ORMAZABAL
velatia

ekor.sys: automation, control, protection, metering and communications of the Electrical Network

ekor.sme

MV and LV monitoring / supervision

Reliable innovation. Personal solutions.

CA-462-EN-1610

www.ormazabal.com

Preface

ekor.sme together with **Ormazabal**'s current and voltage sensors is a general purpose MV and LV monitoring and supervision solution.

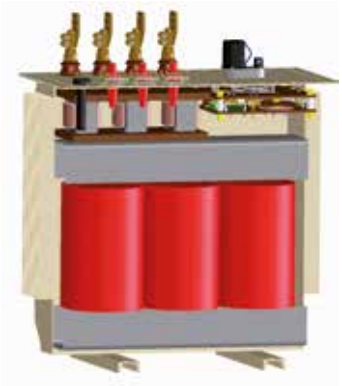
It provides high accuracy, real-time monitoring and reporting of the most important metrics of three phase MV/LV distribution transformers.

- Line voltage
- Phase Current
- Active and reactive power
- Active energy
- Four quadrant reactive energy

All power data is communicated to the back office over an Ethernet or a serial connection using industry standard protocols (IEC 60870-5-104, DNP3, ModBUS, IEC 60870-5-103…)

Applications

- Energy balancing
  - Network technical losses measurement
  - Fraud detection
- Distribution transformer performance monitoring
  - Transformer load profiles
  - Transformer losses
- LV supply quality management
  - LV voltage profiling
  - Phase load balancing
- **transforma**.smart (transformer with on-load tap changer) control unit
  - Voltage regulation in LV networks



Features

Seamless integration with **Ormazabal** RTU and commercial SCADA systems

This solution optimizes cost and footprint using voltage and current sensors, instead of conventional Instrument transformers.

Factory installed sensors prevent errors during onsite works and ensures accuracy all over the sensor/wiring/electronics chain.

Tests

Insulation
IEC 60255-5

EMC
IEC 60255-11
IEC 60255-22-1
IEC 60255-22-2
IEC 60255-22-3
IEC 60255-22-4
IEC 60255-22-5
IEC 60255-22-6
IEC 61000-4-8
IEC 61000-4-12
IEC 60255-25

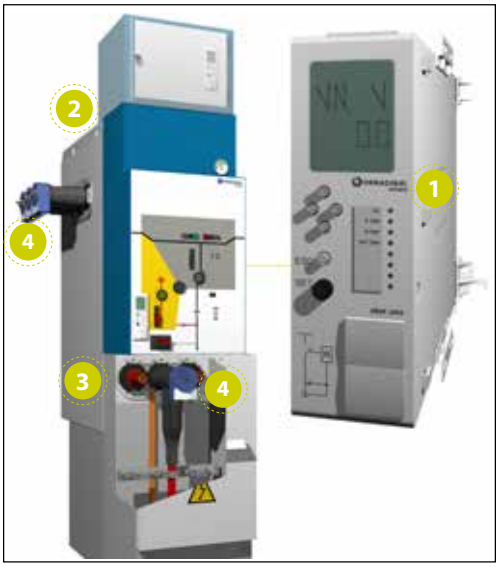
Climatic
IEC 60068-2-1
IEC 60068-2-2
IEC 60068-2-78
IEC 60068-2-30

Mechanical
IEC 60255-21-1
IEC 60255-21-2

Power
IEC 60265
IEC 60056

CE Conformity
CE-26/08-43-EE-1
IEC 60255

Design



1. **ekor**.sme
2. Switchgear
3. Current sensors
4. MV voltaje sensors (**ekor**.evt-c)

Technical characteristics

General

Phase current sensors		3
Voltage sensors		3 (capacitive)
Time synchronisation		Yes

Power supply options

AC	[V_{ac}...V_{ac}]	110 ... 230 ± 20 %
DC	[V_{dc}...V_{dc}]	24 ... 125 ± 20 %
Consumption	[VA]	< 2

Frequency

[Hz; Hz]		50; 60 ± 1 %

Current inputs

Primary phase	[A ... A]	5 ... 630 (acc/ model)
Earth	[A ... A]	0.5 ... 50 (acc/ model)
Impedance	[Ω]	0.1

Accuracy

Voltage	0.5%
Current	0.5%
Active Energy	Class B (IEC 50470-3)
Reactive Energy	Class 2 (IEC 62053-23)

Digital outputs

Voltage	[V_{ac}]	270
Current	[A]	5 (AC)
Switching power	[VA]	750 (resistive load)

Communications

Front port configuration	USB mini-B interface
Rear port remote control	RS485–RJ45
Protocol IP	IEC 60870-5-104, DNP3
Protocol serial	MODBUS (RTU), IEC 60870-5-103 (PROCOME)
Setup and monitoring program (optional)	**ekor**.soft

Indications

Error display	USB mini-B interface
History Log	RS485–RJ45