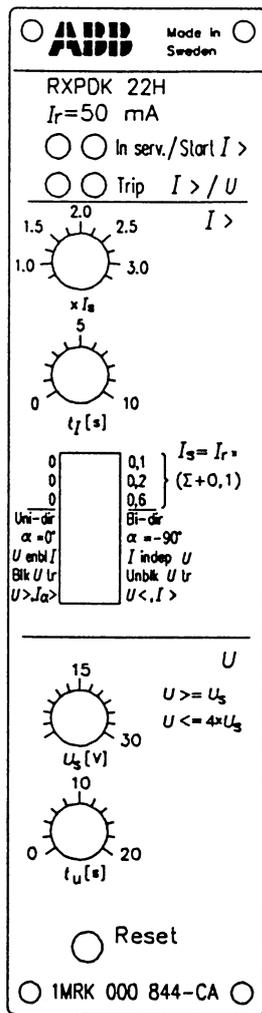


CONNECTION AND SETTING GUIDE



1MRK 000 117-92

Fig. 1 Front layout

Rated current of the relay, I_r (available variants: 0,05 A or 0,2 A)

LED indicators:

In serv. (green): indicates relay in service.
 Start I > (yellow): indicates operation of I > (no time delay).
 Trip I > (red): indicates operation of I > after the set time delay.
 Trip U (red): indicates operation of U after the set time delay.

I > (Directional/non-directional over-current):

Potentiometer (P1) for setting of the operate value for the function I >.

Potentiometer (P2) for setting of the definite-time delay t_I for the function I >.

8-pole programming switch (S1) for setting of the scale-constant I_s, uni-directional or bi-directional operation, characteristic angle α, function I > dependent or independent of U set value, blocking or unblocking of U trip, and directional or non-directional operation.

U (Over/Under voltage):

Potentiometer (P3) for setting of the operate value U_s for the function U.

Potentiometer (P4) for setting of the definite-time delay t_U for the function U.

Reset push-button.

CONNECTION:

The RXPDK 22H relay requires a dc-dc converter type RXTUG for auxiliary voltage supply ±24 V. Connection of the voltage RL shall be made only when the binary input is used.

The relay is delivered with a short-circuiting connector RTXK for mounting on the rear of the terminal base. This connector will automatically short-circuit the current input when the relay is removed from its terminal base.

NOTE! The auxiliary voltage supply should be interrupted or the output circuits should be blocked to avoid the risk of unwanted alarm or tripping, before the relay is plugged into or withdrawn from its terminal base.

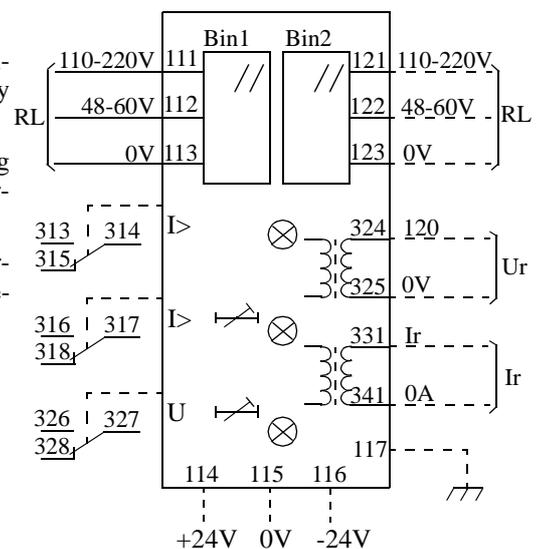


Fig. 2 Terminal diagram

SETTINGS:

All settings can be changed while the relay is in normal service.

1. Setting of the scale-constant I_s .

The scale constant I_s is equal to the rated current I_r times the sum of the set value of the switches S1:1, S1:2 and S1:3 plus 0,1. The setting range is from 0,1 to $1,0 \times$ the rated current I_r .

2 Setting of the overcurrent stage (directional, $I_{\alpha>}$ or non-directional, $I>$) operate value.

The operate value is set with potentiometer P1 according to $I> = P1 \times I_s$. The setting range is 0,75-3,25 $\times I_s$.

The directional function operates for $I \times \cos(\varphi - \alpha) \geq \text{set } I_{\alpha>}$ where φ is the phase angle between U and I.

3. Setting of the time delay t_l of the overcurrent stage $I>$.

The time delay for stage $I>$ has definite-time characteristic. The setting range is 0 - 10 s. The setting is done with potentiometer P2.

4. Setting of the different modes of operation.

The RXPDK 22H relay can be programmed for different modes of operation, with a directional or non-directional over-current stage, and a voltage stage to be used for enabling the over-current stage and as a neutral point voltage protection. The settings are done with the programming switches S1:4 to S1:8.

4.1. Setting of directional overcurrent, $I_{\alpha>}$ and overvoltage, $U>$ functions.

Set the switch S1:8 in position "U>, $I_{\alpha>}$ " for directional function of stage $I>$ and for overvoltage function of stage U. The directional over-current function is enabled or independent of the voltage U according to 4.1.2 or 4.1.3 below.

4.1.1 Setting of Uni-directional or Bi-directional operation and the characteristic angle α .

The Uni-directional or Bi-directional operation of stage $I_{\alpha>}$ is set with the switch S1:4, "Uni-dir" and "Bi-dir" respectively. The characteristic angle is set to " $\alpha=0^\circ$ " or " $\alpha=-90^\circ$ ", with the switch S1:5. When the characteristic angle is set to 0° and the switch S1:4 is set to position "Uni.dir", the relay operates for a resistive earth current in one direction towards a fault point, and with the switch S1:4 in position "Bi.dir" the relay operates in both directions, i.e. α is 0° and 180° . When the characteristic angle is set to -90° the relay operates for a capacitive earth fault current in one direction independent of the setting of switch S1:4.

4.1.2 Setting of U to enable $I_{\alpha>}$ and function $U>$.

Set the switch S1:6 in position "U enbl $I_{\alpha>}$ ". The $I_{\alpha>}$ function is enabled when voltage U exceeds the set value of $U>$. $U>$ is equal to U_s set on potentiometer P3, the setting range is 5 - 30 V.

Set the switch S1:7 to "Blk U tr" for blocking of, or "Unblk U tr" for unblocking of the $U>$ tripping (indication and output contact).

4.1.3 Setting of $I_{\alpha>}$ to be independent of U and function $U>$.

Set the switch S1:6 in position "I indep U". The $I_{\alpha>}$ function is enabled if $U \geq 5$ V.

The function $U>$ is set on potentiometer P3. The setting range is 5 - 30 V.

Set the switch S1:7 to "Blk U tr" for blocking of, or "Unblk U tr" for unblocking of the $U>$ tripping (indication and output contact).

4.2. Setting of non-directional overcurrent, $I>$ and undervoltage, $U<$ functions:

Set the switch S1:8 in position "U<, $I>$ " for non-directional function of stage $I>$ and for undervoltage function of stage U. The non-directional over-current function is enabled or independent of the voltage U according to 4.2.1 or 4.2.2 below. The settings of switches S1:4 and S1:5 have no affect on this function.

4.2.1 Setting of U to enable $I>$ and function $U<$.

Set the switch S1:6 in position "U enbl $I_{\alpha>}$ ". The $I>$ function is enabled when the voltage U falls below the set value of $U<$. $U<$ is equal to 4 times the value U_s set on potentiometer P3. The setting range is 5 - 120 V.

Set the switch S1:7 to "Blk U tr" for blocking of, or "Unblk U tr" for unblocking of the $U<$ tripping (indication and output contact).

4.2.2 Setting of I to be independent of U and function $U<$.

Set the switch S1:6 in position "I indep U". The $I>$ function operates independent of the voltage U and the setting of $U<$.

The function $U< = 4 \times U_s$ is set on potentiometer P3. The setting range is 5 - 120 V.

Set the switch S1:7 to "Blk U tr" for blocking of, or "Unblk U tr" for unblocking of the $U<$ tripping (indication and output contact).

5. Setting of the time delay t_u of the voltage stage U.

The time delay for stage U has definite-time characteristic. The setting range is 0 - 20 s. The setting is done with potentiometer P4.

6. The binary input.

There are two binary inputs (Bin 1 and Bin 2) on the relay. Bin 1 (terminals 111/112-113) is used for changing the characteristic angle from 0° to -90° or -90° to 0° . Bin 2 (terminals 121/122-123) is used for resetting of the LED indicators. The functions are activated when a voltage RL is applied to the binary inputs.

INDICATION

There are four LED indicators. The trip indicators seal-in and are reset manually by the "Reset" push-button or electrically via the binary input Bin 2. The start indicator resets automatically when the relay resets. When the "Reset" pushbutton is depressed during normal operating conditions, all LEDs except "In serv." will light up. When connecting RXPDK 22H to the auxiliary voltage, the relay performs a self test. The "In serv." LED is alight, after performing the self test and when the relay is ready for operation. In case of a fault, the LEDs will start flashing.

TRIPPING AND START OUTPUTS

The RXPDK 22H relay has one start and one tripping output for the overcurrent stage, and one tripping output for the voltage stage. Each output is provided with one change-over contact. All outputs reset automatically when the energising quantity passes the resetting value of the relay.

ESD

The relay contains electronic circuits which can be damaged if exposed to static electricity. Always avoid to touch the circuit board when the relay cover is removed.