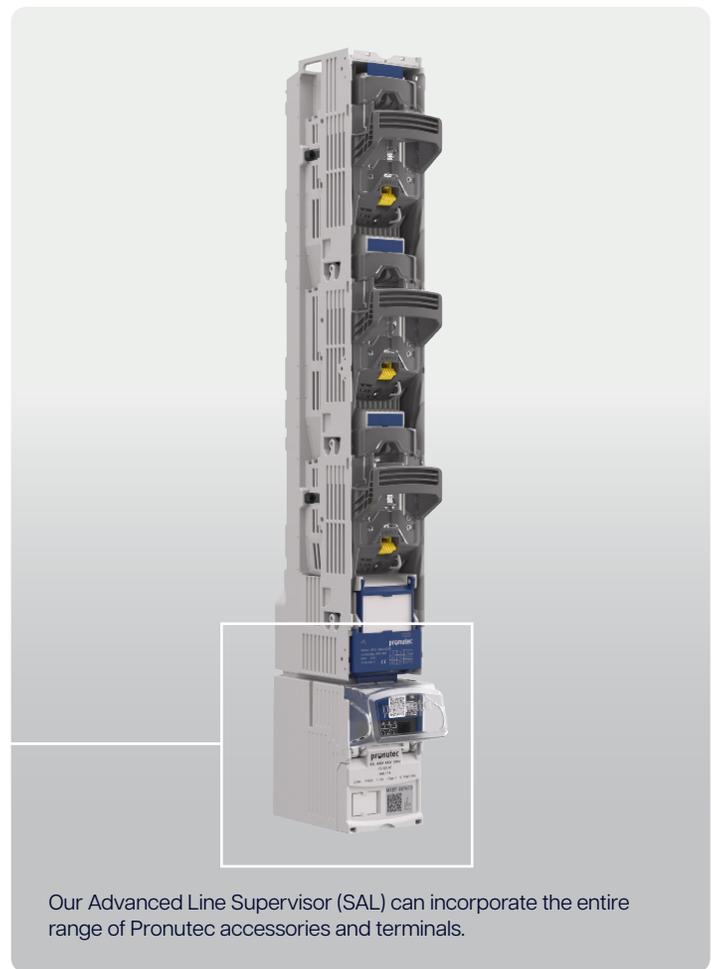
Available in multiple current transformer ratios depending on the amperage of the fuse switch. It offers flexible adaptation to different configurations.

### FUNCTIONALITIES AND CHARACTERISTICS

- Integrated current transformers and voltage connections per phase.
- Multiple current ratios available (250 A / 400 A / 600 A).
- Accurate signal acquisition for protection and monitoring.
- Designed for use with fuse switches in low-voltage panels.
- Compatible with existing installations (retrofit-ready).
- Requires power shutdown for installation.

### KEY USE CASE

Ideal for retrofitting or replacing existing monitoring units in low-voltage panels equipped with fuse switches, providing precise electrical measurement where full smart functionality is not required.



Our Advanced Line Supervisor (SAL) can incorporate the entire range of Pronutec accessories and terminals.

### CURRENT TRANSFORMER RATIOS

I prim.	I sec.	VA	Pr. Cl.	FS	Gama
250 A	1 A	2,5 VA	0,5	< 5	120 %
400 A	1 A	2,5 VA	0,5S	< 3	120 %
600 A	1 A	2,5 VA.	0,5	< 5	120 %

# 01. Protection and sensing

## 01.4 TSA – Advanced Supervision Card

The TSA (Advanced Supervision Card) is a three-phase feeder meter integrated inside the any Smart Advanced Line Supervisor such as our SAL (Advanced Line Supervisor).

It converts analogue signals into digital data, reading all key electrical parameters and transmitting them to the LV Edge Node through RS485 serial ports.

Compact and precise, the TSA enables real-time supervision of voltage, current, power, and energy across each phase, forming the digital core of Zillion’s monitoring architecture.

### FUNCTIONALITIES AND CHARACTERISTICS

Calculates RMS values per second for:

- Voltage and current per phase (including neutral current).
- Active, reactive, and apparent power (per phase and total).
- Power factor, frequency, and phase presence.
- Imported/exported energy and reactive energy in all four quadrants.
- Internal temperature.
- Voltage and current oscillography in case of alarm.

Communicates via RS485 in daisy-chain configuration (up to 24 feeder meters per bus), ensuring reliable data transmission.

Alarm generation per phase: blown fuse, over/under voltage, current overload, short-circuit current.

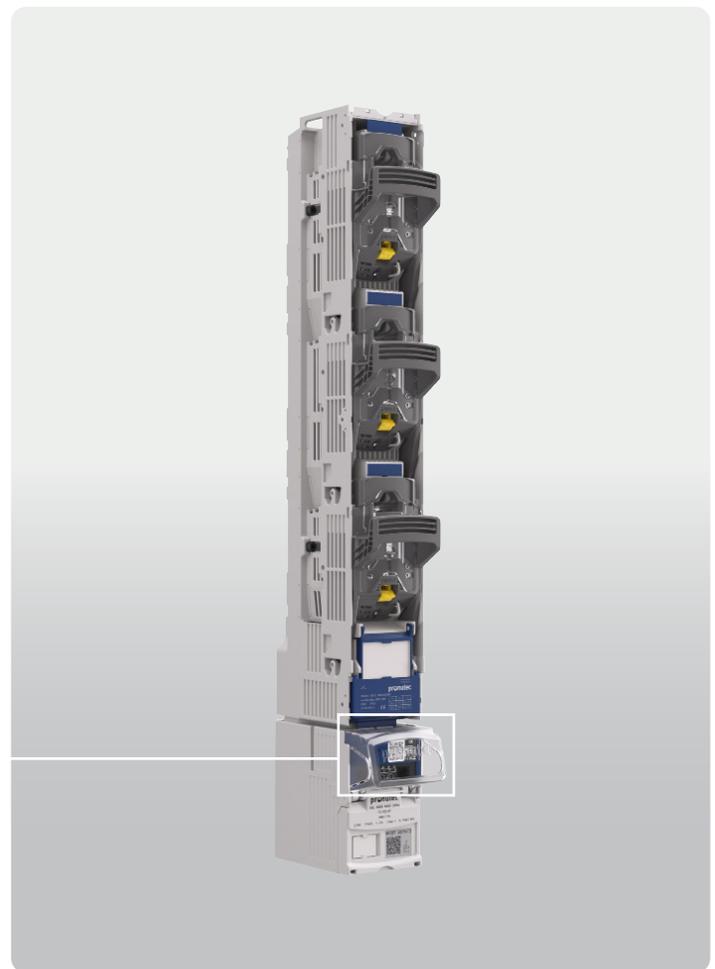
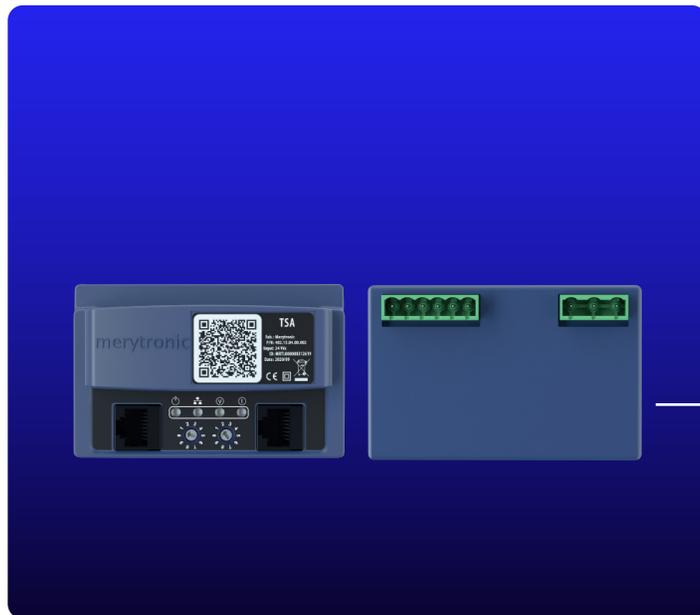
Communication via DLMS/COSEM (HDLC) or Modbus protocols.

Compatible with both upper- and lower-mounted LV monitoring solutions.

Available in two formats for different space and measurement requirements (amperes/millivolts).

### KEY USE CASE

Ideal for real-time digital supervision in modular LV monitoring solutions, transforming analogue signals into actionable data for network diagnostics and control.



# 01. Protection and sensing

## 01.5 LRS – Life Retrofit Supervision

The LRS is a new low-voltage monitoring solution that enables live installation without power shutdown. Designed for retrofit applications, it allows advanced supervision on any type of three-pole fuse switch or circuit breaker, regardless of brand or panel configuration.

It uses the same electronic components and measurement performance as other Zillion supervisors, ensuring full compatibility and consistent accuracy across all systems.

### FUNCTIONALITIES AND CHARACTERISTICS

- Live installation without energy supply interruption.
- Open-core current transformers for quick and easy fitting.
- Insulation-piercing voltage taps for direct and safe connection.
- Equipped as standard with TSA (Advanced Supervision Card), delivering the same functionalities as other Zillion supervisors.
- Voltage and current measurement per line and phase for accurate real-time monitoring.
- Compact components and concentrated cabling per line, avoiding clutter on the substation floor.
- Flexible component positioning along distribution cables for optimal integration.
- Integrated card holder for direct sensor connection and signal interface.
- Protection fuses included for enhanced safety.
- Fully compatible with any LV infrastructure—any type, standard, or brand of fuse switch or circuit breaker. Suitable for both new and legacy panels, with no need for prior inspection before retrofit.
- Fast and simple deployment, ideal for field upgrades.

### KEY USE CASE

Designed for utilities and operators modernising existing low-voltage networks, the LRS enables real-time monitoring and diagnostics without service interruption. Perfect for retrofit projects, asset digitalisation, and progressive network automation where installation time and continuity of supply are critical.

### CONNECTION OPTIONS

Voltage taps option (Vampire Clips): for direct connection to insulated cables. Ring terminal option: for secure and standardised connections to terminal blocks or busbars. V-Type terminal connector option: for flexible, quick-fit connection in space-constrained environments.



## 01. Protection and sensing

### 01.5 LRS – Life Retrofit Supervision

Zillion's LRS range offers different connection models to adapt to any installation requirement or cabling configuration. Each option ensures reliable voltage acquisition and easy integration into existing panels without cutting or stripping insulated cables.



LRS  
Ring terminals  
option



LRS  
V type  
terminal  
connectors  
option



## 01. Protection and sensing

### 01.6 LRG – Life Retrofit Rogowski

The LRG is a live-installation monitoring solution that enables advanced low-voltage supervision without interrupting the power supply. It uses Rogowski coils for current measurement—lightweight, flexible sensors that avoid saturation and do not require a ferromagnetic core.

Fully compatible with any low-voltage panel, fuse switch, or circuit breaker, the LRG ensures precise line and phase measurement even in compact or retrofit environments.

#### FUNCTIONALITIES AND CHARACTERISTICS

Installation without power interruption.

Current measurement using Rogowski coils (no saturation, lightweight, and flexible).

Compatible with any LV panel, brand, and type of three-pole fuse switch or circuit breaker.

Same performance as other Zillion monitoring solutions, including line and phase measurements.

Concentrated cabling on each line – no loose cables on the floor.

Flexible placement of components on power distribution cables.

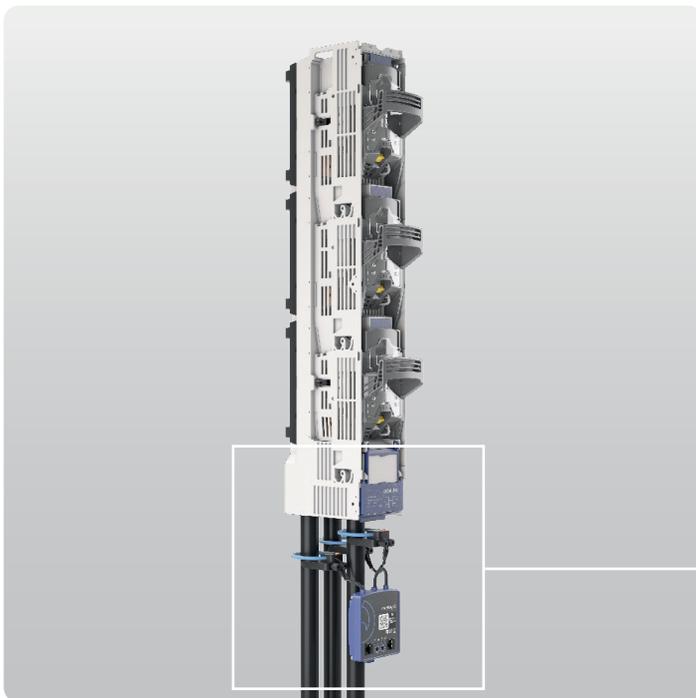
Voltage measurement using vampire clips, screw-nut, or other commercial accessories.

#### KEY USE CASE

Retrofit solution for low-voltage monitoring based on Rogowski coils.

Ideal for installations with limited space or where mechanical constraints prevent traditional transformers.

Compatible with existing infrastructures and suitable for fast, non-intrusive upgrades.





# Processing and communications

02

We develop robust data processing and communication solutions that centralise low-voltage signals, apply local logic, aggregate information, and transmit it securely to your IT/OT systems using standard, cyber-secure protocols.

Converting distributed readings into reliable operational decisions, with easy integration into any existing architecture.

---

We transform measurements into useful, real-time information: remote terminal units (LV Edge Node and Multichannel LV Node), transformer monitoring (LVS), and service multimeters act as the field's brain—storing, synchronising, and transmitting data for diagnostics and operation.

---

We speak the language of the network: Ethernet/Modbus TCP, RS485 (DLMS/HDLC), XML/web services, and cellular connectivity via 4G (through router), ensuring compatibility with SCADA and IT/OT platforms.

## 02. Processing and communications

### 02.1 LV Edge Node

The LV Edge Node is the central device of the low-voltage monitoring system, located at the secondary substation. It acts as the communication and intelligence hub, collecting, storing, and transmitting electrical data from all feeder meters to higher-level platforms and systems.

Fully compatible with standard SCADA/DMS systems, it allows simultaneous data delivery through multiple communication protocols, enabling seamless integration across departments such as LV infrastructure, O&M, asset management, and loss detection.

#### FUNCTIONALITIES AND CHARACTERISTICS

Storage and management of feeder meter data.

Communication with software platforms via:

- XML reports and web services.
- Modbus TCP / IEC 60870-5-104 / DNP3.0.

RS485 bus master for feeder meters (DLMS / HDLC).

DC power supply to feeder meters through RS485 cable.

Advanced features:

- Power quality monitoring.
- Oscillography.
- Earth leakage / service entrance current measurement.

Compact design with minimal cabling and simplified architecture.

#### KEY USE CASE

Main device of the modular LV monitoring system at the secondary substation.

Operates as a protocol gateway, enabling real-time data integration between SCADA/DMS environments for a unified, intelligent network view.



---

## 02. Processing and communications

### 02.2 Multichannel LV Node

---

The Multichannel LV Node is a simplified and cost-effective version of the LV Edge Node, designed to capture and digitalise electrical signals through current transformers or Rogowski coils.

It serves as a multichannel remote terminal unit that collects data from several feeders and transmits it directly to higher-level platforms and systems, ensuring accurate and synchronised measurements with minimal infrastructure.

#### FUNCTIONALITIES AND CHARACTERISTICS

Multichannel LV Node for current and voltage measurement.

Direct connection to fuse switch outgoings.

Electrical signals captured through Rogowski coils or traditional current transformers.

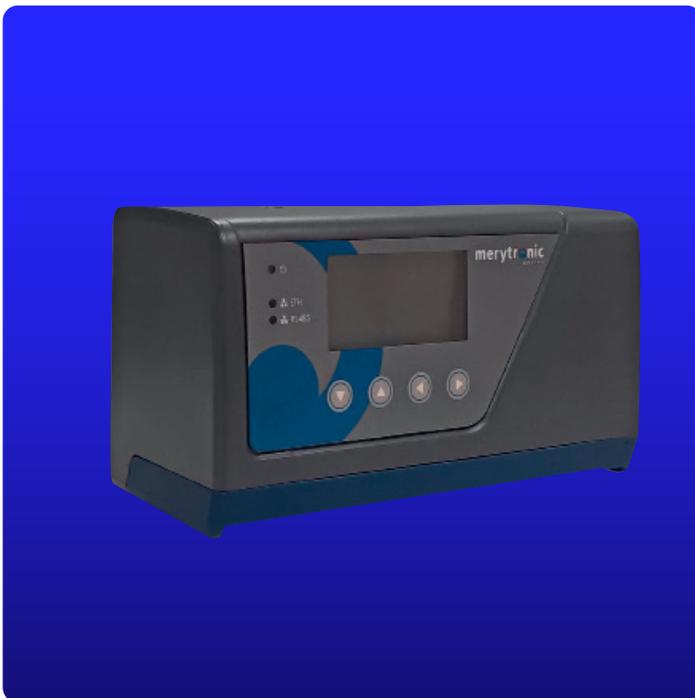
Compact, easy-to-install design.

Simplified integration into existing low-voltage panels.

#### KEY USE CASE

Ideal for secondary substations requiring cost-efficient feeder monitoring.

Acts as a centralised measurement element for multiple feeders, combining simplicity, flexibility, and reliable performance in one compact device.



---

## 02. Processing and communications

### 02.3 LVS – Transformer Supervisor

---

The LVS is a three-phase transformer supervisor designed to monitor the electrical and thermal condition of distribution transformers, whether installed in indoor transformer stations or outdoor pole-mounted enclosures. It provides accurate measurement of voltage, current, power, and harmonics, offering real-time data to SCADA systems to enhance asset management, reliability, and maintenance planning.

Its versatile configuration makes it suitable for both new installations and retrofits, ensuring continuous supervision and power quality analysis at the transformer level.

#### FUNCTIONALITIES AND CHARACTERISTICS

- Up to 6 current inputs and 4 voltage inputs.
- Alarm generation for abnormal operating conditions.
- RS232 / RS485 serial communication ports.
- Ethernet port supporting Modbus RTU / Modbus TCP protocols.
- PT100 input for transformer oil temperature measurement.
- Power quality monitoring, including voltage and current harmonics.
- Class 1 active and Class 2 reactive measurement accuracy.
- LCD display with buttons and visual indicators for local supervision.
- DIN-rail mounting for quick and easy installation.
- Multiple configuration options for indoor or outdoor transformer supervision.

#### KEY USE CASE

- Ideal for monitoring distribution transformers in transformer stations or pole-mounted installations, enabling real-time supervision of electrical, thermal, and power quality parameters.
- Provides secure and continuous data transmission to SCADA systems via Modbus TCP, ensuring effective transformer health management and early fault detection.



---

## 02. Processing and communications

### 02.4 Incoming supervisor – Multimeter

---

The Incoming Supervisor is a compact multimeter designed for supervision of the LV panel's incoming section. It measures and displays all key electrical parameters in real time through its large colour display, providing an intuitive interface for monitoring, diagnostics, and maintenance.

Its reduced size and front-panel format allow seamless integration into any low-voltage distribution panel, combining precision, visibility, and ease of use.

#### FUNCTIONALITIES AND CHARACTERISTICS

1 RS485 communication port (COM) for Modbus RTU protocol (slave mode).

Three-phase measurement of voltage, current, and other electrical parameters.

- 12-pole connector for power supply (Ub).
- 14-pole connector for voltage measurement (Um).
- 16-pole connector for current measurement (Im).

Colour LCD display with four-button navigation.

Firmware update via SD card or Modbus RTU connection.

Compact design for direct integration into LV panels.

Accurate and stable measurement of incoming transformer parameters.

#### KEY USE CASE

Ideal for real-time monitoring of transformer incomings and LV panel supervision, combining high measurement accuracy, colour visualisation, and easy installation.

Perfect for retrofit or new installations where space and visibility are key factors.



---

## 02. Processing and communications

### 02.5 SLVP – Smart LV Panel

---

The Smart LV Panel range combines protection, sensing, and communication in a single ready-to-install solution. Each panel is factory-equipped with intelligent fuse switches, advanced line supervision, and communications nodes, providing full visibility and control of the low-voltage network from the start.

Designed to simplify commissioning and integration, these panels transform traditional low-voltage distribution into an intelligent, connected system. The range is as extensive as Pronutec's LV panel catalogue, offering configurations that comply with different installation types, national standards, and international market requirements.

#### FUNCTIONALITIES AND CHARACTERISTICS

Factory-assembled panels with integrated protection, sensing, and communication devices.

Smart fuse switches (SFS) with current and voltage measurement per line and phase.

Embedded data concentrators ensuring communication with IT/OT and SCADA platforms.

Compact configurations adapted for both indoor and outdoor transformer substations.

Custom-built options tailored to each utility's technical and operational needs.

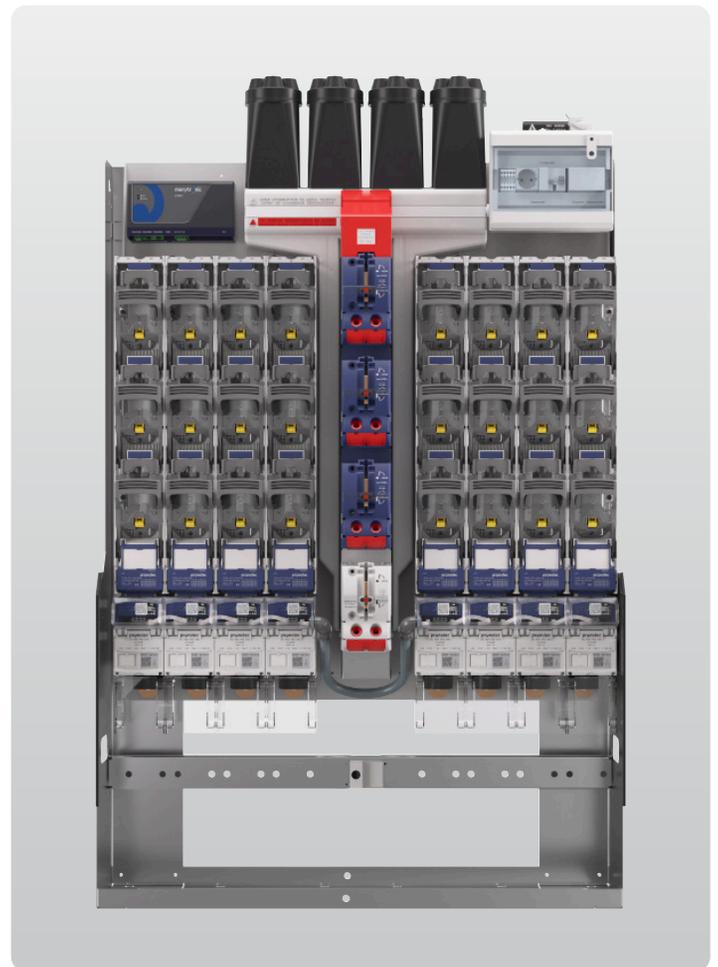
Reduced installation time – plug-and-play deployment and easy commissioning.

Compatible with any monitoring architecture within the Zillion ecosystem.

#### KEY USE CASE

Ideal for utilities seeking pre-engineered, intelligent LV panels that integrate protection, monitoring, and communication in one compact solution.

Designed to simplify field installation, ensure interoperability, and accelerate digitalisation of the low-voltage grid.





# Advanced analytics

03

We bring intelligence directly to the point in the network where it is needed.

We capture electrical measurements, power quality data, and oscillography to make the invisible visible.

Deployment is fast and safe, no de-energisation or supply interruptions required, allowing action precisely when and where it matters.

---

With the advanced analytics of the **Ariadna Smart IoT platform**, we transform data into operational insights: detecting anomalies, losses, and meter tampering while prioritizing actions based on operational criteria.

---

It is the ideal solution for diagnostic campaigns, targeted audits, and incident support.

## 03. Advanced analytics

### 03.1 LV-DNA: Low Voltage Distribution Network Analyzer

A portable data-logger for Advanced Monitoring of Low Voltage Networks. Designed to analyse transformer and feeder load, detect electrical losses and identify power quality issues, LV DNA offers a complete diagnostic solution for network performance assessment; all in a robust, compact, and portable device.

#### FUNCTIONALITIES AND CHARACTERISTICS

Measurement of transformer and feeder load to determine saturation levels and optimise load distribution.

Detection and quantification of technical and non-technical losses, including energy theft.

Power quality analysis to identify and prevent supply disturbances.

Fully portable design, ideal for temporary installations and field diagnostics without fixed mounting.

Suitable for rapid deployment in substations or for temporary monitoring of suspicious network areas.

#### TECHNICAL FEATURES

5 voltage connectors (3 phases, neutral, MV ground).

8 current connectors (3 phases + neutral).

Display and LED indicators for real-time data visualisation.

Ethernet RJ45.

Integrated Bluetooth and GPS.

Cellular modem 2G/3G/4G with external GSM/GPS antennas.

USB port for data export and firmware updates.

Internal battery.

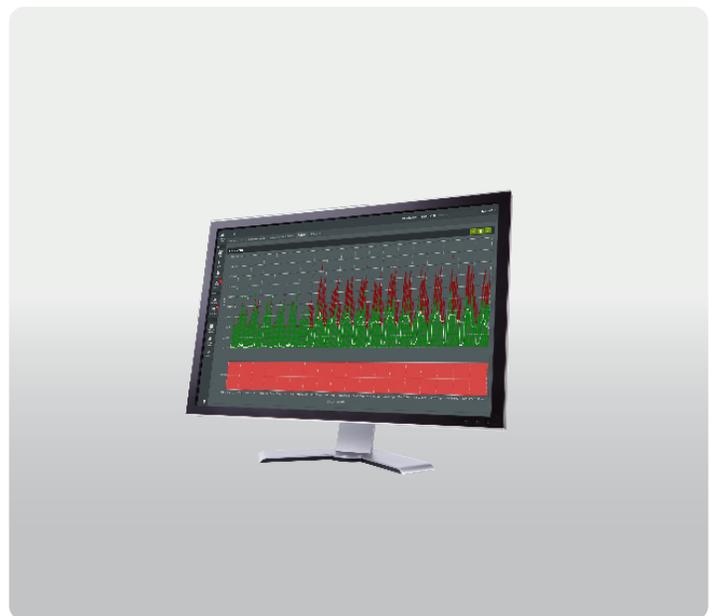
Protection class CAT IV 600V/1000V and IP67.

#### KEY USE CASE

Versatile and portable solution that integrates advanced monitoring hardware with the Ariadna Smart IoT Platform for complete low-voltage network analysis.

Ideal for utilities conducting pilot projects, field tests, or temporary monitoring, as well as for complementing existing fixed supervision systems.

Provides full visibility of transformer and feeder performance, power quality, and energy balance—enhancing network coverage, flexibility, and operational insight without requiring complex installations.

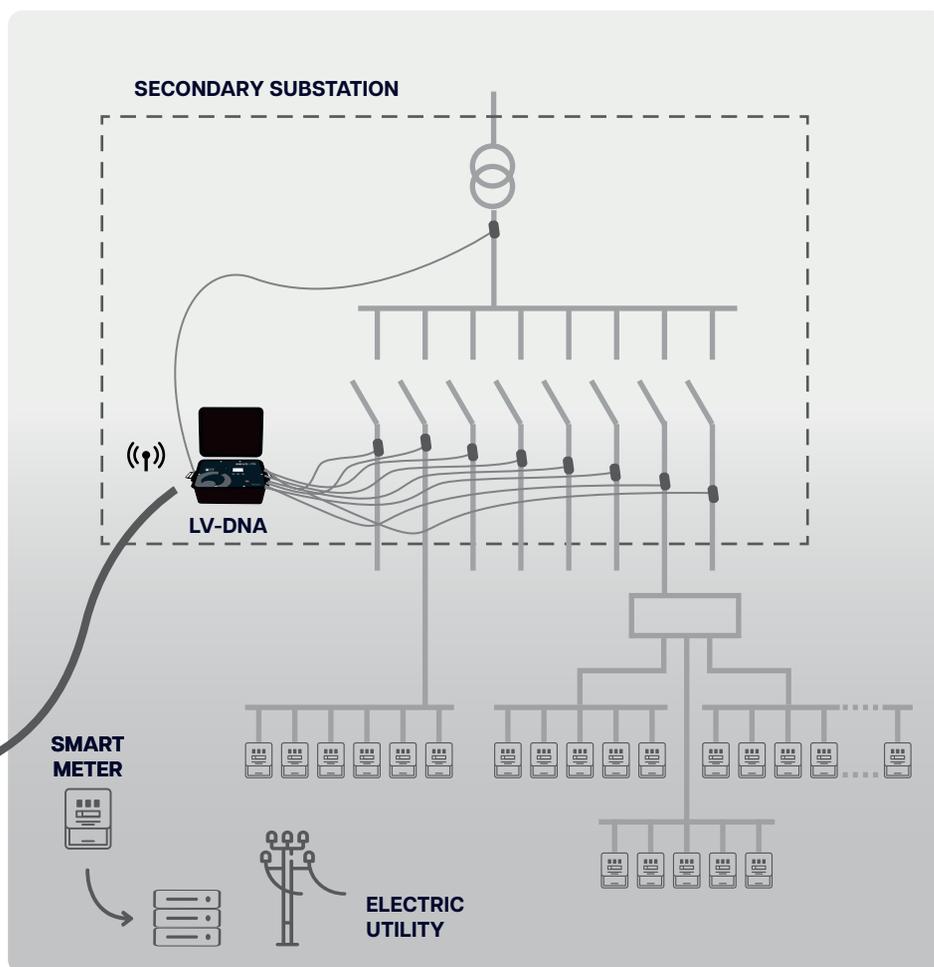


## 03. Advanced analytics

### 03.1 LV-DNA: Low Voltage Distribution Network Analyzer

#### TECHNICAL FEATURES

- 5 x Voltage: Ph.1 + Ph.2 + Ph.3 + Earth + N.
- 4 x Current per feeder: Ph1-Ph2-Ph3-N.
- Up to 8 x Feeder measurement.
- Power Factor per feeder and phase.
- ± Active & Reactive Power per feeder and phase.
- ± Active & Reactive Energy per feeder and phase.
- Overvoltage / Undervoltage event.
- Overcurrent event.
- Oscillographies.
- Power Quality IEC 61000-4-30 (Class S).



### Ariadna Smart IoT platform

The most comprehensive software solution for Low Voltage grid management in Distribution System Operators (DSOs). With a 360° view of the network, it integrates monitoring, analysis, and management capabilities in a single environment, enabling utilities to optimise supervision, maintenance, and planning of their LV assets.

#### FUNCTIONALITIES AND CHARACTERISTICS

- Real-time communication with field devices.
- Long-term data logging for transformer and feeder outputs (over one year).
- Energy balance analysis across transformers and feeders.
- Detection of tampered or malfunctioning meters.
- Alarm management with configurable thresholds.
- Power Quality analysis compliant with IEC 61000-4-30 and EN 50160.
- Oscillographic visualisation for detailed event diagnostics.
- Identification of the LV network topology at feeder and phase level.

#### KEY USE CASE

- Enables utilities to perform comprehensive energy balance analysis across multiple levels of the low-voltage network—from transformers to feeders—within a single platform.
- Ideal for detecting losses, monitoring power quality, and identifying tampered meters, helping optimise operations and improve network efficiency.

**zillion**

ALIVE AND SMART  
GRIDS BY GORLAN

[zillion@gorlan.com](mailto:zillion@gorlan.com)