



**SECUENCIA DE MANIOBRAS
ACCESO A BORNAS**

1. ABRIR EL INTERRUPTOR AUTOMÁTICO Y COMPROBAR INDICADOR DE ESTADO.
2. COMPROBAR AUSENCIA DE TENSIÓN.
3. ABRIR EL SECCIONADOR.
4. COMPROBAR AUSENCIA DE TENSIÓN.
5. CERRAR EL INTERRUPTOR AUTOMÁTICO.
6. COMPROBAR AUSENCIA DE TENSIÓN.
7. CERRAR EL S.P.T. Y COMPROBAR INDICADOR DE ESTADO.
8. DEBENCLAVAR LA TAPA DE ACCESO Y EXTRAÍRILA.

PUESTA EN SERVICIO

1. MONTAR LA TAPA DE ACCESO.
2. CERRAR EL S.P.T. Y COMPROBAR INDICADOR DE ESTADO.
3. CERRAR EL INTERRUPTOR AUTOMÁTICO.
4. COMPROBAR AUSENCIA DE TENSIÓN.

ORMAZABAL

Modelo: CCM-3 y CCM-4
 Normas: IEC 62271-200/62271-100/60343-1/4/5
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ekorsys units: protection,
telemangement & communication

ekor.rps

Multifunctional protection unit

Reliable innovation. Personal solutions.

Preface

Multifunctional protection unit integrated in **Ormazabal** circuit-breaker cubicles.

This consists of a communicable electronic relay and current sensors (1000/1 or 300/1) installed on the cubicle bushings.

- » Protection:
 - » Overcurrent (phase, neutral, directional)
 - » Voltage
 - » Frequency
 - » Power
 - » Breaker supervision
- » Automation:
 - » Recloser
 - » Synchrocheck
- » Metering (I, V, P, Q, E)
- » History Logs
- » Communications

Applications

- » Remote control and automation via integrated control:
 - » Transformer and Switching Substations
 - » Second operation points
- » Protection:
 - » General and line
 - » Transformer
 - » Capacitor banks and motors

Most notable features

- » Cubicle+Control Box+ Toroidal-core current transformer assembly tested at HV laboratory
- » Basic factory configuration
- » 1000/1 or 300/1 toroidal-core current transformers installed on the bushings
- » Factory assembly and tests

Test

Electrical

IEC 60255-5
 IEC 60255-22-1
 IEC 60870-2-1
 IEC 61000-4-2
 IEC 61000-4-3
 IEC 61000-4-4
 IEC 61000-4-5
 IEC 61000-4-6
 IEC 61000-4-8
 IEC 61000-6-4

Environmental

IEC 60068-2-1
 IEC 60068-2-2
 IEC 60068-2-3
 IEC 60068-2-14

Mechanical

IEC 60255-21-1



Technical Characteristics

Power Supply Options

AC [Vac]	125 / 220
DC [Vdc]	24 / 48

Frequency

[Hz; Hz]	50; 60 ±1%
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Digital Inputs

Extended (low) [Vdc]	18 to 160
Extended (high) [Vdc]	86 to 280

Analog inputs

Current	5
Voltage	4

Communications

Inputs	8+9
Outputs	7+7

Comunicaciones

Ports	RS-232 RS-485 FOC
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Protocols	MODBUS PROCOME IEC-60870-5-101 IEC-60870-5-103 DNP3.0
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Dimensions

[mm]	450 x 480 x 465 (Height x Width x Depth)
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Protection ekor.rps-dc and ekor.rps-dd

Phase overcurrent	(3 x 50/51)
Earth overcurrent	(50N/51N)
Current unbalance/ negative sequence current	(46-46FA)
Breaker failure	(50BF)
2nd harmonic restraint	
Ultrasensitive earth overcurrent	(50Ns/51Ns)
Directional phase overcurrent	(3 x 67)
Directional earth fault and sensitive earth fault	(67N) (67Ns)

Isolated earth directional function	(67NA)
Voltage restrained overcurrent	(51V)
Fuse failure	
Thermal image	(49)

Additional protection ekor.rps-dd

Maximum frequency / minimum frequency / frequency-derived	(81M / 81m / 81R)
Directional power	(32)
Phase overvoltage / phase undervoltage / desequilibrio de tensiones	(3 x 59 / 3 x 27 / 47)
negative sequence overvoltage	(59N/64)

Control functions

Three-phase recloser	(79)
Recloser for single-phase trips due to overcurrent	(79)
Trip/close coil supervision	(74)
Recloser for restart after trip due to frequency trip	(79)
Synchrocheck	(25)

Protection status self-diagnosis	
Input/output programming	
Breaker supervision	

Measurements

Phase, neutral and sensitive neutral currents	
Power factor	
Simple and compound voltages	
Current maximeter	
Powers	
Inverse sequence	
Energies	
Harmonic distortion (THD)	

Data acquisition

Chronological event log	
History log of maximum and minimum measurements	
Chronological fault log	
Oscillography	

