INA-F2011a-JE

INSTRUCTION MANUAL

Thermal Overload Relay

Type
TK-E02

This manual should be given to the person who actually uses the products and is responsible for their maintenance.

Safety Precautions

To ensure proper use of the product, be sure to read this manual and the other attached documents carefully before starting installation, operation, maintenance and inspection. Within this instruction manual, safety precautions are ranked, in order of importance, as either "Warning" or "Caution".

⚠ WARNING An operator may be killed or seriously injured by a hazardous condition resulting from improper operation.

⚠ CAUTION An operator may suffer minor injuries and/or objects may be damaged by a hazardous condition resulting from improper operation.

Under certain conditions, improper operation may result in serious injury and/or damage even if it is labeled only as"Caution". Every item indicated by either "Warning" or "Caution" should be considered significant. Be sure to give particular care to those items.

⚠ WARNING

- Do not touch the product or approach it when power connected. Electric shock or burns may result.
- Turn off the power before starting maintenance or inspection.. Failure to turn off power may result in Electric shock or burns.

⚠ CAUTION

- For wiring, select wire sizes suitable for the applied voltage and current.
- Tighten wires with the tightening torque specified in the instruction manual. Failure to do so may result in fire.
- Do not touch the product immediately after the power is turned off. As it may still be hot, burns may result.
- Treat the product as industrial waste when discarding.

1. Unpacking

(1) Check that the type and rating match the requested specifications.
(2) Make sure that no parts have been lost or damaged.

2. Storage

Store the unit in the packing box. Do not store the packing box in a location subject to high temperature, high humidity, corrosive gas, or direct sunlight.

3. Mounting

(1) Mount in a dry, clean and stable location.
(2) Mounting on a vertical surface. The product must not incline more than 30° . (Fig.1)
(3) Combination of magnetic contactors and separate mounting unit.

Thermal overload relay	Combination of magnetic contactors	Separate mounting unit for thermal overload relay
TK-E02	SC-E02, E03, E04, E05 SC-E02/G, E03/G, E04/G, E05/G	SZ-HCE

4. Mounting space

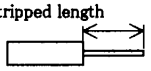
(1) Mount the products at a distance of at least that shown in the table below.
(Fig.2 ex. TK-E02+SZ-HCE)

Dimension A	20mm
Dimension B	10mm

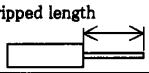
5. Connection

Capable wire size and proper tightening torque.

(1) Main terminals

Types			TK-E02
Direct Connection	Solid Stranded Flexible stranded with end sleeve 【Note 2】	AWG	1×(18 to 12) 2×(18 to 12)
		[mm²]	1×(0.75 to 4) 2×(1 to 4)
	Stripped length 	[mm]	11
Terminal screw size			M4
Kinds of screw 【Note 1】			⊕ ⊖
Tightening torque		[lb·in]	11 to 13
		[N·m]	1.2 to 1.5

(2) Auxiliary terminals

Types			TK-E02
Direct Connection	Solid Stranded Flexible stranded with end sleeve 【Note 2】	AWG	1×(18 to 14) 2×(18 to 14)
		[mm²]	1×(0.75 to 2.5) 1×(φ1 to φ1.6) 2×(0.75 to 1.5) 2×(1.5 to 2.5)
	Stripped length 	[mm]	10
	Terminal screw size		M3.5
	Kinds of screw 【Note 1】		⊕ ⊖
	Tightening torque	[lb·in]	7 to 9
		[N·m]	0.8 to 1

【Note 1】 ⊕ : Philips PH2 φ6
⊖ : Slotted-head screw I-1×5.5×L Type B
【Note 2】 Stranded wire: Number of solids ≦ 7
Flexible stranded wire: Number of solids > 7
【Note 3】 Tighten all terminal screws even if not used.
【Note 4】 After alignment or bending back of connected wires, check the tightening torque of the clamping screws.

6. Usage

(1) Turn the adjustment dial within the dial gradations so that the current loaded to the motor is at the ▼ mark (Fig. 3).
(2) By pushing the Trip bar toward the arrow, the sequence check will start (Fig.3).
(3) If the thermal overload relay operates, first remove the cause of failure such as overload, and then lightly press the reset button to reset it. (In this case, the thermal overload relay cannot be reset, if it is not cooled sufficiently.) (Fig.3)
(4) The operation status of the Thermal overload relay is indicated with the projected length of the Trip bar (Fig.4).
(5) To change from the manual reset mode to the automatic reset mode, please change into the state where a Reset button does not jump out by the method shown in Fig.5. In addition, at automatic reset mode cannot distinguish a state of operation with a Trip bar.
(6) Note that the motor restarts automatically if the Thermal overload relay in a two-wire circuit is reset in the automatic reset mode.

7. Maintenance and Inspection

(1) Check that all screws are tightened.
(2) Check that all terminals are tightened with the proper torque periodically.

8. Short-circuit protective device (SCPD)

Thermal overload relay		Contactor type	IEC60947-4-1					UL508
			Type"1"			Type"2"		
			Fuji Breaker					
Type	Heater range [A]		Prospective Current Iq [kA]	Part No.	Rating [A]	Prospective Current Iq [kA]	IEC60269-1 gG and gM Fuse Rating [A]	Maximum circuit breaker and fuse rating are described in the name plate.
TK-E02	0.1-0.15	SC-E02 SC-E03 SC-E04 SC-E05	10	-	-	50	-	Suitable for use on capable of delivering not more than 1000 rms symmetrical amperes, 600V max.
	0.13-0.2			-	-		-	
	0.15-0.24			-	-		-	
	0.2-0.3			-	-		-	
	0.24-0.36			-	-		-	
	0.3-0.45			-	-		-	
	0.36-0.54			SA53RC	3		2	
	0.48-0.72			SA53RC	3		4	
	0.64-0.96			SA53RC	5		4	
	0.8-1.2			SA53RC	5		4	
	0.95-1.45			SA53RC	10		16	
	1.4-2.2			SA53RC	10		20	Suitable for use on capable of delivering not more than 5000 rms symmetrical amperes, 600V max.
	1.7-2.6	SC-E02/G SC-E03/G SC-E04/G SC-E05/G		SA53RC	10		20	
	2.2-3.4			SA53RC	10		20	
	2.8-4.2			SA53RC	10		20	
	4-6			SA53RC	10		20	
	5-8			SA103BA	30		20	
	6-9			SA103BA	30		20	
	7-11			SA103BA	30		20	
	9-13			SA103BA	30		25	
	12-18			SA103BA	30		40	
	16-22			SA53RC	50		50	
	20-25			SA53RC	50		50	

Type"1" co-ordination requires that, under short-circuit conditions, the contactor or starter shall cause no danger to persons or installation and may not be suitable for further service without repair and replacement of parts.

Type"2" co-ordination requires that, under short-circuit conditions, the contactor or starter shall cause no danger to persons or installation and shall be suitable for further use. The risk of contact welding is recognized, in which case the manufacturer shall indicate the measures to be taken as regards the maintenance of the equipment.

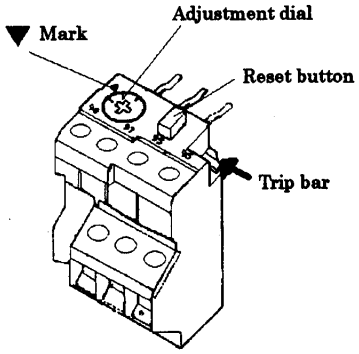
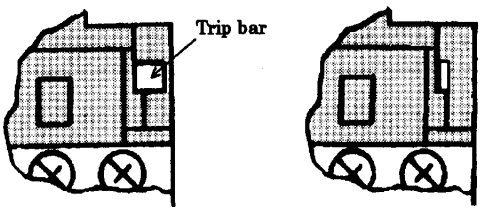


Fig.3



Non-operation status

operation status

Fig.4

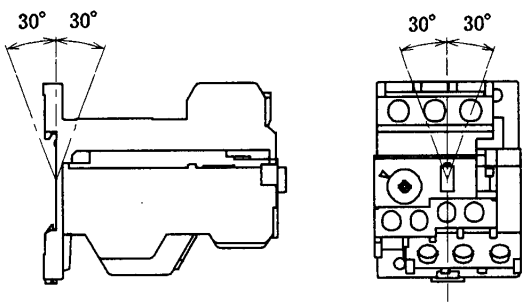
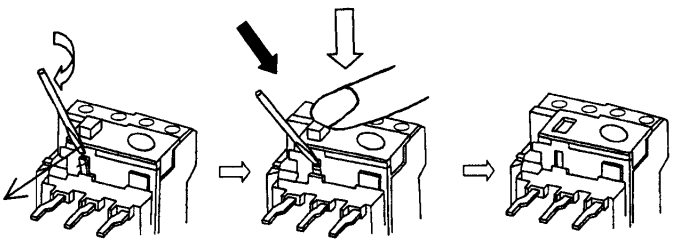


Fig.1



Break plastic cover to expose window.

With pointed tool, push the Reset button back until it latches.

Reset button is now in automatic reset mode.

Note: Use caution when selecting automatic reset mode.
Equipment damage can result when used improperly.

Fig.5

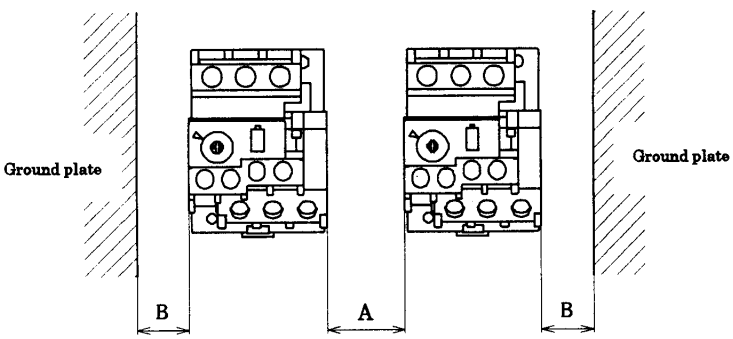


Fig.2

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