ekor.soft

Configuration Software for protection and integrated control units

General instructions
IG-155-EN, version 03, 09/08/2017
CAUTION!

When medium-voltage equipment is operating, certain components are live, other parts may be in movement and some may reach high temperatures. Therefore, the use of this equipment poses electrical, mechanical and thermal risks.

In order to ensure an acceptable level of protection for people and property, and in compliance with applicable environmental recommendations, Ormazabal designs and manufactures its products according to the principle of integrated safety, based on the following criteria:

• **Elimination of hazards wherever possible.**
• **Where elimination of hazards is neither technically nor economically feasible, appropriate protection functions are incorporated in the equipment.**
• **Communication about remaining risks to facilitate the design of operating procedures which prevent such risks, training for the personnel in charge of the equipment, and the use of suitable personal protective equipment.**
• **Use of recyclable materials and establishment of procedures for the disposal of equipment and components so that once the end of their service lives is reached, they are duly processed in accordance, as far as possible, with the environmental restrictions established by the competent authorities.**

Consequently, the equipment to which the present manual refers complies with the requirements of section 11.2 of Standard IEC 62271-1. It must therefore only be operated by appropriately qualified and supervised personnel, in accordance with the requirements of standard EN 50110-1 on the safety of electrical installations and standard EN 50110-2 on activities in or near electrical installations. Personnel must be fully familiar with the instructions and warnings contained in this manual and in other recommendations of a more general nature which are applicable to the situation according to current legislation\(^1\).

The above must be carefully observed, as the correct and safe operation of this equipment depends not only on its design but also on general circumstances which are in general beyond the control and responsibility of the manufacturer. More specifically:

• **The equipment must be handled and transported appropriately from the factory to the place of installation.**
• **All intermediate storage should occur in conditions which do not alter or damage the characteristics of the equipment or its essential components.**
• **Service conditions must be compatible with the equipment rating.**
• **The equipment must be operated strictly in accordance with the instructions given in the manual, and the applicable operating and safety principles must be clearly understood.**
• **Maintenance should be performed properly, taking into account the actual service and environmental conditions in the place of installation.**

The manufacturer declines all liability for any significant indirect damages resulting from violation of the guarantee, under any jurisdiction, including loss of income, stoppages and costs resulting from repair or replacement of parts.

**Warranty**

The manufacturer guarantees this product against any defect in materials and operation during the contractual period. In the event that defects are detected, the manufacturer may opt either to repair or replace the equipment. Improper handling of this equipment and its repair by the user shall constitute a violation of the guarantee.

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\(^1\) For example, in Spain the “Regulation on technical conditions and guarantees for safety in high-voltage electrical installations” – Royal Decree 337/2014 is obligatory.
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1. General description

The ekor.soft configuration Software is a help tool for setting and monitoring the parameters in the ekor.rp, protection, metering and control units, as well as in the ekor.rci integrated control units, which are developed by Ormazabal.

Figure 1.1. ekor.soft Software screens

ekor.soft includes the following functions:

1. Display of the phase currents and zero-sequence measurements carried out by the equipment: I_1, I_2, I_3, I_0.
2. Presentation of the voltage detection status (presence/absence) in integrated control units (ekor.rci and ekor.rpci).
3. Settings for the available protection and detection functions:
   a. ekor.rp: Settings of functions 50/51/50N/51N/50Ns/51Ns.
   b. ekor.rci: Settings for fault detection and voltage presence indication.
   c. ekor.rpci: Setting of functions 50/51/50N/51N/50Ns/51Ns and 79[3], as well as voltage presence indication.
   d. ekor.rps/ekor.rps-tcp: Setting of the protection functions that, depending on the particular model, may incorporate the following functions: 67/67 N + 46/46 FA + 50 BF (three phase) + 74 TC/CC + 67 NS + 68 FF + 59 + 27 + 47 + 59N + 81 M/m + 81R + 25 + 32.
4. Display of the status of the inputs.
5. Direct actuation on the outputs of the ekor.rci and ekor.rpci units.
6. Creation of setting files in «Emulation»[4], mode, enabling to save the units’ setting files configured in «Connection» mode. Additionally, ekor.soft enables to open the files generated in «Connection» as well as «Emulation» and to upload files to the unit to be configured.
7. Printing of the resulting settings curve (in ekor.rp and ekor.rpci units) as well as recording of these settings in a MS Word text document.
8. Display of the event log of the faults detected by the protection or integrated control unit.
9. Carrying out of input/output tests from a dispatching centre[5].

[2] Including the ekor.rpt, ekor.rpg, ekor.rpt.ci, ekor.rpg.ci units and Ormazabal’s ekor.rps and ekor.rps-tc Substations protection units.
[4] In the «Emulation» mode, there is no communication with the protection or integrated control unit.
1.1. General functional characteristics

The ekor.soft configuration Software has four operating modes:

1. **Display**: Displays the status of the connected protection or integrated control unit, including electrical measurements, settings configured at that moment, date and time. The «Emulation» mode shows the empty fields.

2. **User settings**: It enables the modification of the different protection or fault detection parameters.

3. **Event log**: Displays the parameters of both the last and penultimate detected fault and the total number of trips executed by the protection unit, or the total number of faults detected by the corresponding integrated control unit. The ekor.rps units enable to display the following:
   a. Events
   b. Faults
   c. Disturbances

4. **Test mode**: Enables to generate information for the protection or integrated control unit inputs/outputs, without direct electrical interaction with the switchgear adjoining terminal blocks, so it can be sent to the dispatching centre without having to cut off power\(^{[6]}\).

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\(^{[6]}\) Except in Ormazabal’s ekor.rps-tcp units.
General description

All the **ekor rp**, **ekor rp ci**, **ekor rci**, **ekor rps** and **ekor rps-tcp** protection and integrated control units have at least 2 serial communication ports.

The standard RS232 front port is used to set the parameters with the Software **ekor soft**. At the rear, there is an RS485 port (in DB9) which is used for remote control operations.[7]

![Figure 1.5. RS232 connection on the ekor rp protection unit](image)

1.2. System requirements

The minimum system requirements for installing and using the **ekor soft** Software:

- Processor: Pentium II
- RAM: 32 Mb
- Operating System: MS WINDOWS
- CD-ROM/DVD
- RS232 serial port

![Figure 1.6. Minimum requirements for ekor soft installation](image)

[7] As an option, the protection and integrated control units may incorporate an additional remote control RS485 optical fibre port.
2. Installation

Before beginning the ekor.soft installation, close all the current computer applications.

ekor.soft is installed from the CD-ROM, which is supplied byOrmazabal.

After executing the installer.exe file, ekor.soft guides the user through several set up screens until the software is properly installed.

The sequence followed by ekor.soft is as follows.

1. The user is required to confirm the ekor.soft installation (required for settings in the «Connection» and «Emulation» modes of ekor.rp, ekor.rp.ci, ekor.rci, ekor.rps and ekor.rps-tcp units).

2. The user is required to confirm the installation of ekor.soft/SIPCON, which is the configuration Software for both the «Connection» and «Emulation» modes of ekor.rps and ekor.rps-tcp units.

The selection of ekor.soft/SIPCON installation options depends on the type of unit:

1. For ekor.rps units, only the first 3 possible installation elements are required.
2. For ekor.rps-tcp units, all 6 possible installation elements are required, as shown in the figure.

Figure 2.8. ekor.soft/SIPCON installation

Figure 2.9. Installing ekor.soft/SIPCON in ekor.rps-tcp units
ekor.software/SIPCON is installed in Spanish when ekor.software has been installed in Spanish, and in English for any other language in which ekor.software has been installed.

When the installation is completed, ekor.software generates shortcuts from the PC desktop and from the «Programs» menu, as shown in the figure below.

Figure 2.10. Accessing ekor.software
3. Main access/operating mode selection

After executing ekor.soft and through the «Operation mode» selection screen, the user selects between the «Connection» or «Emulation» options.

1. «Connection» mode: Enables to communicate with an ekor.rps, ekor.rps-tcp, ekor.rp, ekor.rp.ci or ekor.rci unit that is connected to the PC.

2. «Emulation» mode: There are no protection or integrated control units connected to the PC. ekor.soft enables to emulate any unit model.

The «Operation mode» selection screen also includes the following options:

1. «Change Password»: Enables to change the password for accessing ekor.soft.

2. «Communications»: Enables to modify the parameters required for establishing communications between ekor.rp, ekor.rp.ci and ekor.rci protection or integrated control units.

![Figure 3.1. «Operation mode» selection screen in ekor.soft](image)
3.1. **ekor rp, ekor rp ci y ekor rci units**

After selecting the «Connection» or «Emulation» operating mode, ekor.soft displays the «Main screen», which includes access to the following menus at the top of the screen.

1. Display
2. User settings
3. Event log
4. Test mode
5. Exit
6. Help

![ekor soft main screen](image)

**Figure 3.2.** ekor.soft main screen

3.2. **ekor rps y ekor rps tcp units**

After selecting the «Connection» or «Emulation» operating mode, ekor.soft displays the ekor.soft/SIPCON «Main screen».

![ekor soft SIPCON main screen](image)

**Figure 3.3.** ekor.soft/SIPCON main screen
4. Description of the screens

4.1. Display menu

The «Display» menu enables to display the different parameters available in ekor.rp, ekor rp.ci and ekor.rci protection or integrated control, but they cannot be modified[10]. The «Emulation» mode shows the fields highlighted in grey.

The following parameters are available in the «Display» menu:

1. Current reading
2. Presence of voltage (for units with voltage presence/absence indication)
3. Settings for the protection or integrated control unit
4. Firmware version
5. Date and time.

ekor.soft displays the non-available options (highlighted in grey) in the protection or integrated control unit inside the «Connection» or «Emulation» mode. (For example: The ekor.rpg-102 unit, ekor.soft displays the settings for the earthing unit highlighted in grey, because this model does not incorporate the (50N/51N) protection functions.

[10] The screen shows all the parameters. Those which are not available in the protection or integrated control unit are not accessible. Example: If the unit does not include integrated control, the voltage presence option is not available.
Description of the screens

4.1.1. Current reading

The «Display» menu shows the current measurements of the 3 phases and the zero-sequence recorded by the protection or integrated control unit in the «Connection» mode in real time.

4.1.2. Presence of voltage

This specific field of the ekor.rci and ekor.rp.ci, integrated control units displays the presence or absence of voltage in each of the phases as detected by the protection or integrated control unit in the «Connection» mode.

4.1.3. Date and time

«Change time»: Enables the user to display and modify the current date and time of the protection or integrated control unit.

«Send time»: Enables the user to load the date and time of the protection or integrated control unit.

«Send PC time»: Enables the user to load the PC’s current date and time in the protection or integrated control unit.

4.1.4. Settings

The «Display» screen offers a list of the current values that are set up in the protection or integrated control unit. The specific fields depend on the available unit. The values that are displayed are as follows:

1. Protection function parameters 50/51 - 50N/51N (or 50Ns/51Ns when a zero-sequence toroidal transformer is used) for all the ekor.rp range protection units.

2. Parameters of the phase and earth fault indication functions as well as the time delays associated to the fault indication and reset for ekor.rci integrated control units.

3. Parameters of the voltage presence/absence detection functions in ekor.rci and ekor.rp.ci integrated control units.

Operating system.
4.1.5. Inputs and outputs

In order to access the status of available inputs and outputs in ekor.rci and ekor.rp.ci protection and integrated control units, press the «I/O» button in the «Display» menu; always from the «Connection» mode.

ekor.soft enables to modify the status of each output by double clicking on it.

The access Password must be introduced in order to change the status.

![Figure 4.5. Inputs and outputs display](image)

4.1.6. Recloser settings

The «Recloser» function settings parameters may be accessed by pressing the «Reeng» button in the «Display» menu; only in ekor.rpg.ci models.

The recloser function option is exclusive to the ekor.rpg.ci protection units.

![Figure 4.6. Recloser function setting](image)

4.1.7. Relay version

In the «Connection» mode, the «Relay version» field displays the Firmware version implemented in the protection or integrated control unit.
4.2. User settings

The «User settings» menu enables to access and modify the protection and fault detection settings of the protection and integrated control units.

When the «Connection» mode is selected, the different settings are Password (1) protected.

The «User settings» screen is specific to the type of unit available and, depending on the model, it incorporates a series of enabled/disabled options.

The allowed functions are the following:

1. Modification of the setting parameters of the protection or integrated control units in «Manual» or «Automatic» mode.
2. System settings display, such as: the date of the last setting, the toroidal transformers associated to the configured protection or integrated control unit, along with its current range and type of coupling for the voltage presence/absence detection.
3. Loading, saving and printing of the settings, as well as printing of the configured settings resulting curve, etc.

The following options must be considered in order to carry out the data transmission of the protection or integrated control unit settings:

1. «Send»: Transmits the data to the protection or integrated control unit.
2. «Exit»: If «User settings» menu is exited after performing any adjustment, ekor.soft asks the user if they wish to send the modifications. If «Yes» is selected, the settings are loaded to the protection or integrated control unit. By selecting the «No» option, the protection or integrated control unit maintains its initial settings data.

(1) The default Password is «0000» (4 zeros) and the user can change it.
4.2.1. Current functions settings

The «User settings» option enables the user to modify the protection or detection parameters. The meaning of each setting along with its range of values is listed in the general instructions (IG) documents corresponding to each particular unit, as shown in the table below.

<table>
<thead>
<tr>
<th>Type of unit</th>
<th>Model</th>
<th>Setting</th>
<th>IG associated</th>
</tr>
</thead>
<tbody>
<tr>
<td>ekor.rpg/ekor.rpt</td>
<td>101, 102</td>
<td>50/51</td>
<td>IG-159</td>
</tr>
<tr>
<td></td>
<td>201, 202</td>
<td>50/51 + 50N/51N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>301, 302</td>
<td>50/51 + 50Ns/51Ns</td>
<td></td>
</tr>
<tr>
<td>ekor.rpg</td>
<td>10 x 1, 10 x 2</td>
<td>50/51 + 79</td>
<td>IG-157</td>
</tr>
<tr>
<td></td>
<td>20 x 1, 20 x 2</td>
<td>50/51 + 50N 51N + 79</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 x 1, 30 x 2</td>
<td>50/51 + 50Ns/51Ns 79</td>
<td></td>
</tr>
<tr>
<td>ekor.rpt</td>
<td>10 x 1</td>
<td>50/51</td>
<td>IG-157</td>
</tr>
<tr>
<td></td>
<td>20 x 1</td>
<td>50/51 + 50Ns/51Ns</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 x 1</td>
<td>50/51 + 50Ns/51Ns</td>
<td></td>
</tr>
<tr>
<td>ekor.rci</td>
<td>10 x 2</td>
<td>Phase-to-phase fault indication</td>
<td>IG-158</td>
</tr>
<tr>
<td></td>
<td>20 x 2</td>
<td>Phase-to-phase and phase-to-earth fault indication (Non-directional or directional)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 x 2</td>
<td>Phase-to-phase &amp; phase-to-earth fault indication (Ns) (Non-directional or directional)</td>
<td></td>
</tr>
<tr>
<td>ekor.rps/ekor.rps-tcp</td>
<td>----</td>
<td>67/67 N + 67 NS + 67 NA + 46/46 FA + depending on the unit model.</td>
<td>IG-150</td>
</tr>
</tbody>
</table>

Where «x» can be 0, 1, 2 depending on the number of inputs/outputs.

Table 4.1. Current functions settings

There are 2 fundamental modes for adjusting the settings of the ekor.rp and ekor.rp.ci units:

1. Manual
2. Automatic

ekor.soft includes the following options:

1. «Manual mode»: The user introduces the desired value for each one of the possible settings.
2. «Automatic mode»: Accessible from the «Table settings» button, is of great help to the user. Available only for the protection units of the ekor.rp range (including the integrated control models).
3. «Table Settings»: The user should insert 2 basic data of the electrical installation:
   a. Power of the transformer to be protected (Pt).
   b. Line voltage (Ur).

After both parameters have been introduced, ekor.soft calculates the most appropriate protection settings once the values are obtained, the user may modify those values he deems appropriate, always in «Manual» mode.

ekor.soft uses the following algorithm for calculating the protection values in «Automatic» mode:

1. Selection of the full load current, which requires calculating the rated current (resulting from the transformer power and the line voltage), using the following formula:

   \[ I_n = \frac{P_t}{(T_r \times \sqrt{3})} \]

2. Rounding up the result to obtain the full load current value.
3. The rest of setting values are fixed as indicated in the following table. The user can modify any of the selected values in «Automatic» mode (this is equivalent to insert parameters in «Manual» mode).
Description of the screens

<table>
<thead>
<tr>
<th>Phase protection</th>
<th>Phase protection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Setting</strong></td>
<td><strong>Setting</strong></td>
</tr>
<tr>
<td>Overload factor</td>
<td>120 %</td>
</tr>
<tr>
<td>Type of curve</td>
<td>EI</td>
</tr>
<tr>
<td>Multiplier constant</td>
<td>0.2</td>
</tr>
<tr>
<td>Short-circuit factor</td>
<td>10 *</td>
</tr>
<tr>
<td>Trip time</td>
<td>0.1 *</td>
</tr>
<tr>
<td>Tripping enabled</td>
<td>DT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Automatic value</strong></th>
<th><strong>Automatic value</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth leakage factor</td>
<td>20 %</td>
</tr>
<tr>
<td>Type of curve</td>
<td>NI</td>
</tr>
<tr>
<td>Multiplier constant</td>
<td>0.2</td>
</tr>
<tr>
<td>Short-circuit factor</td>
<td>5</td>
</tr>
<tr>
<td>Trip time</td>
<td>0.1 *</td>
</tr>
<tr>
<td>Tripping enabled</td>
<td>DT</td>
</tr>
</tbody>
</table>

* For protection through the ekor.rpt unit with 5 – 100 A range toroidal current transformers, the short-circuit factor is 7 and the instantaneous trip time is 0.4.

Table 4.2. Valores de protección

4.2.2. Recloser function settings

Via the «Reeng»[12] option of the «User settings» menu, it is possible to set the different recloser functions that are available in the ekor.rpg.ci protection units. All the parameters configured for the recloser function can be displayed and modified.

4.2.3. Voltage presence indication settings

The ekor.rci and ekor.rp.ci units enable to modify the «Line voltage» (U_r) and «Voltage time delay» (T_u) parameters associated to the voltage presence indication function, through the «User settings» screen.

4.2.4. Parameters inherent in the unit

Through the «Unit inherent parameters» screen, the following general data of the protection or integrated control unit may be displayed but not edited:

1. Date and time of last setting
2. Type of voltage presence/absence detection coupling
3. Phase transformer rated current
4. Zero-sequence toroidal transformer
5. Phase current range
6. Earth current range

4.2.5. Inputs and outputs

The inputs and outputs screen is specific to the ekor.rci and ekor.rp.ci integrated control units and is accessible from the «User settings» screen by pressing the «I/O» button.

Via the inputs and outputs screen, it is possible to view the status of the inputs and act directly upon the outputs.

[12] The different recloser function parameters, as well as its range of values, are listed in Ormazabal’s IG-157 General instructions document.
General instructions

dekor. soft

There are 2 possible configurations:

1. 5 I/7 O (5 inputs and 7 outputs)
2. 10 I/4 O (10 inputs and 4 outputs)

To act upon a specific output, the following mode must be used:

1. Access dekor. soft in the «Connection» mode
2. Insert the access Password
3. Double click on the required output.

4.2.6. Load, save and print settings

dekor. soft enables to print the different settings values to an «MS Word» text document or directly to a printer via the «Print settings» option.

dekor. soft enables to store the different settings values to a settings file or load them from a settings file generated beforehand. These operations can be carried out via the «Save settings» and «Load settings» options.

4.2.7. Print curve

This option is not available for dekor.rci integrated control units. For the rest of units, after pressing the «Print curve» button, a curve resulting from the configured settings is generated for either phase or earth.

**Figure 4.11.** Inputs/outputs screen

**Figure 4.12.** Curve resulting from the configured settings
4.2.8. **Sectionalizer settings**\(^{[13]}\)

The settings of the «**Sectionalizer**» function available in **ekor.rci** units are accessible via the «**Sect settings**» button of the «**User settings**» screen.

**ekor.soft** shows all the parameters configured for the «**Sectionalizer**» function and enable to modify them.

![Figure 4.13. Sectionalizer settings](image)

4.2.9. **Communications settings**

The «**Communications settings**» screen enables to personalise the communications configuration of each protection or integrated control unit.

Updating of the communications settings is carried out by pressing the «**Send**» button located on the lower part of the screen, as shown in the figure below.

![Figure 4.14. Communications settings](image)

\(^{[13]}\) The different parameters for this function as well as its range of configurable values are listed in **Ormazabal’s IG-158 General instructions** document.
4.3. Event log menu

The «Event log» screen shows the information stored in the protection or integrated control unit relative to the last 2 trips performed or the last 2 faults detected. The data stored is shown in the following table:

<table>
<thead>
<tr>
<th>Data</th>
<th>Possible values</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip/fault</td>
<td>L1, L2, L3…</td>
<td>Unit that trips or records the fault: Zero-sequence/phase</td>
</tr>
<tr>
<td>Current</td>
<td>Depending on the fault</td>
<td>Current when the tripping/fault detection occurs</td>
</tr>
<tr>
<td>Cause</td>
<td>Overload, shortcircuit</td>
<td>Cause of the detected trip/fault</td>
</tr>
<tr>
<td>Time</td>
<td>Depending on the fault</td>
<td>Time delay between the start and trip, and duration of the fault, in the case of ekor.rci</td>
</tr>
<tr>
<td>Date</td>
<td>Depending on the fault</td>
<td>Date in which the trip occurred</td>
</tr>
<tr>
<td>Time</td>
<td>Depending on the fault</td>
<td>Time in which the trip occurred</td>
</tr>
</tbody>
</table>

Table 4.3. Event log menu

4.3.1. Trip counter

The «Trip counter» screen shows the total number of trips or faults detected, divided into trips/phase faults, trips/zero-sequence faults and external trips[14].

4.4. Test mode menu

ekor.soft enables to carry out a test of the protection or integrated control unit inputs and outputs. Once the «Test» option is selected, ekor.soft displays the corresponding «Input test» and «Output test» screens.

[14] The external trip is only available in ekor.rp units.
### 4.4.1. **Input tests**

This option enables to test the operability of the signals/indications in simulation mode.

**Input tests**: Obtains an image of the instantaneous status of the physical inputs detected. The inputs that remain active are labelled in red and those that are inactive are labelled in white.

![Figure 4.16. «Input tests» display](image)

**ekor.soft** enables to force status inputs that are opposite to their «real» status or modify the indications generating statuses that are not met at that time (for example, indicate that the switch is open when it is actually closed).

In order to modify the status of the indications, double click on the input or inputs to be modified, which will be highlighted in grey.

By pressing the «Send» button, it is possible to transmit the modifications carried out from the protection or integrated control unit to the dispatching centre in order to verify the correct reception of all signals/indications available in the protection or integrated control unit.

After exiting the «Input tests» screen, the normal mode of operation is re-set and the protection or integrated control unit captures the real status and real indications of the switchgear.

All the modifications carried out in «Test mode» do not affect the «Real» configuration of the protection or integrated control unit.

### 4.4.2. **Output test**

This option enables to test the operability of the outputs/commands in simulation mode.

**Output test**: It obtains an image of the instantaneous status of the physical outputs as well as of the commands of the protection or integrated control unit. The outputs that remain active are labelled in red and those that are inactive are labelled in white.

![Figure 4.17. «Output Tests» display](image)

From this moment on, the commands received from the dispatching centre are displayed without assigning them to the corresponding physical outputs.

After exiting the «Output tests» screen, the normal mode of operation is re-set and any order/command received is assigned to the physical output and/or change of status.

The modifications carried out in «Test mode» do not affect the «Real» configuration of the protection or integrated control unit.
4.5. Help menu

Access to the «Help» menu enables to easily answer any questions regarding the operation of ekor.soft. The ekor.soft integrated screens offer information regarding its operation, meaning of the different parameters, ekor.soft version, etc.

Access to the ekor.soft «Help» menu is achieved by pressing the PC’s «F1» function key.

![Figure 4.18. «Help» menu in ekor.soft](image)

![Figure 4.19. ekor.soft version](image)

4.6. ekor.soft/SIPCON main screen

The ekor.soft/SIPCON main screen provides access to the query and adjustment of the different protection functions that are available in the ekor.rps and ekor.rps-tcp\(^{(15)}\), units, as well as to the information regarding the event logs and faults recorded by the unit, through the «Protections» button.

![Figure 4.20. ekor.soft/SIPCON main screen](image)

\(^{(15)}\) For more information, refer to Ormazabal’s IG-150 General instructions document.
4.7.  ekor.soft/SIPCON tree menus

The ekor.soft/SIPCON Software tree menu is accessible after selecting «Protections», by pressing the button located on the lower left hand side of the screen as shown in the figure below.

![Figure 4.21. ekor.soft/SIPCON protections main screen](image)

The ekor.soft/SIPCON menu tree enables access to:

1. Protection unit status: Access to the input/output/leds statuses, status of the protection functions, etc.
2. Events, faults and disturbances.
3. Protection unit adjustments.

4.8.  ekor.rps test mode

The «Test mode» enables to test the ekor.rps inputs and outputs in the same way as it is carried with ekor.rp.ci and ekor.rci.

In order to access the «Test mode», proceed as follows:

1. From the «Operation mode» selection screen, select the option: «Connection» to the ekor.rps unit.
2. Select «Test mode».

![Figure 4.23. Test mode](image)
5. Establishing communications

5.1. Communications cable

Communications between the PC and the protection or integrated control unit is established via a flat serial communications cable or point to point (DB9 male for the protection or integrated control unit and DB9 female for the PC); that enables communication between the PC serial ports and the front port of the protection or integrated control unit.

5.2. Communications configuration

5.2.1. ekor rp, ekor rp ci y ekor rci units

In order to establish communication with the protection or integrated control unit connected to the PC, proceed as follows:

1. Connect the communication cable between the PC and the protection or integrated control unit.
2. Start ekor soft from the PC by double clicking on the corresponding icon.
3. Select the «Operation mode» selection option.
4. Select the «Communications» option.
5. Select the «Communications Configuration» option to set up the communications with the protection or integrated control unit connected to the PC.

![Communications configuration](image)

Figure 5.1. Communications configuration

In order to establish communications, the «Communications configuration» parameters of the protection or integrated control unit and ekor soft must coincide.

6. ekor soft enables to set up the parameters in «Manual» and «Automatic» mode.

a. Automatic mode: Via the ekor soft «Search» option, carry out the automatic searching of the protection or integrated control unit connected to the PC trying out different configurations.

b. Manual mode: The user selects the parameters that ensure proper communications with the protection or integrated control unit, in accordance with the following table:
Establishing communications

### General instructions

#### ekor.soft

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Possible values</th>
<th>Value by default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral number</td>
<td>1 - 32</td>
<td>1</td>
</tr>
<tr>
<td>Port</td>
<td>COM1, COM2…</td>
<td>COM1</td>
</tr>
<tr>
<td>Transmission speed</td>
<td>1200; 2400; 4800; 9600; 19 200; 38 400 bps</td>
<td>4800 bps</td>
</tr>
<tr>
<td>Parity</td>
<td>NO, ODD, EVEN</td>
<td>NO</td>
</tr>
<tr>
<td>Word length</td>
<td>7 bits, 8 bits</td>
<td>8 bits</td>
</tr>
<tr>
<td>Stop bit(s)</td>
<td>1; 2</td>
<td>1</td>
</tr>
</tbody>
</table>

With the exception of the «Port» (which is the connection port to the PC), the rest of parameters are configurations that are inherent to the protection or integrated control unit. By default, ekor.soft has the same parameters as the protection or integrated control units. The peripheral number «0» is reserved for «broadcast» messages.

Table 5.4. Communications Configuration

7. Access ekor.soft main screen in the «Connection» mode.

#### 5.2.2. ekor.rps and ekor.rps-tcp units

In order to establish communication with the protection unit connected to the PC, proceed as follows:

1. Connect the communication cable between the PC and the protection unit.
2. Start ekor.soft from the PC by double clicking on the corresponding icon.
3. In the «Operation mode» selection screen, select the corresponding ekor.rps or ekor.rps-tcp protection unit in the «Relay type» dropdown menu and press «Accept».

4. The ekor.rps «Operation mode» screen enables to select between the «Configuration and display» modes and the «Test mode». The ekor.rps-tcp unit directly accesses the «Configuration and display» mode.

![Figure 5.3. Operation mode in ekor.rps](image_url)

**Figure 5.3.** Operation mode in ekor.rps

![Figure 5.2. Selecting the relay type](image_url)

**Figure 5.2.** Selecting the relay type
5. After selecting «Configuration and display», ekor.soft automatically accesses the ekorsoft/SIPCON main screen.

6. From the ekorsoft/SIPCON’s main menu, select the «Configuration» option.

7. Select the «Automatic detection» option in «Type of communication with protections», and configure the PC’s communications port, communication parameters (transmission speed, parity, etc.).

8. Select «Protections» from the ekorsoft/SIPCON’s main menu.

9. Under «Communication type», select the «Direct» option and «OK».

10. Unless this is a specific application, select «Generic» for the installation type and press «OK».
11. **ekor.soft/SIPCON** connects with the protection unit and displays the search results on the screen:

![Communication (1)](image1)

**Figure 5.8. Communication (1)**

12. After pressing the «Protection console» button, communications are established between **ekor.soft** and the protection unit. The «Protection console» is displayed on the screen, which provides a general view of the status of the protection unit.

![Protection console](image2)

**Figure 5.10. Protection console**

13. By pressing the tree menu access button (lower left side of the **ekor.soft/SIPCON**'s main screen), the different options offered by the **ekor.soft/SIPCON** menus tree can be accessed: The protection unit can be adjusted, «Event logs» can be accessed, etc.

![Menus tree](image3)

**Figure 5.11. Menus tree**
6. Unit emulation

6.1. ekor.rp, ekor.rp.ci and ekor.rci units

Emulation of the units is carried out directly from the «Operation mode» selection screen by selecting both the relay type (ekor.rpg, ekor.rpt or ekor.rci) and the relay module (100, 101, ..., 302, 1000, ..., 3032, 1000 – D, ..., 3032-D) that wants to be emulated.

6.2. ekor.rps and ekor.rps-tcd units

The emulation of the ekor.rps and ekor.rps-tcp units follow a similar sequence as the establishing of communications with these units[16].

1. Select the «Emulation» option of the corresponding ekor.rps or ekor.rps-tcp unit from the «Operation mode» selection screen and press «Accept».
2. ekor.soft automatically accesses the ekor.soft/SIPCON’s main screen pressing the «Configuration» button select the «Off line» option of the «Connection» section and press «Accept».
3. From the ekor.soft/SIPCON main menu, select the «Installations» option with the «Ormazabal ekor.rps models generic» option and press «Exit».
4. Press «Protections», and select the model of the protection unit to be emulated from the «Position» dropdown menu.
5. After pressing the «Ok» button, it opens the «Protection console» screen, which displays the protection unit’s status.

[16] Refer to section 5.2.2 of this document, «ekor.rps and ekor.rps-tcp units», steps 1 and 2.
Subject to change without prior notice.
For further information, please contact Ormazabal.

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