Ex9JP V-1 3P

Voltage monitoring relay in 3P with LCD display
Napěťové monitorovací relé 3P s LCD displejem
Kontrolné napäťové relé v 3F s LCD displejom
Feszültségfi gyelő relé 3 fázisra LCD kijelzővel
Реле контроля напряжения в 3F с LCD-дисплеем
Multifunktionsspannungsrelais in 3F mit LCD Display
Przekaźnik nadzoru napięcia w 3F z wyświetlaczem LCD
Releu de monitorizare a tensiunii în 3F cu afi şaj LCD
Relé control de tensión trifásica con pantalla LCD

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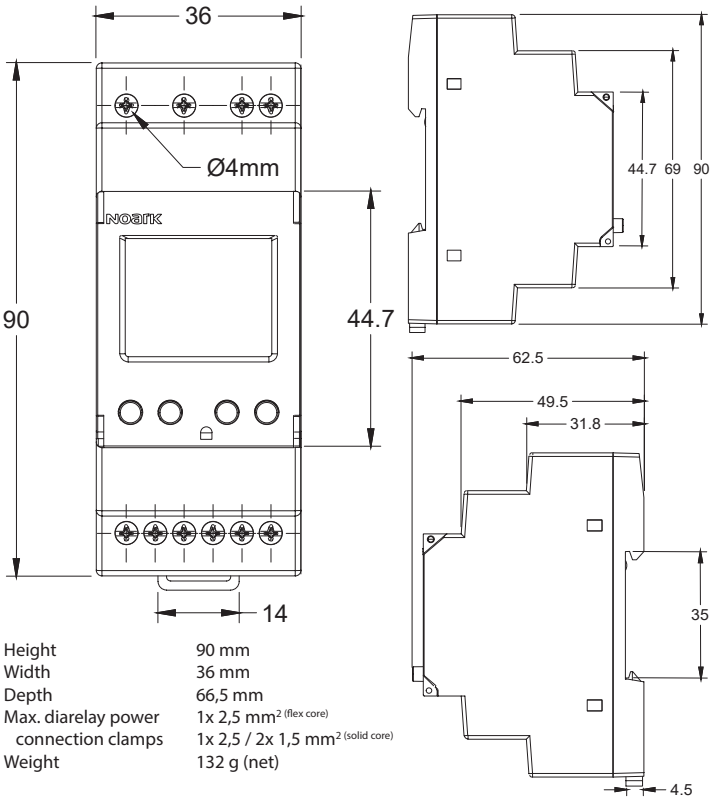
Caution

- Turn off and if possible lock all sources supplying the monitoring relay and the equipment that is connected to it before working on it.
- Always use a properly rated voltage sensing device to confirm that power is off.
- An external switch or a circuit-breaker should be installed on the supply wires, which will be used to disconnect the relay and the device supplying energy. It is recommended that this switch or circuit-breaker is placed near the relay because that is more convenient for the operator. The switch or circuit-breaker should comply with the specifications of the building's electrical design and all local regulations.
- An external fuse or thermal cut-off used as an overcurrent protection device for the relay must be installed on the supply side wires. It's recommended that this protection device is also placed near the relay for the convenience of the operator. The overcurrent protection device should comply with the specifications of the building's electrical design and all local regulations.

Warning

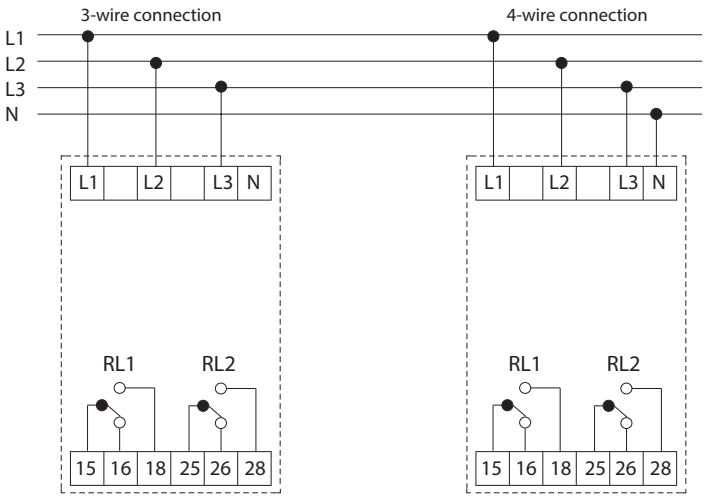
- The installation should be performed by qualified personnel familiar with applicable codes and regulations.
- Use insulated tools to install the device. A fuse, thermal cut-off or single-pole circuit breaker should be fitted on the supply line and not on the neutral line.
- This relay can be installed indoor, or outdoor enclosed in a relay box which is sufficiently protected, in accordance with local codes and regulations.
- To prevent tampering, an enclosure with a lock or a similar device can be used.
- The relay has to be installed against a fire resistant wall.
- The relay has to be installed in a well-ventilated and dry place.
- The relay has to be installed in a protective box if the relay is exposed to dust or other contaminants.
- The relay should be installed on a location where the relay can be read easily.
- In case the relay is installed in an area with frequent surges for example due to thunderstorms, welding machines, inverters etc., the relay is required to be protected with a Surge Protection Device.
- The device should be sealed immediately after installing it in order to prevent tampering.
- The device should be installed with a torque screw driver.

Dimensions

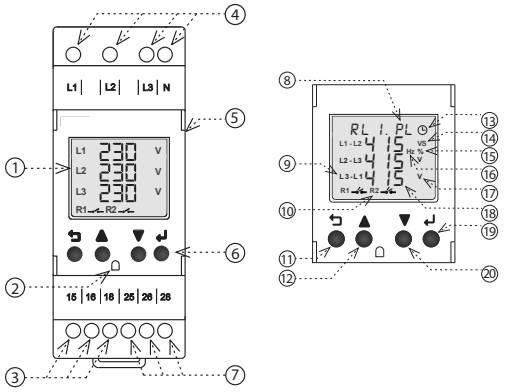


Height	90 mm
Width	36 mm
Depth	66,5 mm
Max. diarelay power	1x 2,5 mm² (flex core)
connection clamps	1x 2,5 / 2x 1,5 mm² (solid core)
Weight	132 g (net)

Connection diagram



Description



1. Backlit display
2. Place for sealing
3. Output contact RL1 (15-16-18)
4. Supply/monitored voltage terminals (L1-L2-L3-N)
5. Transparent opening cover
6. Control buttons
7. Output contact RL2 (25-26-28)
8. Fault status window and function menu in setting
9. Indication of phase or line voltage
10. Status of output contacts RL1 and RL2
11. ESCAPE button - ↩
12. UP button - ▲
13. Indication of a running delay
14. Delay in seconds
15. Asymmetry in percent
16. Frequency in hertz
17. Voltage in volts
18. Current state of voltage or other configurable parameter
19. ENTER button - ↵
20. DOWN button - ▼

Description of controls and signalling

Output contact mode

Mode	OK state			Fault state		
Fail safe	15 & 25 (Pole)		18 & 28 (NO)	15 & 25 (Pole)		18 & 28 (NO)
Non fail safe	15 & 25 (Pole)		18 & 28 (NO)	15 & 25 (Pole)		18 & 28 (NO)

Fault status window

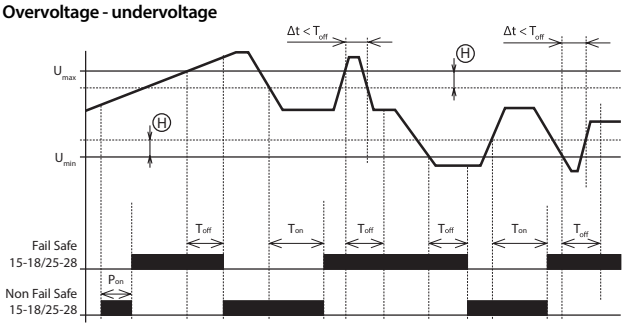
Shortcut	Meaning
"FLT.NF"	Neutral fail
"FLT.LC"	Lower threshold voltage
"FLT.HC"	Upper threshold voltage
"RLx.PL"	Phase failure
"RLx.PR"	Phase sequence
"RLx.ASY"	Phase asymmetry
"RLx.OF"	Overfrequency
"RLx.UF"	Underfrequency
"RLx.OV"	Overvoltage
"RLx.UV"	Undervoltage
"RLx.LCH"	Fault state memory ongoing
Note: RLx indicates RL1 & RL2	

Control buttons

ESCAPE	Enter the settings menu (long press >1s). Return to the main screen or previous menu in edit or display mode. Step back when changing a value or parameter.
UP	Move parameters up. Change/increase the value of a parameter in edit mode. Selection of the currently measured parameter on the main screen - voltage, frequency, asymmetry (pressing the button <500ms).
DOWN	Moving parameters down. Change/decrease the value of a parameter in edit mode. Display history of fault states (pressing the button <500ms).
ENTER	Select and save a parameter value in edit mode. Resetting the product from memory mode (long press >1s).
ESCAPE ENTER	Press a key combination to display the read-only settings menu (long press >1s).

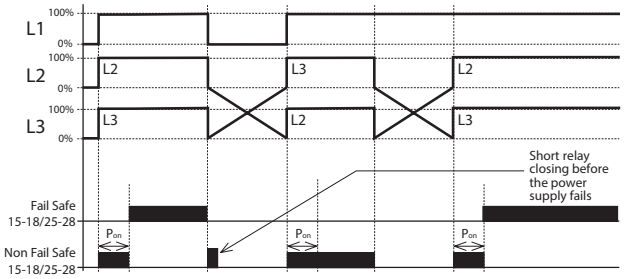
Function

Overvoltage - undervoltage



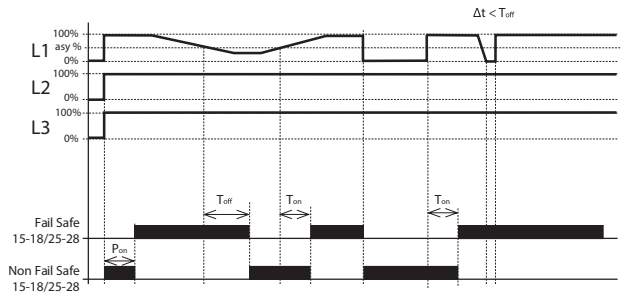
• After the supply/monitored voltage is connected, the delay P_{on} starts timing - during the timing the output contact is in a fault state - in the FAIL SAFE mode it is open. After the delay, if the monitored voltage is in the range U_{min} ... U_{max}, the output contact closes.
• If the monitored voltage exceeds the set value U_{max}, the time delay to the fault state (T_{off}) starts. After the delay, the output contact opens.
• If the monitored voltage falls below the U_{max} value reduced by the set hysteresis, the time delay start to OK state (T_{on}). After the delay, the output contact closes.
• If the duration of the fault state (Δt) is shorter than the set value T_{off} the status of the output contact does not change.
• If the monitored voltage falls below the value U_{min}, the time delay to the fault state (T_{off}) starts. After the delay, the output contact opens.
• If the monitored voltage exceeds the value U_{min} increased by the set hysteresis, the time delay start to the OK state (T_{on}). After the delay, the output contact closes.
• If the duration of the fault state (Δt) is shorter than the set value (T_{off}), the status of the output contact does not change.

Phase sequence



• After the supply/monitored voltage is connected, the delay Pon starts timing - during the timing the output contact is in a fault state - in FAIL SAFE mode it is open. After the delay, if the phase sequence is correct, the output contact closes.
• If the phase sequence is incorrect after the P_{on} delay, the output contact remains open (fault state).

Asymmetry, phase failure



• After the supply/monitored voltage is connected, the delay P_{on} starts timing - during the timing the output contact is in a fault state - in the FAIL SAFE mode it is open. After the delay, if the phase asymmetry is lower than the set value (absolute or percentage - see technical parameters), the output contact closes.
• If the phase asymmetry exceeds the set value, the time delay to the fault state (T_{off}) begins. After the delay, the output contact opens.
• If the phase asymmetry falls below the set value, the time delay starts to OK state (T_{on}). After the delay, the output contact closes.
• If the duration of the fault state (Δt) is shorter than the set value T_{off}, the status of he output contact does not change.

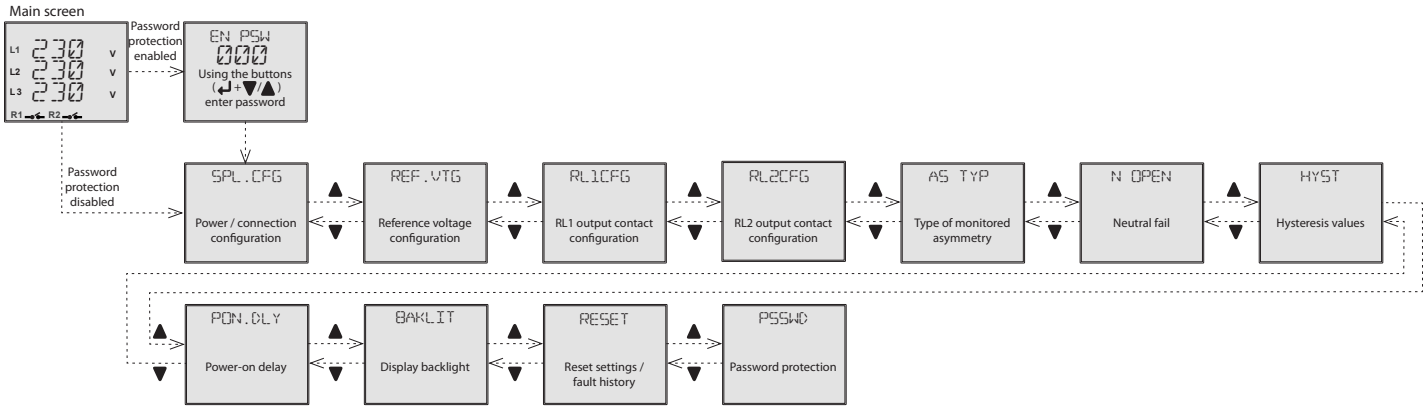
Graph legend:

P_{on} - Power ON delay (delay after power supply connection)
P_{on} - 0 - 999 s (min. 250ms hardware initialization)
T_{on} - ON delay (delay to OK state)
T_{on} - 0,5 - 999 s
T_{on} - OFF delay (delay to fault state)
T_{off} - 0,1 - 999 s
T_{off} - Adjustable for OV, UV, OF, UF & asymmetry faults
T_{off} - Phase sequence, failure <100ms; Neutral fail <500ms
Δt - Duration of the fault state
Ⓗ - Hysteresis

Control

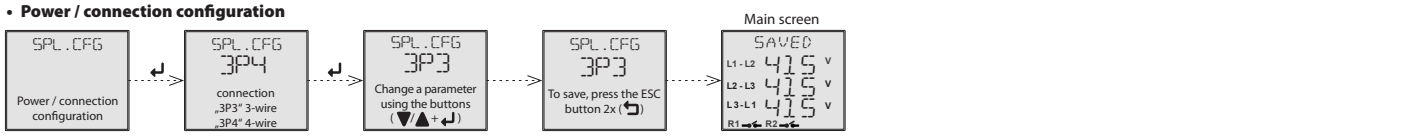
Programming menu structure

- to enter the programming menu, press and hold the ESCAPE button for >1s (⮌)
- possibility of changing a parameter / value is signalled by its flashing on the display

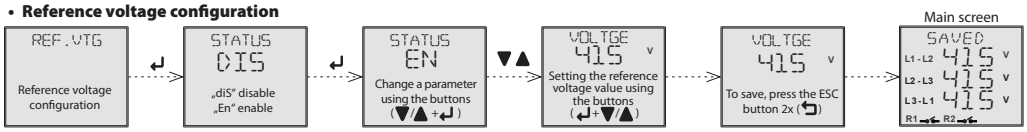


Individual settings of items in the submenu

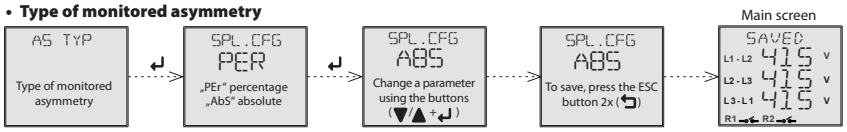
- **Power / connection configuration**



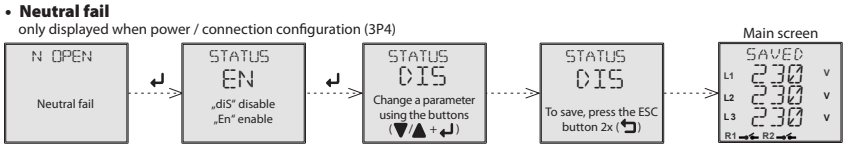
- **Reference voltage configuration**



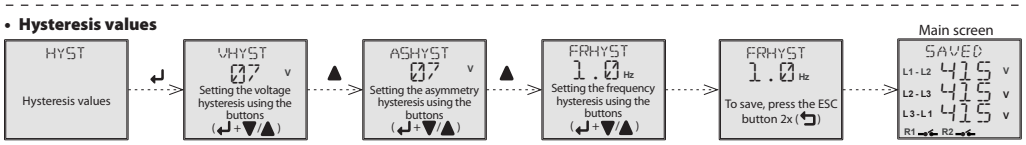
- **Type of monitored asymmetry**



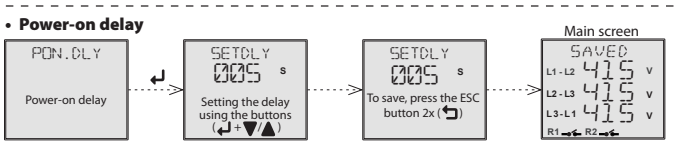
- **Neutral fail**
  only displayed when power / connection configuration (3P4)



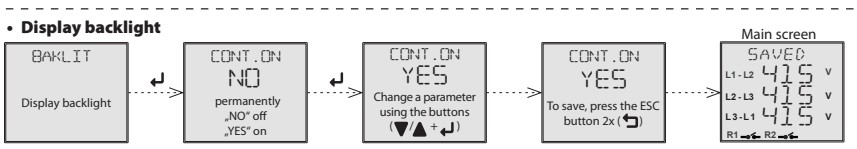
- **Hysteresis values**



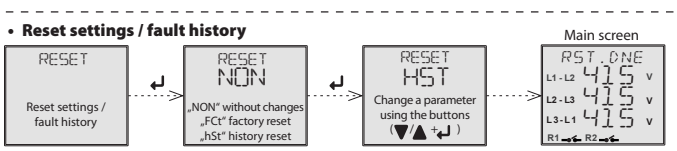
- **Power-on delay**



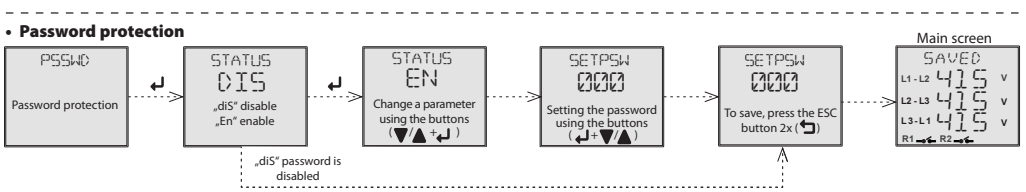
- **Display backlight**

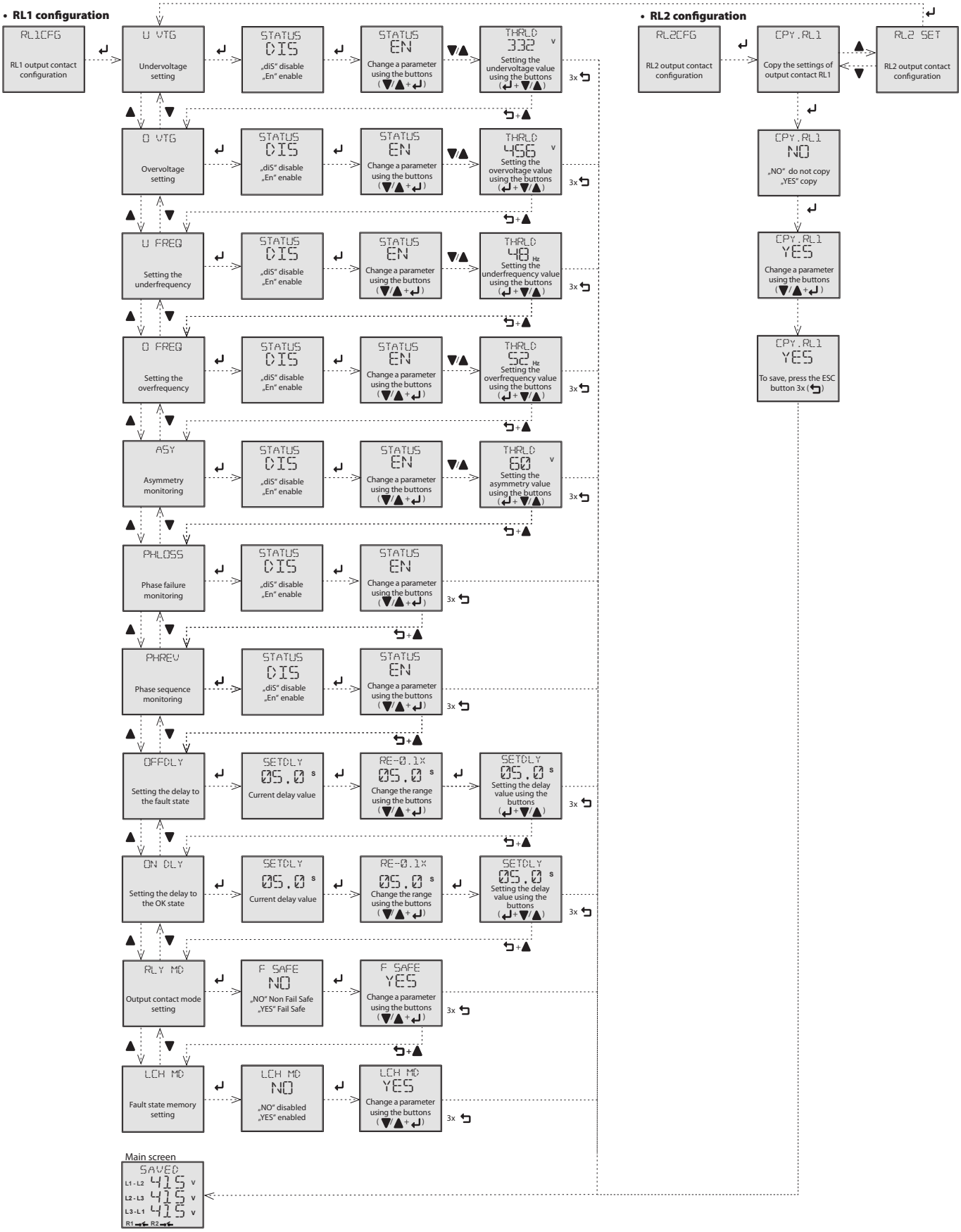


- **Reset settings / fault history**



- **Password protection**





This short user manual does not contain every applicable safety regulation for using this relay. Also it might be required because of company, local governement regulations or (inter)national laws to take additional measures. We have checked the contents of this manual and every effort has been made to ensure that the descriptions are as accurate as possible. However, deviations from the description cannot be completely ruled out, so that no liability can be accepted for any errors or omissions in the information given. Versions might be different in default programming based on the customers order.

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