

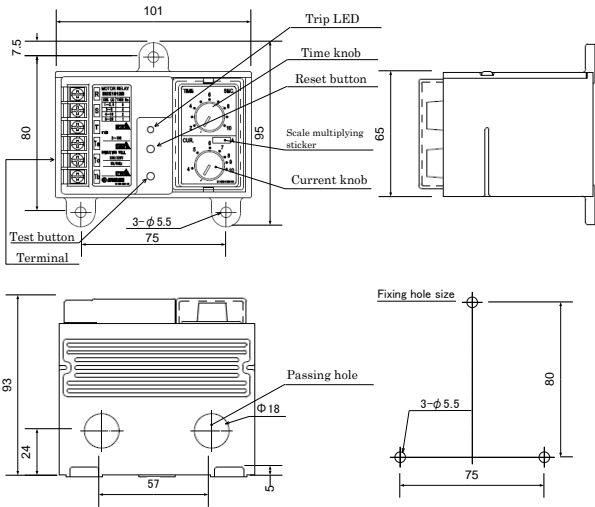
PATLITE® Motor Protection Relays RUK Series

Thank you for your buying Motor Protection Relay RUK Series. Motor Protection Relays are used to protect motors from accidents by overload, open-phase and negative-phase. Be sure to check that the product exactly conforms to your requirement. The product must be handled by experienced personnel familiar with the product. Please read this leaflet without fail. We hope you to use our Motor Relay RUK Series right and safely.

<note>

When export this product, follow statutory provisions of the destination country.

1. Dimensions



2. Connection

Pass the wires in the same direction through two feed holes. The count of wiring turns is shown in the top label. Connect the 3-phase voltage correctly in the phase sequence. When using for star-delta starter, connect the relay between the power supply and the star-delta changeover switch. For high voltage motors and large capacity motors, use the standard current transformers shown in the figure 2.

Connection Diagram

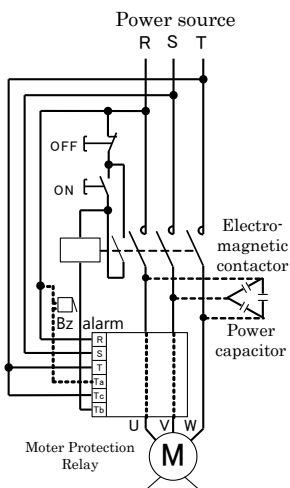


Fig.1 Manual operation

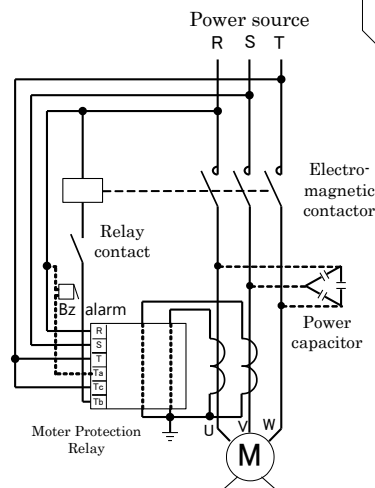


Fig.2 Automatic operation (for motors having a capacity of larger than 160A)

3. Operating current setting

Scale of the current setting range No.1 (1~20A) is calibrated from 4 to 10.

Paste the scale multiplying sticker for the current setting range as shown in the table to correspond to the rated current of the motor. The scale multiplying factor and the count of wiring turns are dependent on the current setting range.

The setting current value is the product of scale value by multiplying factor.

For example, when setting scale value is 6 and multiplying factor is ($\times \frac{1}{2}$), setting current value is 3A ($6A \times \frac{1}{2}$). In this case, count of wiring turns is 4.

Figures of the other current setting scales are actual current values.

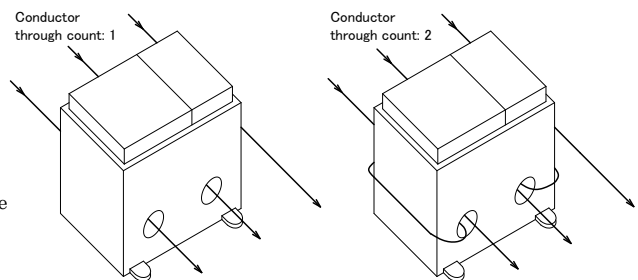
When the current value is set at the rated current of the motor, the operating value is 105~125% of the setting value.

Ratings

Relation of current range and the count of primary through conductors

Rated current No.	Range(A)	(Motor capacity JIS C4210 200V 4-pole motor)			Count of through conductors	Scale multiplying sticker
		kW	HP	A		
1	1~2.5	0.2	1/4	1.8	8	$\times 1/4$
		0.4	1/2	2.8		
	2~5	0.75	1	4.2	4	$\times 1/2$
		1.5	2	7.3		
	4~10	2.2	3	10.0	2	$\times 1$
3.7		5	16.1			
8~20	5.5	7.5	24	1	$\times 2$	
	7.5	10	31			
2	16~40	11	15	45	1	
		15	20	60		
3	32~80	18.5	25	74	1	
		22	30	87		
4	64~160	30	40	117	1	
		37	50	143		

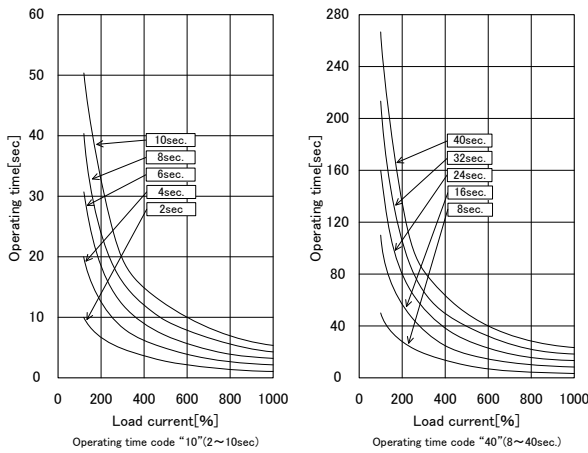
Passing conductors through the internal current transformers



4. Operating time setting

Set the operating time in reference to the following operating characteristics by turning the time setting knob. The scale value shows the operating time at 600% overload current.

Characteristic Curves



5. Resetting

When the relay operates, the trip LED (red LED) will turn on. After taking away the cause of operating, push the button to reset.

Relation of output contacts and trip LED

State of the trip LED	State of trip output contacts	
	Tb - Tc	Ta - Tc
Lighting off	Conduction	Non-conduction
Lighting on	Non-conduction	Conduction

6. Check and Test

- Fully confirm whether there are any errors in wiring after wiring work is finished.
- After setting the rated current and operating time, switch on the power source. If the relay operates instantly, check the phase sequence.
- At the test, push the button until the trip LED turns on. In case that the relay does not operate, check the following points:
 - whether normal voltage is applied.
 - whether the circuit is correctly wired.
- Confirm whether the electromagnetic contactor operates normally by pushing the starter button. When the electromagnetic contactor doesn't operate, check the following points:
 - whether the trip LED turns off.
 - whether the control circuit of electromagnetic contactor is correctly wired.
 - whether the relay contacts are normal. In case of relay operating, Ta-Tc terminal makes and Tb-Tc terminal breaks.
- Confirm that the electromagnetic contactor opens by pushing the test button.

7. Code

RU K 10 3 2 B
 (1) (2) (3) (4) (5)

Type		(3)	(4)	(5)
(1) Basic	(2) protection elements	Operating time (at 600% Load)	Rated current	Rated voltage
RU	K	10	10sec.	1 1~20A
			2 16~40A	
		40	40sec.	2 200/220V
			3 32~80A	
			4 64~160A	4 400/440V

8. Specifications

Rated voltage	200/220V , 400/440V (50/60Hz)
Used voltage range	Within -15 to +10% of rated voltage (Only open-phase operation is activated within -50 to +10%)
Rated current	1~20 , 16~40 , 32~80 , 64~160A
Overload operation value	105 to 125% of stabilization current
Overload operation time	2 to 10, 8 to 40 sec. during 600% overload current (inverse time-current characteristics)
Open-phase operation value	85% or less of stabilization current with single-phase current
Open-phase operation time	4 sec. or less with stabilization current
Negative-phase operation value	80% or less of rated voltage
Negative-phase operation time	1 sec. or less with rated voltage
Ambient operating temperature	-10 to +55 °C (Must be free of icing or condensation)
Power consumption	5VA or less
Output contact	1NO+1NC 250V AC 4A (cos Φ=0.4) :The type of Rated voltage 200V 440V AC 4A (cos Φ=0.4) :The type of Rated voltage 400V
Weight	about 700g
Voltage characteristic	Overload element with -15 to 10% of rated voltage : operation value of ±5% or less, operation time of ±10% or less
Temperature characteristics	Overload elements: at ambient temperature of 20 °C ± 20°C operation value of ±5% or less, operation time of ±10% or less
Insulation resistance (at 500V DC megger)	10MΩ or more (between electric circuit and case) 5MΩ or more (between electric circuits)
Dielectric strength	2500V AC for 1 min. (between electric circuit and case) 2500V AC for 1 min. (between electric circuits)

PATLITE Corporation G21

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