



请注意此使用说明书必须送至最终用户和维修责任人手中保管。  
This manual should be given to the person who actually uses the products and is responsible for their maintenance.

## 使用说明书 INSTRUCTION MANUAL INA-F21184813b-CE

### 热过载继电器

#### Thermal Overload Relay

##### Type

CJR3-13	CJR3-13Q	CJR3-240
CJR3-25	CJR3-25Q	CJR3-450
CJR3-25-AN	CJR3-25Q-AN	CJR3-240H
		CJR3-450H

Table 1

热过载继电器型号 Thermal overload relay (TOR)	可组合的交流接触器型号 Type of contactor on which TOR can be mounted	可组合的独立安装单元 Type of separate mounting unit on which TOR can be mounted
CJR3-13, 13Q	CK3-09F, 12F, 09F/G, 12F/G	FSZ-HB
CJR3-25-AN, 25Q-AN	CK3-18F, 25F, 18F/G, 25F/G	
CJR3-25, 25Q	CK3-09, 12, 18, 25 CK3-09/G, 12/G, 18/G, 25/G	FSZ-HCE
CJR3-240	CK3-220	—
CJR3-450	CK3-300, CK3-400	—
CJR3-240H, 450H	—	不要 / Unnecessary

Table 2

A [mm]	B [mm]
20	10

### 安全注意事项

在安装、运行、保养和维修前必须熟读使用说明书，以保证正确使用。

使用说明书中对安全注意事项区分为“警告”、“注意”两个等级。

**警告**：不解除的话，有可能造成死亡或重伤的危险状态。

**注意**：不解除的话，有可能造成中等程度的残疾，轻伤以及发生物质损伤事故。

并且，即使在**注意**中记载的事项根据情况也有可能导致发生重大事故，所以记载内容都很重要，请必须遵守。

#### 警告

- 请不要触摸和靠近通电中的产品，因有触电、灼伤的危险。
- 维修、检验请在切断电源后进行，因有触电的危险。

#### 注意

- 因为有引发灼伤、火灾的可能，所以请确保说明书上规定的安装空间。
- 因为有引发火灾的可能，所以请在接线时按额定电压、通电电流选用符合规范尺寸的电线，紧固螺钉按照使用说明书规定的力矩紧固。
- 请不要在切断电源后立即触摸产品，因为余热可能会导致灼伤。
- 产品废弃时需按产业废弃物处理。
- 因有引发触电、灼伤的可能，请不要在拆下 CJR3-240 CJR3-450 的电流互感器的情况下使用。

### 1. 解开包装

- (1) 请确认产品型号、适用容量与要求的规格是否一致。
- (2) 请检查是否有由于运输等原因而引起的零部件松动或破损现象。

### 2. 保管

请避免高温多湿、有腐蚀性气体及日光直射的场所，以原包装的状态进行保管。

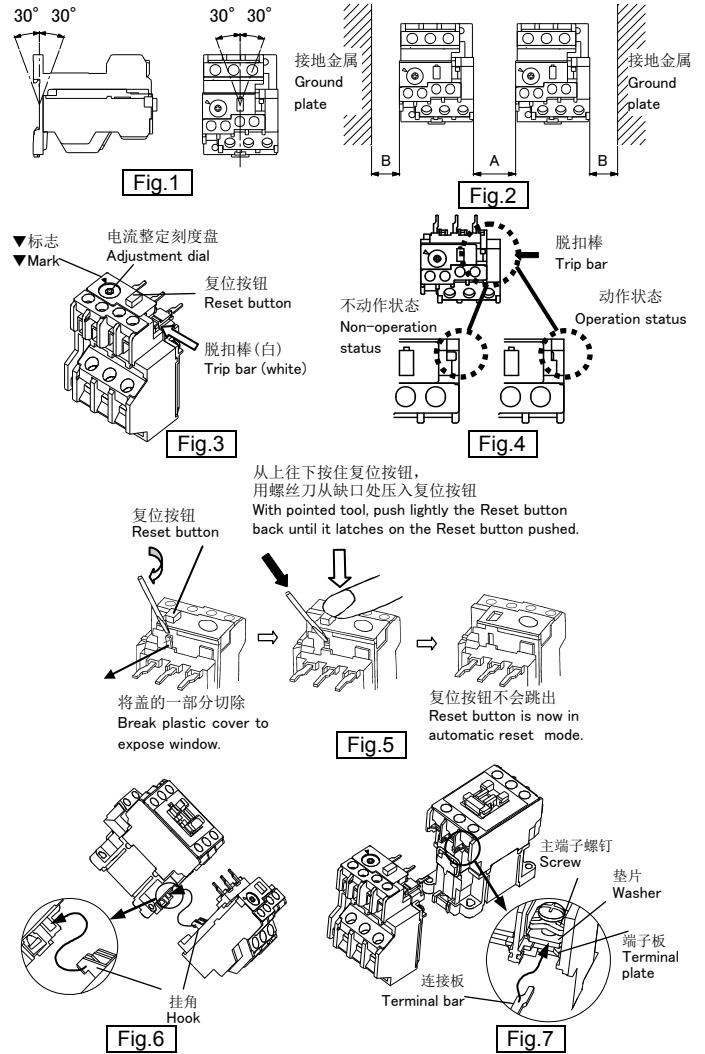
### 3. 安装

- (1) 请安装于干燥、洁净、牢固的场所。
- (2) 请垂直安装。允许倾斜角度在 30° 以内。(Fig.1)
- (3) 可与热继电器组合的交流接触器、独立安装单元的型号请参照 Table 1。

### 4. 安装空间

安装间隙需在 Table 2 尺寸以上。

(Fig. 2 是 CJR3-25 与 FSZ-HCE 组合の場合)



### 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** Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.
- CAUTION** Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury and/or damage to the equipment. 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 do so may result in electric shock.

#### CAUTION

- Install the product in space more than being provided by this manual. Failure to do so may result in fire or burns.
- For wiring, select wire size suitable for the applied voltage and current. Burns may result. 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.
- Do not use the product after moving CT coil wire of TOR types CJR3-240 and CJR3-450. Electric shock may result.

#### 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) See the Table 1 combination of contactor and thermal overload relay (TOR).

#### 4. Mounting space

Mount the products at a distance of at least that shown in the Table 2. (Fig. 2 ex. Combination of type CJR-25 and FSZ-HCE)

Table 3

Type		Main terminals				Auxiliary terminals
		13□	25□, 25□-AN	240□	450□	All Types
直接连接/ Direct connection						
【Note1】 单芯线 / 多股线 Solid / Stranded	[mm <sup>2</sup> ]	1×(0.75~2.5) 2×(0.75~1.5) 2×(1.5~2.5)	1×(0.75~4) 2×(1~4)	-	-	1×(0.75~2.5) 2×(0.75~1.5) 2×(1.5~2.5)
	AWG	1×(18~12) 2×(18~16) 2×(16~14)	1×(18~10) 2×(18~12)	-	-	1×(18~14) 2×(18~16) 2×(16~14)
【Note1】 多股软线 (有压接端子) Flexible stranded with end sleeve	[mm <sup>2</sup> ]	1×(0.75~2.5) 2×(0.75~1.5) 2×(1.5~2.5)	1×(0.75~2.5) 2×(1~2.5)	-	-	1×(0.75~2.5) 2×(0.75~1.5) 2×(1.5~2.5)
	AWG	1×(18~14) 2×(18~16) 2×(16~14)	2×(18~12)	-	-	1×(18~14) 2×(18~16) 2×(16~14)
电线剥皮尺寸 Stripped length	[mm]	10	11	-	-	10
压接端子连接/ Connection with crimp terminal						
多股线 / 多股软线 Stranded Flexible stranded	[mm <sup>2</sup> ]	0.75~4	0.75~10	2.5~240	2.5~300	0.75~2.5
	AWG	18~10	18~8	14~400	14~600	18~14
端子最大宽度 Max. Width【Note 2】	[mm]	7.7	9.7	36.5	44.5	7.7
端子螺钉尺寸 Terminal screw size		M3.5	M4	M10	M12	M3.5
紧固工具/ Tool 【Note 3】		⊙2 ⊖	⊙2 ⊖	○	○	⊙2 ⊖
紧固力矩 【Note 4】 Tightening torque	[N·m]	0.8~1	1.2~1.5	15~20	35~45	0.8~1
* 不接线的端子螺钉，也应全部紧固后使用。 * 压接端子如 Fig. 8 那样可以连接 2 个。 * 请确保相间的绝缘距离。 【Note 1】用 2 根单芯线进行接线的时候请使用相同尺寸的电线。 多股软线若无压接端子就不能使用。使用多股软线时必须选用压接端子。 使用压接端子时电线的剥皮尺寸请按照压接端子厂家的指示。 ● 多股线 0.75~5.5mm <sup>2</sup> (18~10AWG) 的场合：多股线单丝根数不大于 7 下 ● 多股软线：多于上述单丝根数多股线 【Note 2】使用端子最大宽度以下的压接端子，圆形压接端子的最大宽度请参照 Fig. 9。 【Note 3】⊙2: 菲利普 II 型 2 号                      ⊖: I 型螺丝刀 I-1×5.5×L 式 B ○: 套筒扳手 【Note 4】接线后，对连接电线进行整理时，若发生折弯现象，请再次确认紧固力矩。 * Tighten all terminal screws, even if not use. * When connecting two cable lugs, set them as shown in Fig. 8 * Be sure to maintain insulating clearance between poles. 【Note 1】When connecting two solid wires, use the same size wire. Finely stranded wire without end sleeve is not applicable. Use finely stranded wire with end sleeve. Follow the ferrule manufacturer's instructions to determine the stripping length of the wire when using the ferrule. ● Stranded wire (0.75 to 5.5 [mm <sup>2</sup> ]): Number of solids ≤ 7 ● Flexible stranded wire: Number of solids is more than the above-mentioned value. 【Note 2】Use round crimp terminal which width is the size specified at the maximum terminal width or less. (Fig. 9) 【Note 3】⊙2: Philips PH2 φ6    ⊖: Slotted-head screw I-1×5.5×L Type B ○: Socket wrench 【Note 4】After alignment or bending back of connected wires, check the tightening torque again.						

5. 接线

可以连接的电线尺寸及紧固力矩  
请参照 Table 3。

6. 使用方法

- (1) 在刻度范围内转动电流整定刻度盘，与▼标志对齐的电流值即为电动机全负载电流。  
(Fig. 3) 在刻度范围外使用的场合，不能满足性能。
- (2) 把脱扣棒向箭头方向压入可进行控制功能检查。(Fig. 3)
- (3) 在热过载继电器动作时，脱扣棒隐藏。(Fig. 4) 而且，如果复位，脱扣棒就会出现。(在自动复位的状态，即使动作，脱扣棒也不会隐藏。)
- (4) 在热过载继电器动作时，必须排除超载等因素之后，轻轻按复位按钮进行复位。(此时，当热过载继电器还未完全冷却时，复位无效。)( Fig. 3)
- (5) 从手动复位切换到自动复位的时候，请按照 Fig. 5 的顺序，让复位按钮保持着按下的状态。
- (6) 在自动复位状态，单相电路的场合，请注意热过载继电器自动复位时，电动机机会自动再启动。

7. 组合方法

CJR3-13(Q), CJR3-25(Q)的场合

- (1) 请拧松交流接触器负载侧的主端子螺钉。
- (2) 请将热过载继电器的挂角插入交流接触器的孔中。(Fig. 6)
- (3) 请将热过载继电器的接线板插入交流接触器的端子部。(Fig. 7)  
此时如 Fig. 7 那样，请确认接线板被插入主端子螺钉的右侧。同时，请确认接线板被插入垫片与端子板之间。
- (4) 请一边按住热继电器，一边用规定的力矩锁紧交流接触器所有相上被拧松的螺钉。

8. 维修、保养

8.1 运转前的检查

- (1) 请确认螺钉没有松动。
- (2) 请确认是否有电线碎屑、垫片等嵌在产品中。

8.2 定期检查

- (1) 在运转后立即进行初期检查，然后请进行定期检查。
- (2) 端子的紧固螺钉请定期重新紧固。

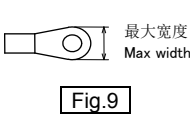
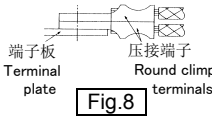
9. 短路保护装置 (SCPD)

请参照 Table 4。

- Type 1: 选择该型协调保护，短路后触头会熔焊或损坏。短路发生后必须迅速更换产品。
- Type 2: 选择该型协调保护，短路后产品可以继续使用。被组合好的交流接触器的主触头可能会有轻微的熔接，请进行检查。在触头熔接的场合，请用螺丝刀或类似工具将其分离。

Table 4

Type		GB14048.4, IEC60947-4-1			
		Type“1”		Type“2”	
		短路电流 Prospective Current “Iq” [kA]	CM1 断路器 额定电流 Breaker Max. Rating [A]	短路电流 Prospective Current “Iq” [kA]	熔断器 额定电流 Fuse Max. Rating [A]
Thermal overload relay (TOR)	Range [A]	Contactor	CJR3-13: 5	CJR3-25: 10	50
CJR3-13	0.1-0.15	CK3-09 CK3-12 CK3-18 CK3-25	CJR3-13: 5	CJR3-25: 10	50
	0.13-0.2				
	0.15-0.24				
	0.2-0.3				
	0.24-0.36				
	0.3-0.45				
	0.36-0.54				
	0.48-0.72				
	0.64-0.96				
	0.8-1.2				
	0.95-1.45				
	1.4-2.2				
	1.7-2.6				
	2.2-3.4				
	2.8-4.2				
	4-6				
	5-8				
	6-9				
	7-11				
	9-13				
CJR3-25	12-18				
	16-22				
	20-25				
	25-25				
CJR3-240 CJR3-240H	85-125	CK3-220	CJR3-13: 5	CJR3-25: 10	50
	110-160				
	125-185				
	180-240				
CJR3-450 CJR3-450H	110-160	CK3-300 CK3-400	CJR3-13: 5	CJR3-25: 10	50
	125-185				
	160-240				
	200-300				
	240-360				
	300-450				



5. Connection

Connectable wire size and proper tightening torque

See Table 3.

6. Usage

- (1) Turn the current setting dial within the scale so that the full load current of the motor is at the ▼ mark (Fig.3). Do not use beyond the scale, or the expected performance cannot be obtained.
- (2) By pushing the trip bar toward the arrow, checking of control circuit wiring can be done. (Fig. 3)
- (3) When the TOR operates, the trip bar disappears. If the TOR resets, the trip bar appears. (Even if the TOR operates, the trip bar dose not disappears at automatic reset mode.) (Fig.4)
- (4) ) If the TOR operates, first remove the cause of failure such as overload, and then lightly press the reset button to reset it. (In this case, the TOR cannot reset, if it is not cooled sufficiently.) (Fig.3)
- (5) To change over from manual reset mode to automatic reset mode, keep the reset button pushed by the procedure shown in Fig.5.
- (6) Note that the motor restarts automatically if the TOR is automatic reset mode.

7. Connection Method

For CJR3-13(Q), CJR3-25(Q)

- (1) Loosen load side screws of Contactor enough.
- (2) Insert the hook of TOR into the hole of Contactor. (Fig.6)
- (3) Put the terminal bars of TOR into the terminal of Contactor. (Fig.7) At that time check that the terminal bars of TOR are in right side of screw. (Fig.7) Simultaneously, check that the terminal bar of TOR has been inserted between terminal plate and the washer of the Contactor.
- (4) As holding TOR, tighten all screws of Contactor at proper torque.

8. Maintenance and inspection

8.1 Inspection before operation

- (1) Check that all screws are tightened.
- (2) Check that there is no foreign matter in the unit, such as wire chips or washers.

8.2 Periodic inspection

- (1) Perform initial inspection early, and perform subsequent inspections on a regular basis.
- (2) Check that all terminals are tightened with the proper torque periodically.

9. Short circuit protective device (SCPD)

See Table 4.

Type 1 is a selection that the contact welding or damage may result after short-circuited.

Exchange the product for a new product promptly.

Type 2 is a selection that the product can be used after short-circuited. The slight welding of the main contacts of combined contactor may result. Check if the contacts are welded. Separate the contacts by driver or its equivalent in case of welding.

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