



Open ecosystem
of solutions

zillion



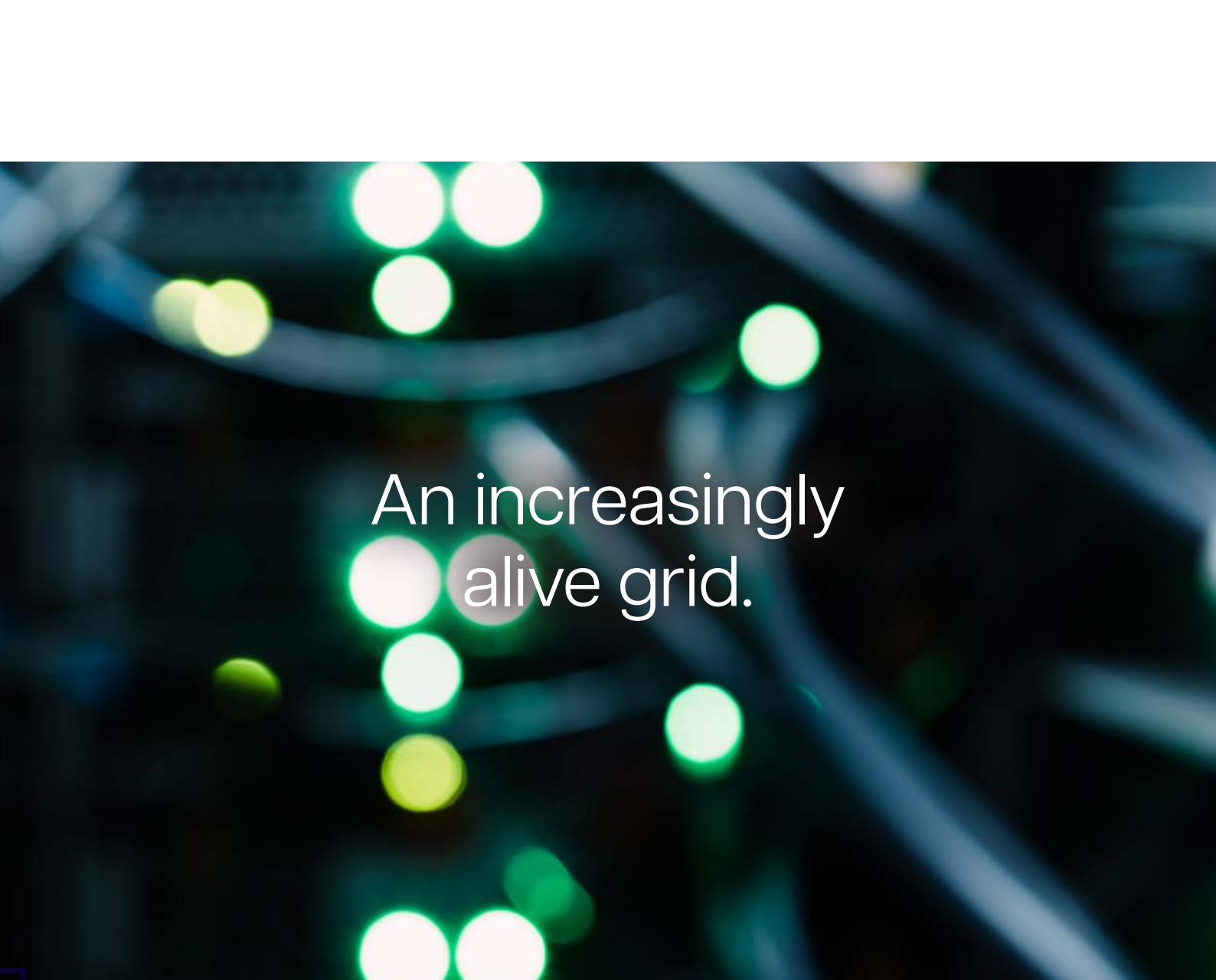
Alive and Smart Grids by Gorlan



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 that is protected by Pronutec and sensed by Merytronic, connects with all IT/OT target systems, enabling access to energy intelligence to electrify the future of our society.





An increasingly alive grid.

Grids are no longer static: they are evolving and becoming increasingly constrained due to factors such as sustained growth in electricity demand, the widespread adoption of electric vehicles and distributed generation. Together with the need to reduce power losses, these developments are driving continuous improvements in grid efficiency.

Today, to ensure power quality and security of supply, the grid needs:

**Greater flexibility and
resilience.**

**Insight into grid stress
points to optimize
investment.**

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

Open ecosystem of solutions

We offer a modular ecosystem of solutions designed to adapt to your infrastructure and improve the management of your distribution grid. It provides a comprehensive, flexible, and scalable approach that integrates with the utility's existing systems.

protected by

pronutec
gorlan

WHO WE ARE

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

Our approach

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 clients and enable more precise and secure decisions.

We are an ecosystem of solutions

An end-to-end chain spanning protection and power distribution through to sensing and monitoring, with connectivity to all IT/OT target systems. Pronutec and Merytronic work together at every level to make this possible.

Modular by design

Our solutions are modular, enabling technology deployment to scale in line with each client's needs.

Optimizing the management of your distribution grid

We facilitate decision-making by providing continuous, real-time visibility and enabling operational orchestration.

Improving quality of supply

We detect quality-of-supply issues before they lead to incidents on the grid.

Fraud detection

One of the most common use cases is the detection of grid losses, both technical losses and energy theft. Thanks to the data provided by our devices, numerous DSOs have been able to reduce their losses.

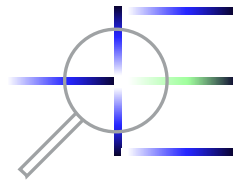
Transformer, feeder and phase monitoring

Fixed and portable instrumentation enables monitoring at transformer, feeder and phase level, providing visibility across the low-voltage grid, improving grid planning and reducing the duration of power outages.

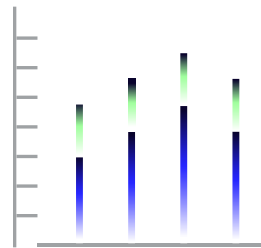
Grow in phases

New capabilities with the lowest barriers.
Manage the grid more efficiently, flexibly, and resiliently.

Monitoring



Analytics



Real-time electrical measurements

Alarm management
and threshold settings

Alarms

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

Power quality

Oscillography display

Oscillography

Enabler for grid topology
identification at feeder and
phase level

Incoming supply monitoring

Enabler for fraud detection through
energy balancing or anomalous
pattern detection

Earth leakage current
measurement

Detection of technical losses

Protection device status
monitoring

Zillion monitoring levels

Zillion makes it possible to adapt the level of grid monitoring to the needs of each installation, from a high-level overview of the system to detailed, real-time monitoring at feeder and phase level.

These levels do not depend on a single product, but on the combination of solutions within the ecosystem, enabling a gradual progression towards more advanced models of digitalisation and grid operation.

Incoming supply monitoring (general overview)

This corresponds to monitoring models in which the grid is analysed and monitored at transformer, switchboard, or phase level.

It provides a general overview of the system's status, based on aggregated voltage, current or quality-of-supply measurements.

This approach is suitable for:

- basic monitoring
- general diagnostics
- monitoring the overall status of the installation
- transformer condition and temperature monitoring

It provides structural monitoring focused on determining whether the system is operating correctly.

Advanced monitoring (feeder-level view)

This corresponds to monitoring models in which the grid is monitored at feeder and phase level, providing greater detail and enhanced analytical capabilities.

It enables each outgoing feeder in the switchboard to be analysed, specific incidents to be identified, and the grid's actual behaviour to be understood.

This approach is suitable for:

- precise fault detection
- loss and imbalance analysis
- improving quality of supply for customers

It provides operational monitoring that is key to the digitalisation of the low-voltage grid, supporting decision-making, and active grid management.

Evolution of the architectures

Zillion's evolution is structured around three progressive levels:

Architecture

1.0

A classic monitoring architecture, with thousands of installations operating across power grids worldwide.

A benchmark model for incoming supply or advanced grid monitoring, widely deployed internationally and designed to provide monitoring through a compact, robust and highly reliable solution.

Architecture

1.5

A monitoring architecture designed to meet new European cybersecurity requirements.

It retains the incoming supply monitoring capabilities of Architecture 1.0 while incorporating a communications and security architecture aligned with regulations such as NIS2, strengthening protection, resilience and regulatory compliance.

Architecture

2.0

A monitoring and automation architecture for smarter, more active low-voltage grids that can be managed in real time.

Based on a distributed model, it enables each feeder and phase of the grid to be monitored in greater detail, facilitating incident analysis and diagnostics. It also incorporates remote-control capabilities to automate the opening and closing of low-voltage feeders, enabling the transition from monitoring to intelligent grid operation. Its design represents a new step in the digitalisation of power grids, improving efficiency, flexibility and responsiveness.



From measurement to action

How this catalogue is organized

Zillion solutions are presented according to the same functional logic through which the low-voltage grid evolves: information is first captured, then structured and communicated, subsequently analysed and, finally, used to act on the grid.

Each section of the catalogue addresses a specific function within the ecosystem and

brings together the solutions best suited to that level of need, from field sensing through to the remote operation of assets.

Products should therefore not be understood as isolated devices, but as complementary components within a modular architecture that can be deployed in phases and adapted to each infrastructure.

Protection and sensing

Zillion's protection and sensing solutions enable the digitalisation of the low-voltage grid from its point of origin, integrating electrical protection and data capture within a modular architecture. This range is structured into two complementary layers:

Capture See the grid

The grid becomes visible

Protection and sensing solutions enable direct measurement at key points across the grid, including feeders, incoming supplies and transformers, capturing real-time electrical data.

01

Physical layer

This is the point where electrical protection is provided and where the solution is physically installed in the switchboard.

It includes devices such as Zillion SAL and Zillion SFS, which combine protection, switchboard integration and readiness for electrical signal acquisition.

Within this layer, Zillion SFS acts as the physical foundation, integrating electrical protection and signal acquisition.

This layer turns the protection point into the first digitisation node in the grid.

Sensing and measurement

This is the layer where electrical signals are converted into structured, actionable data.

Zillion TSA, LRS and LRG, together with Zillion SFS configurations incorporating measurement electronics, enable real-time measurement of grid behaviour in both new installations and retrofit environments without interrupting the power supply.

Within this layer, Zillion SFS can evolve into a comprehensive solution by incorporating measurement electronics, such as TSA, enabling it not only to capture signals but also to convert them directly into data ready for monitoring.

This layer provides the information required for monitoring, diagnostics, and operational decision-making.

Key range functions

Electrical protection at the grid connection point

- Electrical signal capture directly at feeders, incoming supplies and transformers
- Conversion of electrical signals into measurable data, depending on the configuration
- Real-time monitoring of electrical behaviour
- Adaptability to new installations and retrofit environments
- Flexible installation, with or without interruption to the power supply, depending on the solution
- Integration with the Zillion architecture for monitoring, analysis and operation

01. Protection and sensing

01.1 Zillion SFS – Smart fuse switch

Zillion SFS (smart fuse switch) is a range of low-voltage fuse switches that combine electrical protection, sensing and monitoring capabilities in a single device.

Current transformers and voltage taps are integrated directly into the fuse switch, enabling electrical signals to be captured at the protection point and converted into data for grid monitoring.

Thanks to its compact design and native integration with solutions such as SAL or TSA, Zillion SFS makes it possible to transform conventional switchboards into monitored systems, simplifying installation and reducing wiring complexity.

Available configurations:

Zillion SFS

Lower solution

The electronics are integrated into the lower section of the fuse switch, including the feeder meter, while the current transformers and voltage taps form part of the assembly. This configuration reduces wiring requirements and optimises the system's internal layout.

Electronic boards can be replaced safely thanks to fuse protection.



Zillion SFS
Smart fuse switch
Protected by Pronutec

Zillion SFS

Upper solution

The meter is integrated into the upper section, providing easier access to the electronics and facilitating installation, operation, and maintenance tasks. This solution is particularly suitable for compact switchboards where accessibility is required in confined spaces.



Zillion SFS
Smart fuse switch
Protected by Pronutec

01. Protection and sensing

01.1 Zillion SFS – Smart fuse switch

Zillion SFS is available in different configurations to meet a range of installation requirements:

FUNCTIONS AND FEATURES

Protection and operation

- Protection using NH fuses.
- Feeder disconnection and protection function.
- Maintains the electrical functionality of the switchboard.

Signal capture and digitalisation

- Integrated current transformers for each phase and voltage taps.
- Signal capture at the protection point.
- Foundation for monitoring, diagnostics and control.

Architecture and design

- Compact, integrated design.
- Electronics embedded in the fuse switch.
- Reduced external wiring.

Installation and integration

- Compatible with NH00, NH1, NH2 and NH3.
- Retrofit-ready for existing installations.
- Straightforward installation, requiring interruption of the power supply.
- Integration with SAL and TSA.
- Daisy-chain architecture, using RS485 or Ethernet depending on the solution.

Electrical design and connection

- No complex external wiring required.
- Simplified connection between components.
- Different terminals available depending on the outgoing connection configuration.

MAIN USE CASES

Digitalisation of conventional switchboards

Enables monitoring to be added without completely redesigning the switchboard, supporting the transformation of traditional infrastructure into monitored systems.

Integrated protection and sensing solution

Combines fuse protection, electrical data capture and readiness for advanced monitoring in a single device, reducing the number of components and simplifying system design.

Lower-mounting
solution details



Upper-mounting
solution details



01. Protection and sensing

01.2 Zillion SAL – Line advanced supervisor

Zillion SAL (Line Advanced Supervisor) is a compact device designed for monitoring low-voltage feeders. It is installed as a lower extension of the fuse switches. It captures electrical signals through current transformers and voltage taps integrated into each phase, providing accurate data for monitoring and diagnosing the status of the grid.

Thanks to its adaptable design, it enables monitoring capabilities to be added to existing infrastructure, providing an efficient solution for environments where full system digitalisation is not required.

FUNCTIONS AND FEATURES

Electrical measurement

- Signal capture through current transformers integrated into each phase.
- Integrated voltage connections.
- Measurement of basic electrical parameters at feeder level.
- Accurate data captured directly from the fuse switches.

Adaptability and configuration

- Available with multiple transformation ratios: 250 A, 400 A and 600 A.
- Other configurations available on request.
- Adaptable to different switchboard configurations.

Installation and deployment

- Designed for integration with fuse switches in low-voltage switchboards.
- Compatible with existing installations for retrofit applications.
- Straightforward installation, although interruption of the power supply is required.

Design and application

- Compact device.
- Designed for advanced monitoring applications.
- Compatible with the full range of Pronutec accessories and terminals.

Safety and operation

- Voltage taps protected by fuses.
- Designed for conventional electrical environments.

MAIN USE CASES

Adding monitoring capabilities to existing fuse switches

Enables measurement capabilities to be added to unmonitored low-voltage switchboards, improving grid visibility without the need to redesign the installation.

Electrical monitoring in conventional environments

Provides reliable electrical data for grid monitoring and diagnostics in applications where a complete digitalisation solution is not required, supporting maintenance and operation through straightforward deployment.



Zillion SAL
Line advanced supervisor
Protected by Pronutec



01. Protection and sensing

01.3 Zillion TSA – Line Feeder Meter

Zillion TSA (Line Feeder Meter) is a three-phase feeder meter integrated into advanced line supervisors such as Zillion SAL. It converts electrical signals into digital data ready for processing, enabling key variables such as voltage, current, power, and energy to be monitored for each phase.

Through its integration into modular architectures and connection to the Zillion RTU, it enables feeder-level grid digitalisation, providing reliable data for monitoring, diagnostics, and operational control.

FUNCTIONS AND FEATURES

Advanced electrical measurement

- Three-phase voltage and current measurement (neutral calculation).
- Calculation of active, reactive and apparent power, power factor and frequency.
- Active and reactive energy measurement, including import and export.
- Real-time RMS value calculation.
- Temperature probe measurement coming soon.

Monitoring and diagnostics

- Continuous monitoring of electrical variables for each phase.
- Phase presence and deviation detection.
- Event logging, including blown fuses, overloads and short circuits.
- Oscillography capture associated with alarms.
- Identification of feeder incidents.

Data management

- Storage of load profiles and average, maximum and incremental values.
- Periodic data transmission to the node.

Communications and integration

- Communication with the node via DLMS/COSEM over RS485/IP.
- Daisy-chain architecture.
- Power supply and communication via RJ45.

Interfaces

- 2 RJ45 Ethernet ports for daisy-chain connection.
- Measurement connections: voltage (3 poles) and current (6 poles).

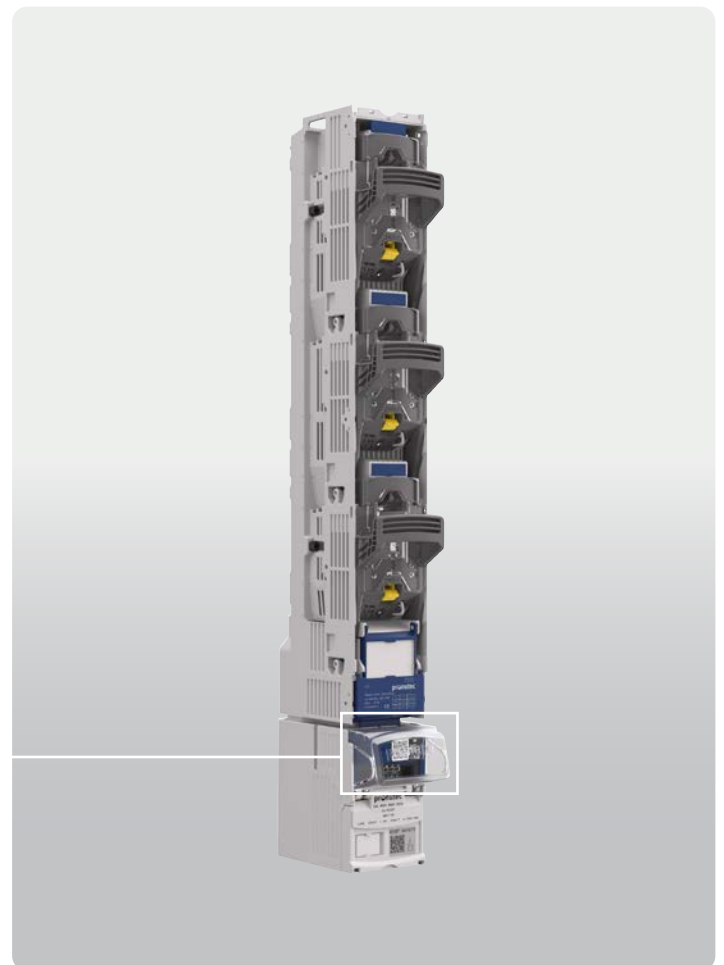
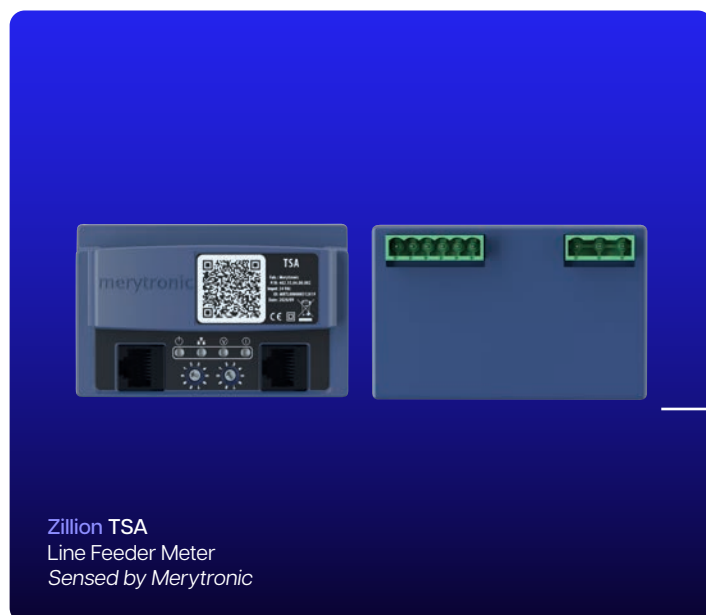
MAIN USE CASES

Digital monitoring of low-voltage feeders

Enables the electrical behaviour of each feeder to be monitored in real time, providing phase-level visibility to detect incidents, assess grid status, and improve operations without the need for complex additional instrumentation.

Data foundation for grid diagnostics and control

Converts electrical signals into structured data for higher-level systems, such as nodes and platforms, enabling advanced analysis, issue detection, and data-driven decision-making.



01. Protection and sensing

01.4 Zillion LRS – Feeder retrofit supervisor

Zillion LRS (Feeder Retrofit Supervisor) is an advanced low-voltage feeder monitoring solution designed for installation while the network remains energized, without interrupting the power supply.

Designed for retrofit environments, it enables monitoring capabilities to be added to any type of low-voltage switchboard, regardless of its configuration or manufacturer. Its adaptable design allows it to be installed directly on the outgoing feeder cables.

Equipped with electronics from the Zillion ecosystem, including Zillion TSA, it provides advanced measurement and analysis capabilities, enabling existing grids to be digitalized quickly and safely without disrupting operations.

FUNCTIONS AND FEATURES

Digitalisation of existing low-voltage switchboards (retrofit)

- Installation while in service, without interrupting the power supply.
- Compatible with existing switchboards fitted with either fuse switches or circuit breakers.
- Flexible, plug-and-play deployment.
- No prior switchboard inspection required.

Electrical measurement and monitoring

- Voltage and current measurement at feeder and phase level.
- Real-time monitoring.
- Integrates Zillion TSA, the Line Feeder Meter.

In-service installation

- Split-core current transformers.
- Rapid installation on existing cables.

Architecture and design

- Compact, modular components.
- Reduced wiring per feeder.
- Flexible positioning.

Voltage connection options

- Insulation-piercing connection, enabling direct connection without stripping the cable.
- Metric terminal, using a washer and screw.
- V-type terminal for connection in confined spaces.

Integration and communications

- Protocols compatible with universal solutions.
- Integration with the RTU and monitoring systems.

Operational safety

- Fuse-protected signal interface.
- Designed for safe field installation.

Compatible
with circuit breakers



Voltage connection:
insulation-piercing
connector for direct
connection without
stripping the cable



01. Protection and sensing

01.4 Zillion LRS – Feeder retrofit supervisor

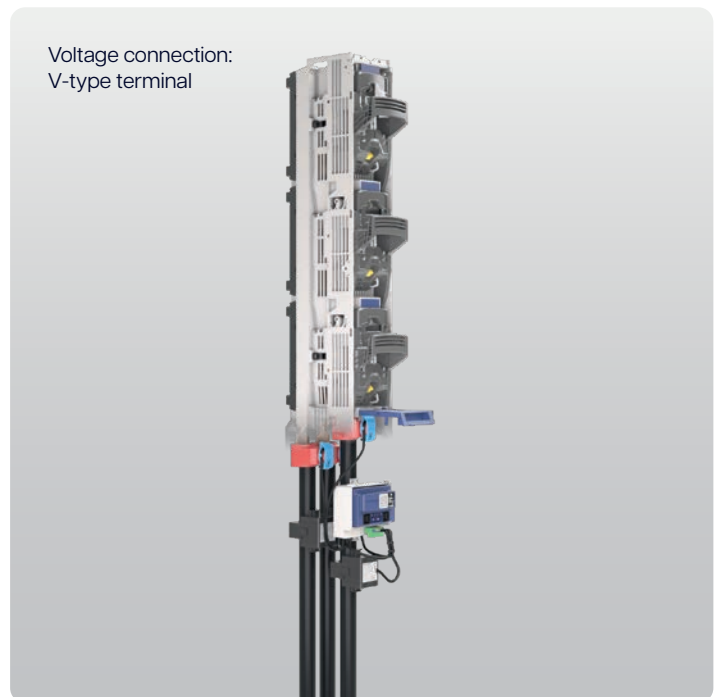
MAIN USE CASES

Digitalisation of existing grids without service interruption

Enables advanced monitoring to be added to low-voltage feeders without interrupting the power supply, making it suitable for environments where continuity of service is critical.

Flexible monitoring across different switchboard configurations

Adapts to both fuse switches and circuit breakers, enabling monitoring to be deployed across mixed infrastructure without the need for prior standardization.



01. Protection and sensing

01.5 Zillion LRG – Feeder retrofit Rogowski

Zillion LRG (Feeder Retrofit Rogowski) is an advanced low-voltage monitoring solution designed for retrofit environments, enabling electrical feeders to be monitored without interrupting the power supply.

By using Rogowski coils, lightweight and flexible sensors without a ferromagnetic core, the system enables accurate and safe current measurement, even in existing installations with limited space or where invasive work is not possible.

It combines comprehensive electrical measurement, straightforward installation, and universal compatibility with low-voltage switchboards, enabling grids already in operation to be digitalized without disrupting service.

FUNCTIONS AND FEATURES

Benefits

- In-service installation, without interrupting the power supply.
- Compatible with existing switchboards fitted with fuse switches or circuit breakers.
- Flexible, plug-and-play deployment.
- No prior switchboard inspection or specific inventories required.

Electrical measurement

- Feeder- and phase-level current measurement using Rogowski coils, with neutral current measurement available on request.
- Voltage measurement using insulation-piercing, screw-and-nut or V-type connectors.
- Integrated fuse protection, enhancing operator safety.

Rogowski technology

- Lightweight, flexible sensors.
- No ferromagnetic core, providing high accuracy without the risk of saturation.
- Suitable for installation in confined spaces.

Integration and architecture

- Compatible with the Zillion ecosystem and monitoring systems through standard protocols.

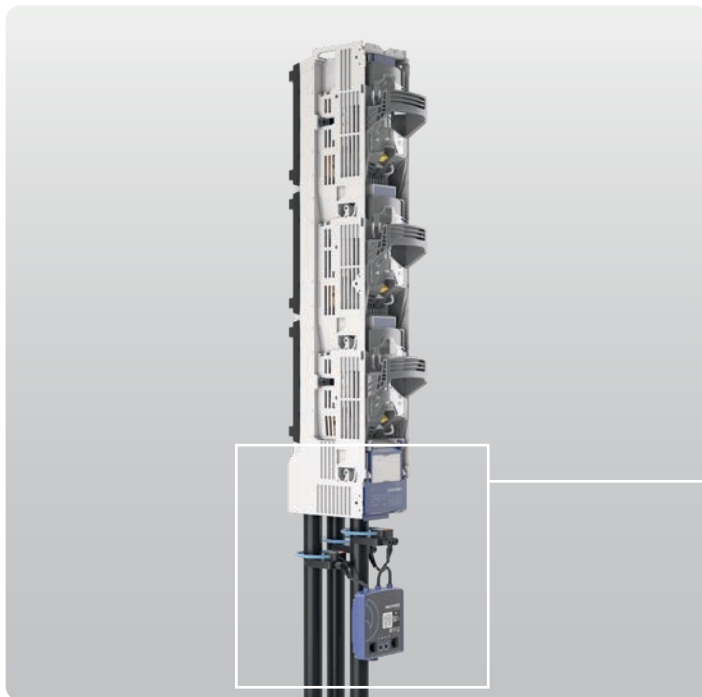
MAIN USE CASES

In-service monitoring (without interrupting the power supply)

Enables measurement systems to be installed on low-voltage feeders without disconnecting the installation, making it suitable for environments where continuity of service is critical.

Digitalisation of existing infrastructure (efficient retrofit)

Integrates into any existing low-voltage switchboard, enabling advanced monitoring to be added without complex modifications or equipment replacement.



Zillion LRG
Feeder retrofit Rogowski
Sensed by Merytronic

Processing and communications

Zillion's processing and communications solutions transform captured electrical signals into structured, connected information ready for use in monitoring and operation systems.

This range acts as the bridge between the power grid and management systems, ensuring reliable, interoperable, and scalable integration in any environment.

Within this range, two functional levels address different monitoring needs:

Monitor Organise the data

Data becomes information

Processing nodes integrate, structure and transmit information from the grid, providing a coherent view of the system and enabling continuous monitoring.

02

Processing nodes

These are the devices that act as the core of the system, integrating and managing information from the grid.

They include solutions such as Zillion RTU and Zillion RM, which aggregate signals from multiple feeders, structure the data, and transmit it to higher-level systems such as SCADA, DMS or IoT platforms.

These devices do more than collect information: they turn it into a comprehensive and coherent view of the grid, acting as the central hub for communications and operational intelligence.

Asset-specific monitoring

This refers to solutions designed to monitor specific grid assets in greater detail.

It includes devices such as Zillion LVS (transformer), Zillion LVM (incoming supply) and Zillion VTN (neutral-to-earth relationship), which provide precise information on electrical status and detect specific anomalies that are not identified through general monitoring.

These solutions complement the processing nodes by providing advanced visibility into critical points of the grid.

Key range functions

- Integration and centralization of data from multiple devices
- Conversion of electrical signals into structured information
- Communication with SCADA, DMS and IT/OT platforms
- Interoperability through standard protocols
- Continuous monitoring of grid status
- Management of alarms, events and quality of supply
- Scalability from compact solutions to distributed architectures

02. Processing and communications

02.1 Zillion RTU – Low-voltage node

Zillion RTU (Low-voltage Node) is the central device within the monitoring system for secondary stations, acting as the communications and intelligence hub of the low-voltage grid.

It collects, manages, and transmits information from the measurement devices installed across the grid, integrating it into monitoring platforms such as SCADA, DMS, IoT, and analytics platforms.

Through its protocol gateway and data-processing capabilities, it consolidates information from different devices and transforms it into a coherent view of the grid, supporting operations, maintenance, and data-driven decision-making.

FUNCTIONS AND FEATURES

Data and communications management

- Collection and management of data from feeder meters.
- Protocol gateway function.
- Communication via Modbus TCP/IP, IEC 60870-5-104 and DNP3 protocols to SCADA/DMS, Ariadna or IoT platforms (e.g. MQTT, depending on the configuration).

Architecture and connectivity

- RS485 bus master function for meters using DLMS/HDLC.
- Distributed power supply through the communications bus, enabling other system devices, such as feeder meters, to be powered without additional wiring.
- Simplified architecture with reduced wiring.

Advanced monitoring

- Power quality monitoring.
- Oscillography capabilities.
- Earth leakage current measurement and advanced electrical variables.
- Power quality reports in accordance with IEC 61000-4-30.

Scalability and modularity

- Upgrade path from basic to advanced monitoring.
- Adaptable to different use cases without replacing the device.

Interface and installation

- Optional display with buttons for local operation.
- Compact design.
- Straightforward installation in secondary stations.
- Designed to operate either as a standalone device or as part of a modular system.

MAIN USE CASES

Integration and centralization of grid data

The RTU acts as the central aggregation point for information from multiple metering devices, consolidating data within a single system for visualization, analysis and use by operations, maintenance and asset management teams.

Advanced monitoring and digitalisation of the secondary station

It enables advanced capabilities such as power quality monitoring, incident detection, and analysis of grid behaviour. Its scalability supports progression from basic monitoring to more advanced models without replacing the device.



Zillion RTU
Low-voltage node
Sensed by Merytronic

02. Processing and communications

02.2 Zillion RM – Multichannel low-voltage node

Zillion RM (Multichannel low-voltage node) is a solution designed to efficiently monitor multiple low-voltage feeders from a single device, optimizing the installation architecture in compact secondary stations.

It enables up to 10 outgoing feeders and one incoming supply to be monitored from a single central unit, simplifying wiring and reducing system complexity.

Thanks to its design, which integrates all the electronics for both feeder and incoming supply sensors into a single device, together with its optimised architecture, Zillion RM enables more cost-effective, organised and easy-to-maintain deployments, particularly in environments where space and installation efficiency are critical.

FUNCTIONS AND FEATURES

Multichannel monitoring

- Monitoring of up to 10 feeders.
- Monitoring of one incoming supply.
- Current measurement on each feeder and voltage measurement at the incoming supply.

Optimized architecture

- Eliminates individual wiring for each feeder, with no separate feeder cards required.
- Direct, organized connections from the central unit.
- Reduced installation complexity.

Installation and deployment

- Compact solution that is easy to integrate.
- Simpler, more organized wiring.
- Reduced risk of connection errors.
- Ideal for compact secondary stations.

Operational efficiency

- Reduced number of devices.
- Lower maintenance requirements, with a single electronic unit.
- Simplified upgrades and management.

Communications and integration

- Compatible with the Zillion architecture.
- Integrates with SCADA, DMS, IoT and analytics platforms.
- Simplified communications compared with distributed solutions.

MAIN USE CASES

Monitoring multiple feeders in compact switchboards

Enables several low-voltage feeders to be monitored from a single device, avoiding the need to install multiple standalone units. This makes it an ideal solution for small or compact secondary stations where space is limited.

Cost optimization and simplified installation

The device significantly reduces the number of components and the amount of wiring required, enabling faster installations with a lower risk of errors. By integrating the electronics into a single unit, it also simplifies maintenance and reduces operating costs.



02. Processing and communications

02.3 Zillion LVS – Low-voltage transformer supervisor

Zillion LVS (Low-voltage Transformer Supervisor) is a solution designed to continuously monitor the condition of distribution transformers, combining electrical and thermal analysis in a single device.

It provides real-time visibility into asset performance, including voltage, current, power quality and oil temperature, enabling deviations to be detected before they develop into critical incidents.

Thanks to its integration with SCADA systems and straightforward installation, it enables the digitalisation of both new installations and existing transformers, improving grid reliability and optimizing maintenance management.

FUNCTIONS AND FEATURES

Electrical monitoring

- Measurement of current, voltage, power and harmonics.
- Power quality monitoring.
- Detection of phase imbalances, phase-angle or phase-shift issues, and abnormal consumption patterns.

Thermal monitoring and asset protection

- Oil temperature calculation based on an ambient temperature sensor and load measurement on each phase.
- Alarm generation under abnormal conditions, including overtemperature.

Grid management and advanced operation

- Analysis of imported and exported energy.
- Analysis of inductive and capacitive reactive energy.
- Support for environments with bidirectional power flows, including renewables and self-consumption.
- Assessment of the impact of distributed generation on the grid.

Communications and integration

- Protocols: Modbus RTU and Modbus TCP.
- Interfaces: RS232, RS485 and Ethernet.
- Integration with SCADA systems.

Accuracy and measurement

- Measurement accuracy: class 1 for active energy and class 2 for reactive energy.
- Up to six current inputs and four voltage inputs.

Interface and installation

- LCD display with buttons for local operation.
- Visual status indicators.
- DIN rail mounting.
- Flexible configuration compatible with indoor or outdoor installations, new deployments and retrofit applications.
- Configurable alarms based on priority and criticality.

MAIN USE CASES

Transformer protection and failure prevention

Zillion LVS enables early identification of risk conditions such as overloads and overheating. This helps prevent serious failures, extend transformer service life, and reduce unplanned interventions and the costs associated with incidents.

Grid monitoring for data-driven decision-making

The device provides continuous information on grid status and quality of supply. This enables phase imbalances, energy losses, and abnormal consumption patterns to be detected, helping operators make informed decisions and improve grid efficiency.



Zillion LVS

Low-voltage transformer supervisor
Sensed by Merytronic

02. Processing and communications

02.4 Zillion LVM – Low-voltage multimeter

Zillion LVM (Low-voltage Multimeter) is a compact device designed to measure and monitor electrical parameters in real time at incoming supply points in low-voltage grids. Its integrated display provides a direct and clear view of the system's electrical behaviour, supporting monitoring, diagnostics, and maintenance tasks.

Thanks to its standard panel-mount format and straightforward installation, it is an ideal solution for both new installations and modernization projects, providing visibility without adding complexity.

FUNCTIONS AND FEATURES

Electrical measurement

- Three-phase measurement of voltage, current and other key incoming supply electrical parameters.
- Accurate and stable measurement of the transformer incoming supply parameters.

Communications

- RS485 (COM) with Modbus RTU protocol in slave mode.
- Straightforward integration with monitoring systems or higher-level devices.

Interface and display

- Colour LCD display.
- Push-button interface.
- Direct, real-time display of electrical data.

Installation and format

- Standard 96 × 96 mm panel-mount format.
- Compact design for integration into low-voltage switchboards.
- Quick and straightforward installation.

Architecture and connections

- 12-pole connectors for power supply (Ub).
- 14-pole connectors for voltage measurement (Um).
- 16-pole connectors for current measurement (Im).
- Design optimized for clear and straightforward connections.

Maintenance and upgrades

- Firmware updates via SD card or Modbus RTU connection.
- Simplified communications compared with distributed solutions.

MAIN USE CASES

Local incoming supply monitoring

The device enables the main electrical parameters to be viewed in real time directly from the low-voltage switchboard. This supports rapid incident detection and field diagnostics, improving the efficiency of operations and maintenance teams.

Local and remote visibility

Its straightforward integration into the panel, using a standard format, makes it a practical solution for providing visibility in installations without advanced monitoring. It is particularly suitable for retrofit projects and environments where space and simplicity are key factors.



02. Processing and communications

02.5 Zillion VTN – Earth leakage supervisor

Zillion VTN (Earth Leakage Supervisor) is a monitoring device designed to measure in real time the potential difference between the low-voltage neutral and protective earth in secondary stations.

It enables the detection of anomalies that cannot be identified using conventional measurement systems.

Integrated into the Zillion ecosystem, VTN adds an additional layer of intelligence to the grid, improving operational safety, maintenance, and infrastructure diagnostics.

FUNCTIONS AND FEATURES

Specific electrical measurement

- Measurement of the voltage difference between the low-voltage neutral (service earth) and protective earth (metalwork).
- RMS value calculated every second.
- Continuous monitoring of electrical status.

Anomaly detection

- Capable of identifying conditions such as earth leakage currents, insulation faults, return currents and structural issues in the neutral.
- Detects problems that other devices cannot identify directly.

Data logging and analysis

- Storage of instantaneous, maximum, minimum and average values.
- Generation of configurable historical profiles.
- Data ready for operational analysis and predictive maintenance.

Signalling and operation

- Front LEDs for checking device status, communications and voltage levels against defined thresholds.

Architecture and integration

- Integration into secondary stations.
- Daisy-chain architecture.
- Communications: RS485 and DLMS/COSEM.
- Power supply: 24 V DC from the Low-voltage Node (RTU).

Device interfaces

- Two RS485 ports with RJ45 connectors.
- One 2-pole connector for voltage measurement.

MAIN USE CASES

Early detection of earth leakage and earth faults

Enables deviations in the voltage between neutral and earth to be identified, indicating the presence of leakage currents or developing faults. This allows action to be taken before the issue leads to failures or operational risks.

Identification of neutral conductor issues

The system supports the detection of neutral conductor breaks, degradation, improper sizing, and electrical imbalances, all of which are critical conditions that directly affect grid safety.

Improved diagnostics and maintenance

Enables issues to be localized at secondary-station level, reducing fault-location times and supporting predictive maintenance strategies.



02. Processing and communications

02.6 Zillion VRS – Vertical retrofit supervision solution

Zillion VRS (Vertical Retrofit Supervision Solution) is a comprehensive solution designed to add advanced monitoring to existing low-voltage switchboards through direct integration into the space of a fuse switch.

Its compact design allows the system to be installed in an available switchboard position, occupying the same space as a protection fuse switch and enabling fully native integration without structural modifications.

Thanks to its modular architecture, the solution can be configured to integrate different components from the Zillion ecosystem, as well as third-party devices, bringing together all the capabilities required for advanced monitoring within a single unit.

FUNCTIONS AND FEATURES

Integrated modular architecture

- Integration of multiple components, including current sensors such as Rogowski coils or other technologies, voltage measurement, data acquisition electronics and communications.
- Configurable according to the solution, using Zillion devices or third-party equipment.

Physical integration into the switchboard

- Occupies the space of a standard fuse switch.
- Installation in spare outgoing feeder positions in low-voltage switchboards.
- No structural extensions or additional enclosures required.

Advanced electrical measurement

- Voltage and current measurement at feeder and phase level.
- Technology compatible with different current and voltage sensors.
- Accuracy equivalent to fixed monitoring solutions.

Installation and deployment

- Fast and organized installation.
- Reduced wiring, with power supply and communications combined in a single cable.
- Installation without interrupting the power supply, depending on the configuration.

Design and efficiency

- Compact, modular column-type architecture.
- Clean integration within the switchboard.
- Eliminates dispersed standalone solutions.
- Adaptable to different grid configurations.
- Ideal for heterogeneous environments.

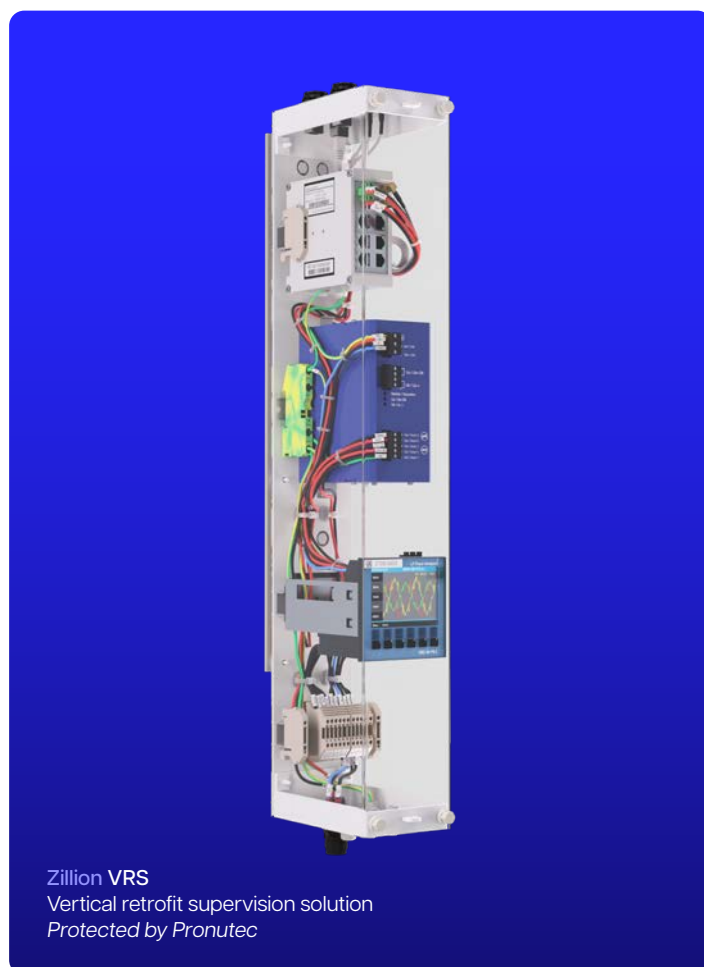
MAIN USE CASES

Complete digitalisation of existing switchboards

Enables a traditional low-voltage switchboard to be transformed into a monitored system by integrating the solution directly into an available space within the switchboard. This supports modernization without redesigning the installation or adding complex external equipment.

Rapid deployment of advanced monitoring

Thanks to its compact, preconfigured format, the solution enables complete monitoring capabilities, including measurement, communications and sensing, to be deployed quickly and in an organized manner. It is ideal for projects where deployment time and simplicity are key.



02. Processing and communications

02.7 Zillion SLVP – Smart low-voltage panel

Zillion SLVP (smart low-voltage panel range) transforms Pronutec's traditional low-voltage panels into smart solutions capable of integrating protection, sensing, communications and advanced monitoring within a single architecture.

While retaining the foundation and design of the standard panel range, Zillion incorporates all the capabilities of its technology ecosystem, enabling any existing configuration to become a smart node within the distribution grid.

This approach ensures maximum flexibility, adapting to different technical, regulatory, and market requirements without compromising the robustness and reliability of the traditional architecture.

Zillion's offering extends the existing panel range, enabling different levels of monitoring and digitalisation to be incorporated according to each client's needs. This makes it possible to configure anything from compact basic-monitoring solutions to advanced architectures ready for remote control, while maintaining consistency across the Zillion ecosystem.

The smart low-voltage panel range can integrate:

- 1. Low-voltage feeder protection and sensing solutions with Zillion SFS (smart fuse switches).
- 2. Processing and communications nodes such as Zillion RTU (Low-voltage Node) or Zillion RM (Low-voltage Multichannel Node).
- 3. Complementary monitoring levels such as Zillion LVS (Low-voltage Transformer Supervisor) or Zillion VTN (Earth Leakage Supervisor).
- 4. Local monitoring levels such as Zillion LVM (Low-voltage Multimeter).



Zillion SLVP
Smart low-voltage panel
Protected by Pronutec

02. Processing and communications

02.7 Zillion SLVP – Smart low-voltage panel

FUNCTIONS AND FEATURES

Advanced electrical monitoring

- Real-time current and voltage measurement.
- Monitoring of quality-of-supply parameters.
- Continuous monitoring of low-voltage grid status.

Event analysis and logging

- Detection of electrical events through oscillography.
- Historical data logging for analysis and diagnostics.
- Improved traceability and understanding of grid behaviour.

Modular architecture and interoperability

- Integration of different nodes within a single solution.
- Compatibility with multiple communication protocols.
- Interoperability with SCADA systems, IoT platforms and third-party solutions.

Field operation interfaces

- Option to incorporate a display with buttons.
- Improved local interaction with the system.
- Easier on-site operation and data consultation.

Design and integration

- Retains the structural design of Pronutec's traditional range.
- Adaptable to indoor and outdoor installations.
- Compatible with different types of electrical panels.

Solution scalability and evolution

- Modular design enabling the integration of new elements.
- System evolution without affecting the core architecture.
- Protection of the customer's investment by avoiding complete replacements.

MAIN USE CASES

Digitalisation of the low-voltage grid

Zillion smart panels integrate all the monitoring, communications and sensing capabilities required for grid management directly from the factory. This ensures that the installation is ready from the outset for advanced monitoring, maintenance, and future evolution towards remote control.

Real-time operational monitoring of the grid

Smart panels provide complete visibility into grid status (current, voltage, quality of supply and events) directly from the panel. This improves diagnostic capabilities and operational decision-making.

Scalability towards remote control (architecture 2.0)

In advanced configurations, the system enables not only grid monitoring but also grid operation (remote control), supporting use cases such as voltage regulation and remote asset management. This transforms the panel into an active node within the smart grid.

Adaptation to different levels of digitalisation

The flexibility of the architectures (1.0 / 1.5 / 2.0) enables the level of monitoring to be adapted to each operator's needs, from basic solutions to advanced systems with cybersecurity and remote-operation requirements.



Zillion SFS

Smart fuse switch

Protected by Pronutec

Advanced analytics

Zillion's advanced analytics solutions transform captured and processed information into operational insight, supporting decision-making and grid optimization.

This layer brings intelligence to the system, making it possible not only to see what is happening on the grid, but also to understand why it is happening and which actions should be prioritized.

Advanced analytics is embedded directly into the solutions within this layer, avoiding the need for separate or complex tools.

Analyse
Understand
the grid

Information becomes insight.

Advanced analytics solutions enable grid behaviour to be interpreted, anomalies to be detected, losses to be identified, and actions to be prioritized based on real data.

03

Integrated advanced analytics

This refers to solutions that combine measurement and analytics capabilities within a single tool, enabling operational insight to be obtained directly from grid data.

It includes Zillion LV DNA, which combines advanced field data capture with the analytical capabilities of Ariadna Smart IoT, enabling electrical information to be transformed immediately into actionable insight.

This solution enables diagnostic campaigns to be carried out, grid behaviour to be analysed and incidents to be detected without the need for permanent deployments or complex additional infrastructure.

Grid intelligence

Integrated analytics makes it possible to understand the grid's actual behaviour and turn data into operational insight. This includes the ability to:

- Analyse load imbalances
- Identify technical and non-technical losses
- Assess quality of supply
- Detect events and anomalies
- Reconstruct the actual grid topology

These capabilities enable the transition from passive monitoring to management based on real, validated information.

Key range functions

- Advanced analysis of the grid's electrical behaviour
- Identification of anomalies, losses and imbalances
- Quality-of-supply analysis
- Grid topology reconstruction
- Historical data and trend management
- Prioritization of incidents and actions
- Support for operational and strategic decision-making

03. Advanced analytics

03.1 Zillion LV DNA – Low voltage distribution network analyser

Zillion LV DNA (Portable Advanced Supervisor) is a portable, self-contained solution designed for advanced analysis of low-voltage grids, enabling their behaviour to be assessed in real time without requiring permanent installation.

It combines a robust IP67-rated device with integrated communications (4G, Bluetooth and GPS) and an advanced analytics platform (Ariadna Smart IoT), transforming field data into actionable information.

Zillion LV DNA supports grid diagnostic, optimization and validation campaigns, providing a comprehensive view of electrical status (load, quality of supply, topology and events) in a flexible and secure way, without adding operational complexity.

FUNCTIONS AND FEATURES

Grid analysis and operation

- Automatic identification of the consumer's feeder and phase (ILF mode).
- Analysis of transformer loading, phase balance and energy distribution.
- Load measurement at transformer and feeder level.

Quality of supply

- Power quality analysis in accordance with IEC standards, including identification of the source of problems.
- Detection of flicker, undervoltage and overvoltage.
- Harmonic measurement.

Real-time monitoring and events

- Grid data capture every 15 seconds for continuous monitoring.
- Detection and logging of events, including overcurrent, short circuits, overloads and blown fuses.
- Oscillography capture for advanced analysis.

Reliability and advanced diagnostics

- Measurement of actual neutral current.
- Detection of low-current or high-impedance faults.

Data integration and utilization

- Integration with DSO control systems.
- Consolidation of communications at a single point to simplify data acquisition.

Electrical capabilities

- Up to eight measurement feeders.
- Calculation of power factor, active and reactive power, and active and reactive energy.
- Power quality in accordance with IEC 61000-4-30 (Class S).

TECHNICAL CHARACTERISTICS

- Five voltage connectors (three phases, neutral and earth).
- Eight current connectors (three phases and neutral).
- Visual information via display and LEDs.
- RJ45 Ethernet, integrated Bluetooth and internal GPS.
- 2G/3G/4G cellular communications module with external GPS/GSM antenna.
- USB port.
- Self-powered from the grid.
- Integrated internal battery for continuity of field operation.
- CAT IV 600/1000 V compliance.
- IP67 protection for indoor and outdoor environments.

MAIN USE CASES

Advanced diagnostics and incident resolution

Enables the source of grid issues, such as overloads, imbalances or power quality incidents, to be identified through the analysis of electrical events and actual field behaviour. It also supports diagnostic campaigns, technical audits, and hypothesis validation without requiring permanent installation, reducing analysis and response times.

Grid optimization and efficiency

Enables energy balance analysis from the transformer to the low-voltage feeders, identifying electrical losses and opportunities to improve load distribution. This contributes to optimizing grid performance and improving overall operational efficiency.

Grid visibility and understanding

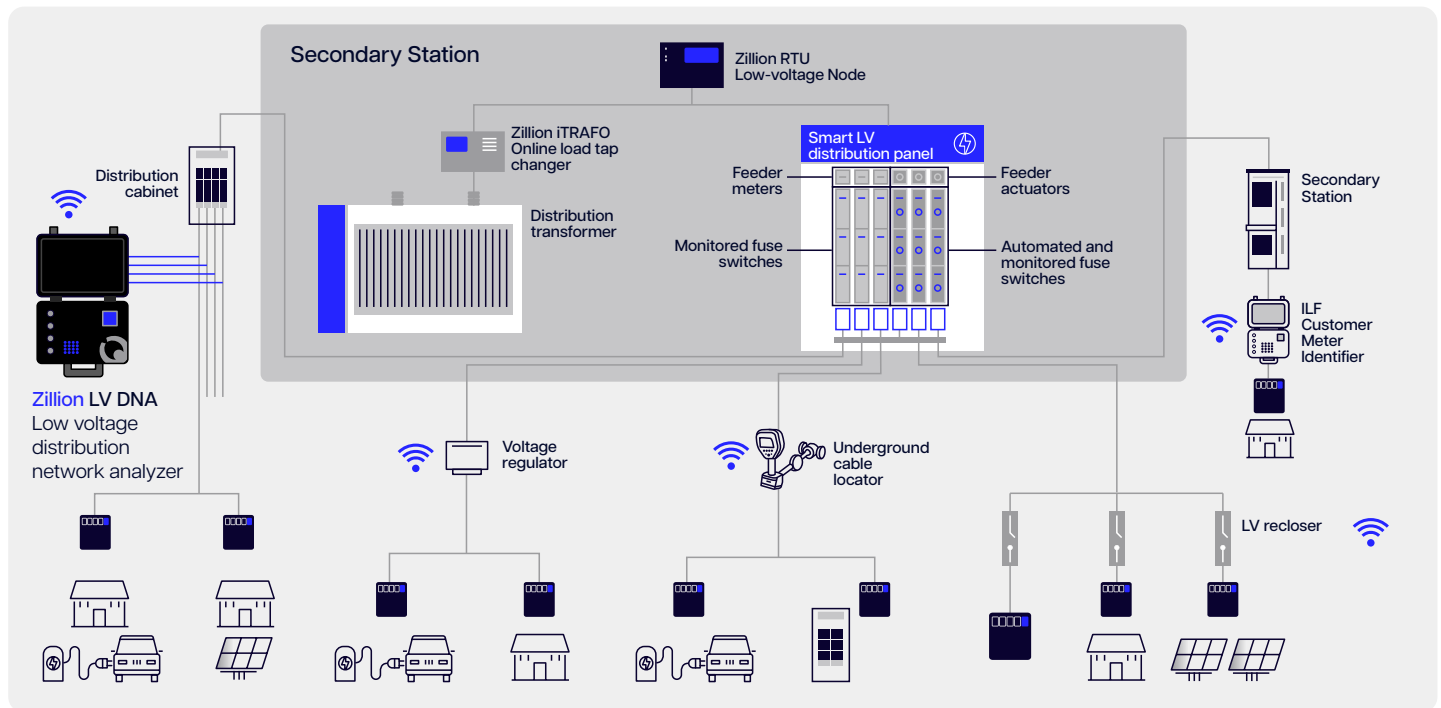
Supports the reconstruction of the actual grid topology at feeder and phase level through automatic identification (ILF), as well as the analysis of power quality and its source. It provides an accurate and up-to-date view that improves both operational and planning decision-making.



Zillion LV DNA
Low voltage distribution network analyser
Protected by Merytronic

03. Advanced analytics

03.1 Zillion LV DNA – Low voltage distribution network analyser



TECHNICAL CHARACTERISTICS

- 5 voltage measurement inputs: F1 + F2 + F3 + T + N.
- 4 current measurement inputs per feeder: F1 + F2 + F3 + N.
- Up to 8 measurement feeders.
- Power factor per feeder and phase.
- ± Active and reactive power per feeder and phase.
- ± Active and reactive energy per feeder and phase.
- Overvoltage and undervoltage events.
- Overcurrent events.
- Oscillography.
- Power quality in accordance with IEC 61000-4-30 (Class S).

Ariadna Smart IoT platform

The Ariadna Smart IoT platform provides the advanced analytics layer, transforming data captured by LV DNA into useful information for grid operation, maintenance and planning. It enables centralized management with a comprehensive view of the low-voltage grid.

FUNCTIONS AND FEATURES

- Unified grid visualisation (360° view).
- Historical data analysis (more than one year).
- Alarm and event management with threshold configuration and tracking.
- Oscillography display.
- Automatic grid topology identification.
- Power quality in accordance with IEC 61000-4-30 / EN 50160.

Control and automation

It includes solutions such as Zillion iTRAFO, designed for remote transformer regulation, and Zillion NEULAN, focused on the operation and switching of low-voltage panels from a control centre.

Within this range, two levels of actuation enable intervention in the grid with different scopes:

Control Operate the grid

The grid becomes operable.

Automation solutions enable direct action on electrical infrastructure, operating transformers, circuits, and low-voltage panels to improve quality of supply, reduce response times, and support the transition towards more active grids.

04

Asset actuation

This refers to devices that enable direct action on specific grid assets.

It includes solutions such as Zillion iTRAFO, which enable transformer voltage regulation through remote control of the on-load tap changer, optimizing asset performance and quality of supply.

Operable infrastructure

This refers to solutions that transform the electrical panel into an active node within the grid.

It includes the Zillion NEULAN range, which enables feeders to be opened, closed, or reconfigured remotely, while allowing power supply and electrical protection to be managed in real time from a control centre.

Key range functions

- Remote voltage regulation
- Circuit control and feeder switching
- Integration with remote-control systems
- Remote management of protection devices
- Improved continuity of supply and operational resilience

04. Control and automation

04.1 Zillion NEULAN –

Range of automatic, automation-ready and hybrid low-voltage panels

The Zillion NEULAN range (range of automatic, automation-ready and hybrid low-voltage panels) is designed to enable the remote operation of the low-voltage grid, incorporating capabilities for direct actuation on circuits from a control centre.

These panels may or may not include monitoring capabilities, but their main value lies in their ability to be controlled remotely, enabling the power supply to be managed without requiring physical intervention in the field.

This range is currently under development and will be fully available by the end of 2027. It has been conceived as the next step in the evolution of the grid: the transition from monitored infrastructure to operable infrastructure.

Its design enables installation at any point in the grid where power supply control is required, transforming each panel into an active node capable of acting on power flow in real time.

Integrated into the Zillion ecosystem, these panels combine configuration flexibility, communications capabilities and compatibility with different architectures, supporting their progressive deployment across the existing grid.

FUNCTIONS AND FEATURES

Remote circuit operation

- Enables incoming and outgoing circuits to be opened, closed and operated directly from a control centre. This eliminates the need for field visits and significantly reduces incident response times.

Advanced electrical protection management

- The system enables protection curves to be configured and adjusted remotely, adapting them to actual grid conditions. This is particularly useful for validating or correcting the protection settings of feeders that are not properly configured, allowing tests, adjustments and configuration to be carried out without physical intervention while ensuring safe system operation.

Remote-control-ready architecture

- The panels are designed for integration with remote-control systems, enabling remote operation and bidirectional grid management.
- This supports the transition towards grid models in which assets are not only monitored but also operated remotely.

Optional monitoring integration

- Although their main function is operation, the panels can incorporate electrical monitoring capabilities (current, voltage, events, temperature, etc.), integrating sensing and control within a single solution.

Modularity and flexible configuration

- The solution can integrate different modules according to the requirements for electronic control, inputs and outputs, communications, and sensing.
- This enables the panel to be adapted to different operational scenarios without limiting its future evolution.

Compatibility with the Zillion ecosystem and open systems

- The panels are compatible with the Zillion ecosystem and can be integrated with SCADA systems, IT/OT platforms and third-party solutions, ensuring interoperability in heterogeneous environments.

MAIN USE CASES

Remote operation of the low-voltage grid

Automation-ready panels enable incoming and outgoing circuits to be opened, closed or operated remotely from a control centre, avoiding field visits and improving incident response times.

Advanced electrical protection management

The system enables protection curves to be configured and adjusted remotely, adapting them to actual grid conditions. This is particularly useful when protection settings are not optimized, allowing feeder behaviour to be validated, adjusted, and secured without field intervention.

Continuity of supply and incident response

They enable rapid action in the event of faults, reconnecting feeders, or reconfiguring the grid remotely to minimize the impact on the power supply.

Control of critical grid points

They can be installed at strategic locations where remote control of the power supply is required, such as critical secondary stations, areas with a high incidence of faults or grid switching points.

Transition towards operable grids

These panels provide an intermediate step between monitoring and full automation, enabling utilities to progress gradually towards active grid management models.

04. Control and automation

04.1 Zillion NEULAN –

Range of automatic, automation-ready and hybrid low-voltage panels



Partially
automated
panel



Zillion NEULAN
Low-voltage panel range
Protected by Pronutec

Fully
automated
panel



Zillion NEULAN
Low-voltage panel range
Protected by Pronutec

04. Control and automation

04.2 Zillion iTRAFO – Online load tap changer

Zillion iTRAFO (Online Load Tap Changer) is a device designed to control and monitor distribution transformers equipped with an on-load tap changer (OLTC), enabling remote and automated voltage regulation.

It acts as an interface between the transformer and monitoring systems (such as the RTU), enabling the communication and data exchange required to optimize grid performance.

Through its integration into secondary stations, Zillion iTRAFO enables the transformer's operating status to be managed in real time, improving voltage stability and ensuring more efficient and secure grid operation.

FUNCTIONS AND FEATURES

OLTC control and monitoring

- Remote control of transformer tap positions (raise/lower tap).
- Monitoring of the OLTC operating status.
- Integration with voltage regulation systems.

Transformer condition monitoring

- It can be equipped with a module for measuring the following transformer variables: oil level, pressure and temperature.
- Management of alarms associated with the transformer and voltage regulator.
- Detection of incidents in the OLTC system.

Communications and integration

- Communication with the RTU via DLMS/COSEM over TCP/IP.
- Communication with the OLTC regulator via Modbus RTU.
- Supported protocols: TCP/IP and HTTPS.
- Integration with DSO control systems.
- Remote firmware updates via the RTU.

Management and operation

- Integrated web server (HTTPS) for configuration and monitoring.
- Access via a local or remote web interface.
- User management (LDAP).
- Configuration, monitoring, control, historical data and event management capabilities.
- Manual lockout input and LED outputs included to indicate correct operation or errors.

Network architecture and integration

- Designed to operate in secondary stations.
- Acts as an intermediate element between the transformer equipped with OLTC, the RTU and monitoring systems.
- Integration into a distributed network architecture.

Device interfaces

- One Ethernet port (RJ45).
- One RS485 port.
- AC power supply connector (2 poles).
- AC voltage measurement connector (4 poles).

MAIN USE CASES

Remote grid voltage regulation

Zillion iTRAFO enables the tap positions of the transformer's OLTC to be controlled remotely, adjusting voltage according to grid requirements. This helps maintain appropriate voltage levels in response to variations in load or generation, improving quality of supply.

Transformer condition monitoring

The device collects key information from the transformer (status, alarms, oil conditions, etc.), enabling incidents to be detected and failures to be anticipated. This helps improve asset reliability and optimize its operation.



Solution map

	Zillion stage	What it is	Monitoring level	When to use it	Integrates with
Zillion SFS	Capture	Smart fuse switch	Base / Configuration dependent	Digitalisation of the protection point	SAL TSA SLVP
Zillion SAL	Capture	Line and phase monitoring	1.0 1.5	Basic measurement in conventional environments	SFS RTU
Zillion TSA	Capture	Line Feeder Meter	1.0 1.5 2.0	Feeder- and phase-level measurement	RTU LRS SLVP
Zillion LRS	Capture	Feeder Retrofit Supervisor	1.0 1.5 2.0	Digitalisation of existing feeders	TSA RTU
Zillion LRG	Capture	Feeder Retrofit Rogowski	1.0 1.5 2.0	Digitalisation of existing feeders	RTU
Zillion RTU	Monitor	Central data node	1.0 1.5 2.0	Integration and communications	TSA LVS VRS
Zillion RM	Monitor	Multichannel node	1.0 1.5	Compact panels	SCADA IoT, etc
Zillion LVS	Monitor	Transformer supervisor	1.0 1.5	Asset protection	Third-party RTUs
Zillion LVM	Monitor	Local multimeter	1.0	Basic visibility	Third-party RTUs
Zillion VTN	Monitor	Neutral-to-earth monitoring	1.0 1.5 2.0	Electrical safety	RTU
Zillion VRS	Monitor / Integration	Complete in-panel solution	1.0 1.5 2.0	Integrated retrofit digitalisation	Rogowski RTU
Zillion SLVP	Monitor / Infrastructure	Smart panel	1.0 1.5 2.0	New digitalized infrastructure	SFS RTU TSA
Zillion LV DNA	Analyse	Portable advanced diagnostics	2.0 (advanced analytics)	Diagnostic campaigns	Ariadna
Zillion Ariadna Smart IoT	Analyse	Analytics platform	2.0	Interpretation and optimization	LV DNA RTU
Zillion iTRAFO	Act	Transformer control	2.0 (operation)	Voltage regulation	RTU
Zillion NEULAN	Act	Operable panel	2.0 (full operation)	Low-voltage grid remote control	iTRAFO



zillion

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GRIDS BY GORLAN

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