



**ekorsys** units:  
automation, control, protection, metering and communications  
of the electrical network

**ekor.rpa**

Multifunctional protection unit

Reliable innovation. Personal solutions.

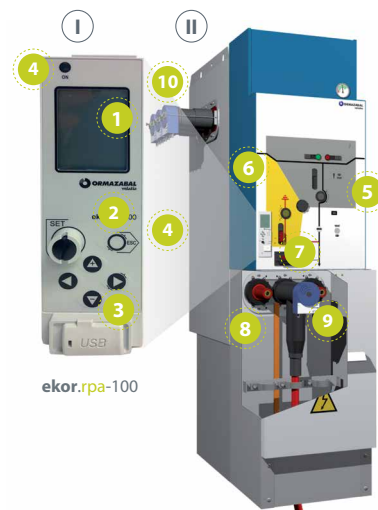
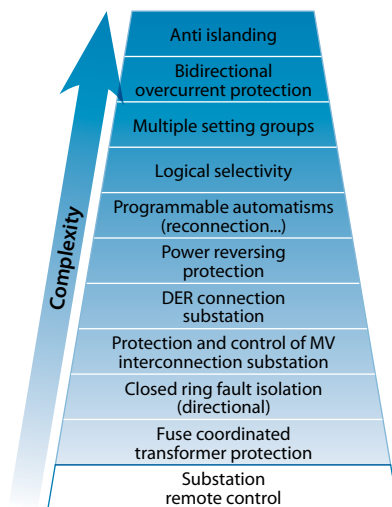
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# Preface

The **ekor.rpa** multifunctional protection, metering and control unit offers scalable levels of functionality and hardware options to best suit protection requirements, and allows to choose the most effective solution for MV applications.

All these features cover the current and future requisites of the distribution network.

To meet those demands the **ekor.rpa-100** has been designed according to international standards as well as grid code requirements and recommendations.



I. ekor.rpa-100

- 1 Display
- 2 Menu keypad
- 3 COMMS ports
- 4 Status LED

II. Switchgear

- 5 Circuit breaker
- 6 Earthing switch
- 7 Voltage indicator (ekor.ivds)
- 8 Current transformers
- 9 MV cable voltage sensor (ekor.evt-c)
- 10 MV busbar voltage sensor (ekor.evt-c)

# Features

## In-cubicle integrated solution

- » Fully-assembled and tested in factory
  - » Integrated test terminal blocks
  - » Current transformers installed on bushings
  - » Safety redundancy: back-up tripping coil
- » Reduced commissioning
  - » Compact solution pre-tested in factory
- » Reliability
  - » MTBF optimization
  - » Programable automatism vs wired ones
- » Personnel safety
  - » Programable integrated interlocks
  - » Alarms

## Hardware flexibility

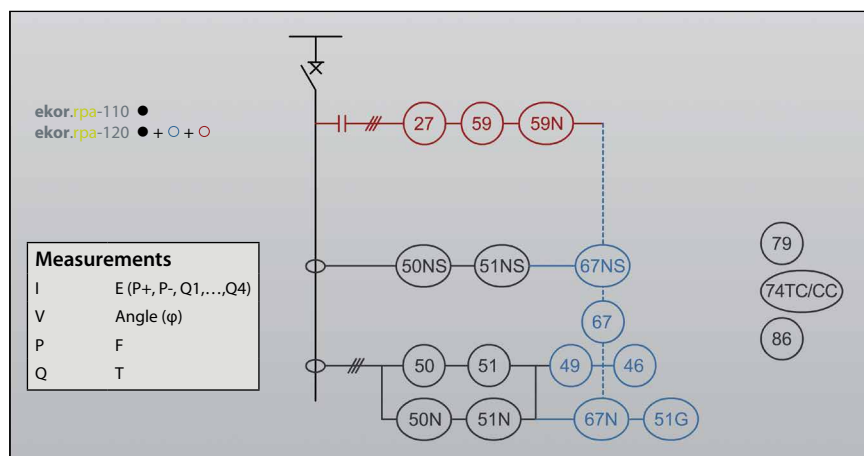
- » Voltage measuring through different in-cubicle integrated alternatives
    - » **Ormazabal** capacitive voltage sensors
    - » **Ormazabal** capacitive dividers inside precast bushings
  - » Current measuring through integrated **Ormazabal** current transformers
    - » High sensitivity and low noise
    - » Wide range\*: 300/1, 1000/1, 2500/1 A
- Ⓢ (\*) Contact **Ormazabal** technical-commercial department for other values

## Design

- » Modular functionality
  - » Scalable automatism, protection functions and communications
  - » Remote control and communications
- » Operation and maintenance
  - » LCD display
  - » Control and operation through SCADA
  - » Local/remote supervision, maintenance and parametrization via Web
  - » Faults and event register
  - » Real time MV measurement (I, V, P, Q, E)
  - » Non-proprietary configuration software - Configuration through web or xml file

# ANSI functions diagram

ekor.rpa protection functions.



Ⓢ Consult functionality and models in the following page

## Technical characteristics

ekor.rpa				ekor.rpa-110		ekor.rpa-120	
<b>General characteristics</b>							
24/48/125 V <sub>ac</sub>				●		●	
Current analog inputs				4 + I <sub>0</sub> <sup>(1)</sup>		4 + I <sub>0</sub> <sup>(1)</sup>	
Voltage analog inputs <sup>(2)</sup>						3 + V <sub>0</sub> <sup>(1)</sup>	
Configurable digital inputs/outputs				9/4		9/4	
Setting groups				1		1	
<b>Protection functions</b>							
50-51[1]-51[2]		50N-51N[1]-51N[2]		50Ns-51Ns		●	
46		46BC				●	
67		67N <sup>(3)</sup>		67Ns <sup>(3)</sup>		●	
49						●	
27		59		59N		●	
<b>Measurements</b>							
Current				●		●	
Voltage		Active/Reactive/Apparent power				●	
Energy P+, P-, Q1, ..., Q4		Phi angle (φ)				●	
<b>Control and supervision</b>							
Circuit Breaker control & operation		Lock-out (86)		●		●	
Trip coil supervision (TCS)		Voltage presence/absence		●		●	
Events record				4000		4000	
Fault record				10		10	
LEDs/Configurable LEDs				4/0		4/0	
Trip blocked by 2 <sup>nd</sup> harmonic				●		●	
Recloser (79)				●		●	
Configuration through software				●		●	
Configuration through web				●		●	
Front communication ports				● miniusb		● miniusb	
Rear communication ports				● RS-485		● RS-485	
<b>Communications: Serial<sup>(4)</sup></b>							
MODBUS-RTU		PROCOME		●		●	
<b>Communications: IP<sup>(5)</sup></b>							
MODBUS-TCP		DNP3 TCP		○		○	
IEC 60870-5-104		IEC 61850		○		○	

**Notes:**

<sup>(1)</sup> Calculated

<sup>(2)</sup> Voltage sensing capabilities according to model features

<sup>(3)</sup> Angular and Wattmetric

<sup>(4)</sup> Check with **Ormazabal** other protocols

<sup>(5)</sup> Check with **Ormazabal** your IP protocol needs

**Configuration:**

● Standard

○ Optional



# ANSI functions

- 27 - Undervoltage relay
- 46 - Negative sequence / unbalance relay
- 46BC - Broken conductor detection
- 49 - Machine or transformer thermal relay
- 50 - Instantaneous overcurrent relay
- 50N - Instantaneous earth overcurrent relay
- 50NS - Instantaneous sensitive earth overcurrent relay
- 51 - Inverse time overcurrent relay
- 51N - Inverse time earth overcurrent relay
- 51NS - Inverse time sensitive earth overcurrent relay
- 59 - Overvoltage relay
- 59N - Residual overvoltage relay
- 67 - Directional overcurrent relay
- 67N - Directional earth fault relay
- 67NS - Directional sensitive earth fault relay
- 79 - Reclosing relay (auto reclosing)
- 86 - Lockout relay



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