

Zelio Control - Monitoring & Control Relays

3-phase and 1-phase pump control relays
RM35BA



RM35BA10

Presentation

Measurement and control relay RM35BA10 is used for control and monitoring of 3-phase and single-phase pumps.

Functions	RM35BA10
3-phase phase sequence	
3-phase phase loss	
3-phase overcurrent and undercurrent control	
1-phase overcurrent and undercurrent control	

- Function performed
- Function not performed

These control relays allow:

- Absence of one or more phases
- Undercurrent for protection against dry running
- Overcurrent for protection against overload
- Acceptance of different nominal voltage values:
 - 208...480 V ~ in 3-phase mode
 - 230 V ~ in 1-phase mode
- Clip-on mounting on a \perp rail
- Monitoring of their own supply voltage measured as a true rms value

They feature:

- A sealable cover to help protect the settings
- A control status indicator LED

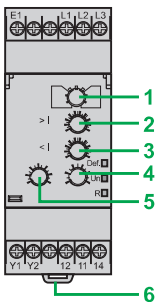
Applications

- Management of pumps

Description

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- 1 Configuration: selection of active function and operating mode **3-ph/1-ph** (Double - Single)
- 2 Overcurrent setting potentiometer **> I**
- 3 Undercurrent setting potentiometer **< I**
- 4 Time delay adjustment potentiometer **Tt**
- 5 Starting inhibition time delay adjustment potentiometer **Ti**
- 6 Spring for clip-on mounting on 35 mm/1.38 in. \perp rail



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Def. Yellow LED: indicates fault present status

Un Green LED: indicates that supply to the product is on

R Yellow LED: indicates relay output status

Operating principle

Pump control relay RM35BA10 can operate on a 1-phase or 3-phase supply and incorporates 3 functions in a single unit:

- Current control
- Phase presence control (in 3-phase mode)
- Phase sequence control (in 3-phase mode)

Function Diagram

- Power supply off
- Power supply on
- Output 11-14, 21-24 open
- Output 11-14, 21-24 closed

These relays have two operating modes which are designed to control a pump via two external signal inputs (Y1 Y2). These two signal inputs are controlled by volt-free contacts.

Control signal inputs Y1 and Y2 can be connected to:

- A level sensor
- A level relay
- A pressure sensor
- A pushbutton, etc.

Fault signaling is by LEDs with differentiation of the reason for the fault.

RM35BA10

The following operating mode is selected by using a switch:

- Single control
- Double control
- 1-phase or 3-phase supply

The position of the switch and the operating mode is read by the product on energization.

- If the switch position is changed while the device is operating, all the LEDs flash, but the product continues to operate normally with the function selected at the time of energization preceding the change of position.
- If the configuration switch is returned to the original position selected prior to the last energization, the LEDs return to their normal state.

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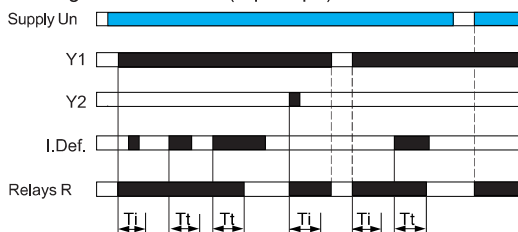
3-phase and 1-phase pump control relays
RM35BA

Operating principle (continued)

RM35BA10 (continued)

Single control mode

- Single control mode (3-ph/1-ph)

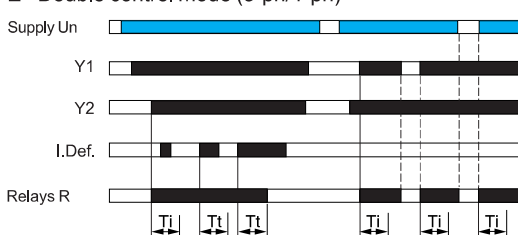


This mode is designed to control a pump via an external signal. The relay output is closed when the signal is present at Y1 (contact closed). Y2 can be used to reset the relay after a current fault.

Note: *Ti*: time delay to inhibit fault monitoring on pump starting (overcurrent and undercurrent, setting on front panel)
Tt: time delay on occurrence of a fault (overcurrent or undercurrent, setting on front panel)
I. Def.: presence of a current fault (overcurrent or undercurrent)

Double control mode

- Double control mode (3-ph/1-ph)

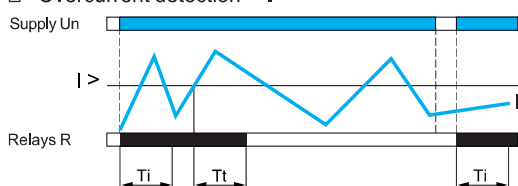


This mode is designed to control a pump via two external control signals (Y1 and Y2). The output relay closes when both input signals are present (Y1 and Y2 closed). It will open as soon as one of these signals disappears.

Note: *Ti*: time delay to inhibit fault monitoring on pump starting (overcurrent and undercurrent, setting on front panel)
Tt: time delay on occurrence of a fault (overcurrent or undercurrent, setting on front panel)
I. Def.: presence of a current fault (overcurrent or undercurrent)

1-phase or 3-phase supply control mode

- Overcurrent detection $I >$



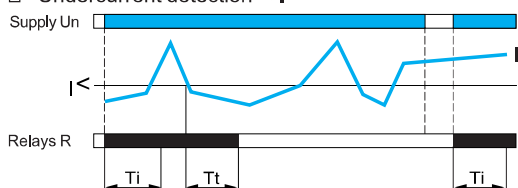
- If the control relay is configured for a 1-phase supply, it monitors the current consumed by the pump.
- If the control relay is configured for a 3-phase supply, it monitors the current, phase sequence and phase loss.
- If a phase fault is detected, the output relay opens immediately.
- On energization, if there is a phase sequence or phase loss fault, the output is unable to energize.

The overcurrent and undercurrent values are set by two separate potentiometers, graduated from 1 to 10 A.

- If a setting error occurs (low threshold greater than high threshold), the output relay opens and all the LEDs flash to signal the error.
- If a current fault occurs (overcurrent or undercurrent), the relay opens when the fault persists for longer than the threshold time delay setting.
- When the current returns to the correct value, the output relay continues to remain open. It can only be re-energized by a RESET: either by switching off the power, or by closing external contact Y2 (in single control mode).
- An inhibition time delay on energization (*Ti*) allows detection of current peaks on motor starting.

Note: *Ti*: time delay to inhibit fault monitoring on pump starting (overcurrent and undercurrent, setting on front panel)
Tt: time delay on occurrence of a fault (overcurrent or undercurrent, setting on front panel)

- Undercurrent detection $I <$



References



RM35BA10

Function	Current range controlled	Supply voltage	Output Reference	Weight
	A	V		
3-phase: ■ Phase sequence ■ Phase loss ■ Overcurrent and undercurrent control	1...10	■ 208...480 ~, 1 CO	RM35BA10	0.110/ 0.243
		■ 230 ~,		
		1-phase		
1-phase: ■ Overcurrent and undercurrent control				