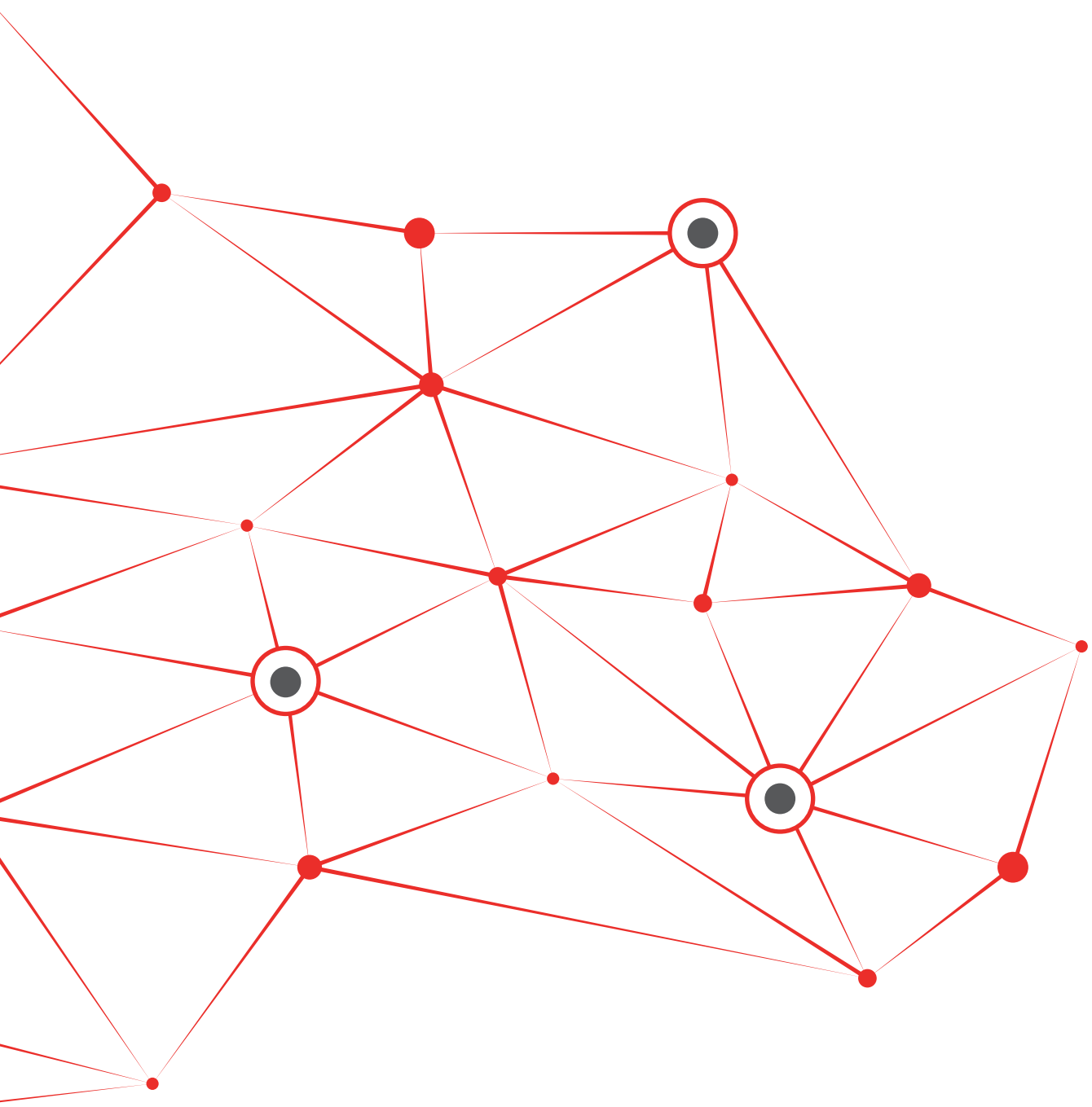
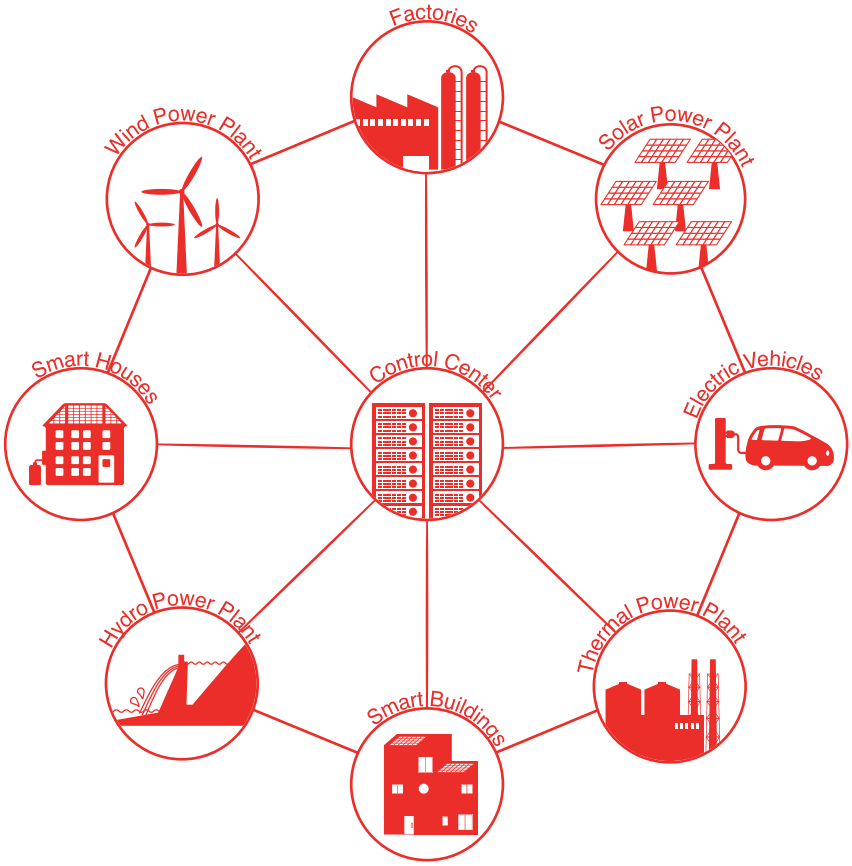


Repl Smart Termination

Smart Grid

A Smart Grid is an electricity network based on digital technology that is used to supply electricity to consumers via two-way digital communication. This system allows for monitoring, analysis, control and communication within the supply chain to help improve efficiency, reduce energy consumption and cost, and maximize the transparency and reliability of the energy supply chain.



Properties

It can repair itself

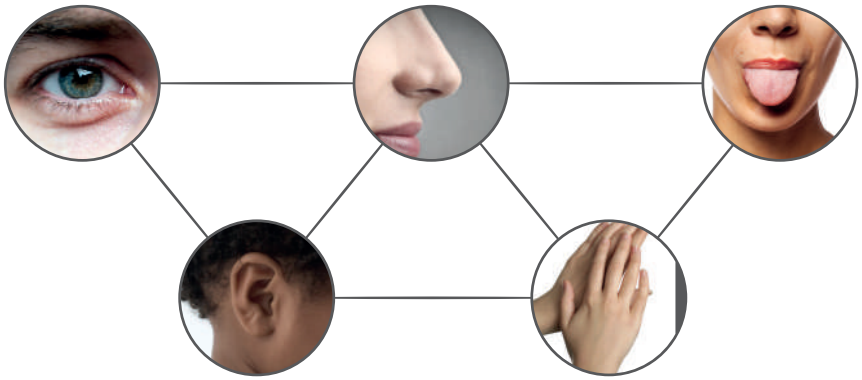
It allows more installations and easier management of renewable distributed generation

It ensures a consistent and premium-quality power supply that resists power leakages

It can be operated more efficiently

Distribution Automation Systems

In order for a grid to be made “smart” it needs to have efficient Distribution Automation Systems (DAS) which in turn needs **SENSORS** to be present within the grid.



Those sensors are installed in the electrical network in specific places. Generally in the Secondary Substation or along the Medium Voltage Line where the DSO needs to have a continuous control and measurement of the main electric parameters i.e. Voltage, Current, Power Factors...

Repl Smart Termination

It is a Medium Voltage Cable Termination with integrated Voltage and Current sensor up to 24 kV that can be installed on conventional Switchgears in the Secondary Substation. The REPL Smart Termination can be used on single core or three core medium voltage extruded insulated cables.

Characteristics

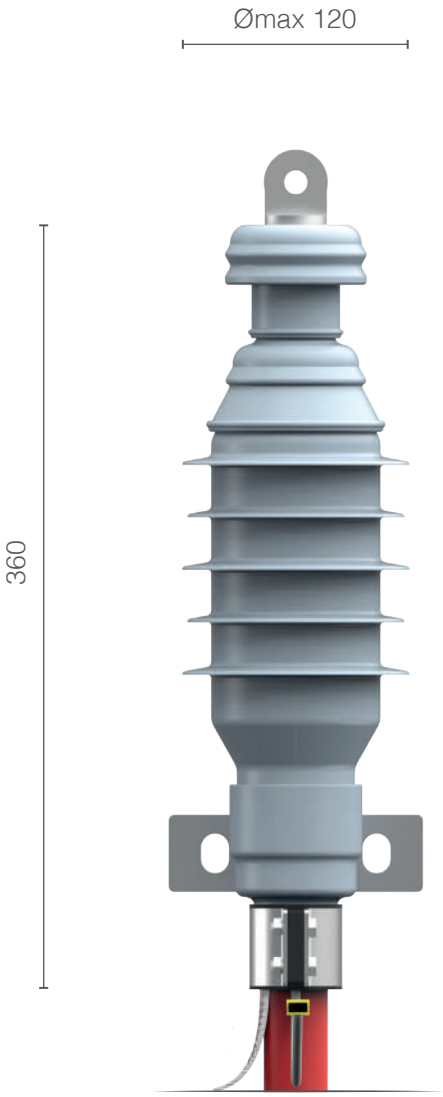
Precise and robust

Compact

Easily installed in the network

Economical retrofit of existing hardware

Characteristics



Precise and robust

Very High Accuracy (see table 1) in order to calculate the correct value of the Zero Sequence Current and Voltage. Compliance to Cenelec HD 629, IEC 60044-7 and IEC 60044-8.

Compact

The REPL Smart Termination has been designed in manner to permit easy retrofitting of conventional Insulated Switchgears with no further modification required! The maximum height and the width are show in the figure.

u.m. : mm

Easily installed in the network

The REPL Smart Termination is a fully integrated, pre-calibrated Cold Applied medium voltage termination that is easily installed by conventional cable jointers following the REPL installation instructions. Both the passive current and voltage sensors are encapsulated in the product and can be installed quickly and easily

Economical retrofit of existing hardware

A main benefit of the REPL Smart Termination is the possibility to convert an existing conventional “Non Smart” Distribution Substation into a “Smart One” without touching anything inside the switchgears. All that needs to be done is to remove the existing conventional gas insulated terminations and replace them with the REPL Smart Terminations and in a few hours you have a Smart Grid.

Output

The Output of each REPL Smart Termination is a RJ45 connector (can be customised). The three Terminations are connected via RJ45 to either an existing electronic/communication board or a REPL supplied board.

The Electronic Board, requires two main features :

1) Reading and transmitting to a control center the following network parameters :

- Voltage

- Current

- Power Factor

- Active Power

- Reactive Power

- Active Energy

- Reactive Energy

- THD

2) Calculating with VERY HIGH ACCURACY the values of Zero Sequence Voltage, by summing the three vectors of Line Voltage

$$\dot{U}_0 = \frac{\dot{E}_{10} + \dot{E}_{20} + \dot{E}_{30}}{3}$$

and relative Zero Sequence Current I_0. The I_0 and the V_0 allow to determine the 67N Grounding Protection Overcurrent Relay. By this calculation, it is therefore possible to arrange an efficient protection network system for Medium Voltage Networks.

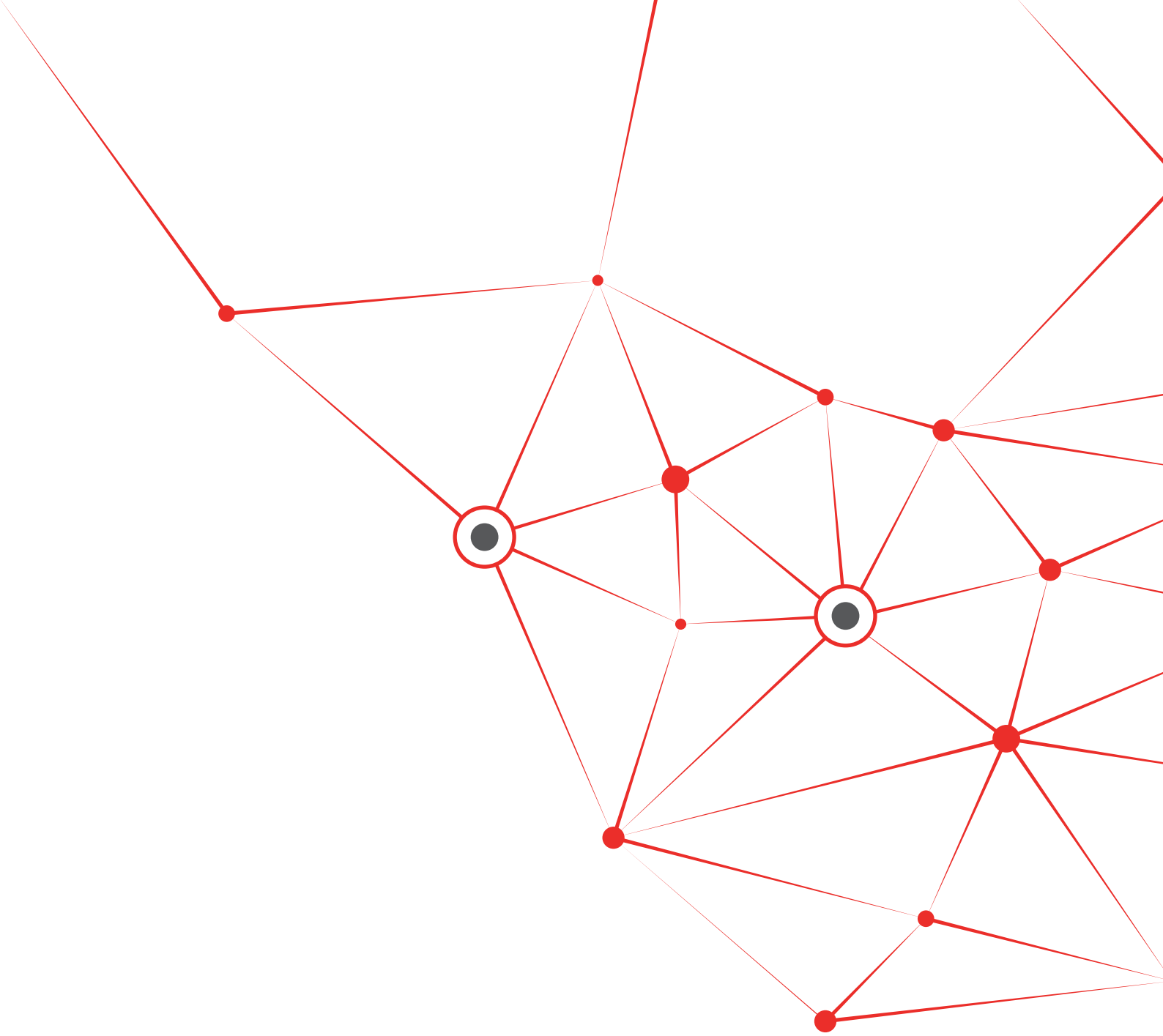
Accuracy and technical data

Accuracy (Table 1)

Current (I/Ipr)	Amplitude	Phase
	Ratio Error (%)	Phase Displacement (degree)
0.01	+/- 5	+/- 2
0.05	+/- 1	
1	+/- 1	
20	+/- 5	
Ipr is the rated Primary Current 300A		

Technical data (Table 2)

Parameter		UnitV	alue
Highest Voltage for the Equipment (Um)		kV	24
Rated power-frequency withstand Voltage		kV	50
Rate Lighting-Impulse withstand Voltage		kV	125
Rated Frequency		Hz	50/60
Rated Primary Voltage (Upr)		kV	up to 20
Rated Voltage Factor (Ku)			1.9 per 8h
Temperature Range		ºC	-5º +40º
Rated Primary Current (Ipr)		A	300
Rated Continuous Thermal Current (Icth)		A	360
Rated Primary Time Constant for transient performance (Tpr)		ms	40
Rated Short Time Thermal current (Ith)		kA	16/3s
Rated Dynamic Current (Idyn)		kA	31.5
Secondary Circuit Impedence	Voltage Measurement	Mohm	1 +/-2%
		pF	<=50
	Current Measurement	kOhm	10 +/- 2%
		pf	<=10
Rated Voltage Transformation Ratio	Voltage Measurement	V/V	10000/1
		V/V	79000/1
Ratet Current Transformation Ratio (Ikra)		A/mV	1000/31



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