



请注意此使用说明书必须送至最终用户和维修责任者手中保管。  
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-F05184813d-CE

### 交流接触器

### Magnetic Contactor

#### Type

CK3-09\*1 CK3-09\*1/G  
CK3-12\*1 CK3-12\*1/G  
CK3-18\*1 CK3-18\*1/G  
CK3-25\*1 CK3-25\*1/G

### 辅助继电器

### Auxiliary relay

#### Type

FSH-4, FSH-4/G

在上述型号后缀记号 \*1 表示的是附属型号。详细规格请参照产品样本。  
Suffixes listed below may be attached to the above types at portions marked with \*1. For details regarding specifications, see the catalog.

\*1: F

## 能效值

型号	吸持功率(V A)	能效等级
CK3-09~25	9.0	3
CK3-09F~25F		

## 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。
- 请不要在打开消弧盖的情况下使用，因为有引发触电、灼伤的可能。
- 产品废弃时需按产业废弃物处理。

## 1. 解开包装

- (1) 请确认产品型号、控制线圈电压及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) 导轨安装型可装于 35mm 安装轨上。(符合 IEC60715)  
安装轨平面布置见 Fig.2。装、卸方法见 Fig.3。
- (4) 有 4 个安装孔的场合，选取对角线上的两个孔进行安装。

## 4. 安装空间 (Fig.4,5)

- (1) 安装间隙需在 Table 1 尺寸以上。
- (2) 紧密安装时(连续通电和高频通断的产品视同紧密安装)，根据使用条件有可能因温度上升而造成线圈寿命降低。在此种条件下使用时，推荐使用时产品间的间距大于 20mm。
- (3) C 尺寸是在 IEC 标准及 GB 标准的接通、分断容量试验条件下的值。

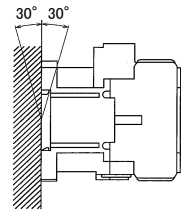


Fig.1

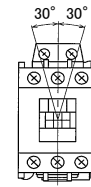


Fig.2

安装螺钉 M5  
M5 screw  
安装间距 : 400mm 以下  
Mounting pitch: 400mm or less

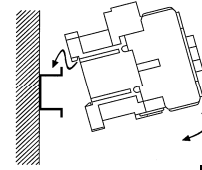


Fig.3

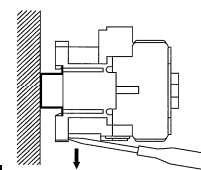


Fig.4

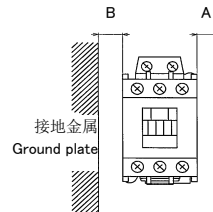


Fig.5

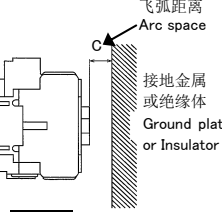
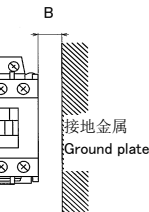


Table 1

A [mm]	B [mm]	C [mm]
0	10	0

## 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.
- Do not use the product with the arc chamber removed. Electric shock or burns may result.
- Treat the product as industrial waste when discarding.

## 1. Unpacking

- (1) Check that the type, coil voltage and contact arrangement 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) The rail mounting type can be attached on a standard 35mm IEC60715 mounting rail.  
See Fig.2 for mounting of the rail on the panel, see Fig.3 for attachment and removal of products.
- (4) If products are provided with four mounting holes, use any two mounting holes on a diagonal line.

## 4. Mounting space (Fig.4, Fig.5)

- (1) Mount the products at a distance of at least that shown in the Table 1.
- (2) When units must be installed very closely, the temperature may rise in some conditions (i.e. the power is continuously supplied for a long time or units that frequently do switching are installed very closely), and it may shorten the life of the coil. Thus, when installing units very closely, it is recommended to install the units 5 mm or more apart.
- (3) Dimension C is based on breaking test in close circuit of IEC and GB standard.

Table 2

Type	Magnetic contactor [ CK3- ]	Main terminals		Coil terminals and auxiliary terminals
		09F, 12F	09~25 18F, 25F	09□~25□
	Auxiliary relay		—	—
直接连接 / Direct connection				
单芯线 / 多股线 Solid / Stranded	【Note 1】 [mm <sup>2</sup> ]	1×(0.75~2.5) 2×(0.75~1.5) 2×(1.5~2.5)	1×(0.75~6) 2×(1~4) 2×(1.5~6)	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×(18~8) 2×(18~12) 2×(16~10)	1×(18~14) 2×(18~16) 2×(16~14)
多股软线 (有压接端子) Flexible stranded with end sleeve	【Note 1】 [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×(18~14) 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	0.75~2.5
	AWG	18~10	18~8	18~14
端子最大宽度 Max. Width	【Note 2】 [mm]	7.7	9.7	7.7
端子螺钉尺寸/ Terminal screw size		M3.5	M4	M3.5
紧固工具/ Tool		Φ2 Φ		
紧固力矩 Tightening torque	【Note 4】 [N·m]	0.8~1	1.2~1.5	0.8~1
<p>* 各端子分别能连接 2 个压接端子。(Fig. 6)</p> <p>* 不接线的端子螺钉, 也应全部紧固后使用。</p> <p>* 请确保相间绝缘距离。</p> <p>【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。</p> <p>多股软线若无压接端子就不能使用。</p> <p>使用多股软线时必须选用压接端子。</p> <p>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。</p> <ul style="list-style-type: none"><li>●多股线 0.75~6mm<sup>2</sup>(18~10AWG) 的场合: 多股线单丝根数不大于 7</li><li>●多股软线: 多于上述单丝根数多股线</li></ul> <p>【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.7</p> <p>【Note 3】Φ2: 菲利普 H 型 2 号      Φ: I 型螺丝刀 I-1×5.5×L 式 B</p> <p>【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。</p> <p>* When connecting two round crimp terminals, set them as shown in Fig.6.</p> <p>* Tighten all terminal screws, even if not use.</p> <p>* Be sure to maintain insulating clearance between poles.</p> <p>【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.</p> <ul style="list-style-type: none"><li>●Stranded wire (0.75 to 6 [mm<sup>2</sup>]): Number of solids ≦ 7</li><li>●Flexible stranded wire: Number of solids is more than the above-mentioned value.</li></ul> <p>【Note 2】Use round crimp terminal which width is the size specified at the maximum terminal width or less. (Fig.7)</p> <p>【Note 3】Φ2: Philips PH2 φ6      Φ: Slotted-head screw I-1×5.5×L Type B</p> <p>【Note 4】After alignment or bending back of connected wires, check the tightening torque again.</p>				

5. 接线

可以连接的电线尺寸及紧固力矩  
请参照 Table 2。

6. 使用方法

动作指示块能确认接触器的动作状态。(Fig.8)  
请不要触摸动作指示块, 因有引发触电、灼伤的可能。

7. 维修、保养

7.1 运转前的检查

- 请确认螺钉没有松动。
- 请确认是否有电线碎屑、垫片等嵌在产品中。
- 请确认控制回路电压在控制线圈电压的允许变动范围内。控制线圈电压的允许变动范围为线圈电压的 85~110%。/G 的场合, 周围温度在 40℃ 以下时为 80~110%。
- AC 操作时, 请确认电压波形是否无畸变, 频率为 50Hz 或 60Hz。
- 在使用可逆型产品的场合, 请务必安装机械联锁单元。

7.2 定期检查

- 运转后尽早进行初始检查, 之后请进行定期检查。
- 端子的紧固螺钉请定期重新紧固。
- 检查时, 即使触点表面有发黑、凹凸不平的现象, 因不影响触头的性能, 请不要进行研磨或者涂油。当触点接触面严重腐蚀露出基材时, 请更换产品。

7.3 消弧盖的安装、拆卸

- CK3-09, 12, 18, 25 (Fig. 9, 10)
- (1) 拆卸按照 (Fig. 9), 拆卸时使端子盖沿接线方向滑动, 拆卸后用一字形螺丝刀插入位于消弧盖侧面(对角的 2 处)的角孔中, 要从侧面笔直地插入然后把消弧盖拆下。(请注意如果用用力过猛, 有可能导致消弧盖破损。)
- (2) 安装按照 (Fig. 10), 请把四个角同时压入。请注意此时消弧盖不能浮于瓦形垫片上面。
- CK3-09F, 12F, 18F, 25F (Fig. 11, 10)
- (1) 拆卸按照 (Fig. 11), 拆卸时使端子盖沿接线方向滑动, 拆卸后用一字形螺丝刀插入位于消弧盖侧面(对角的 2 处)的导向孔中, 要从接线方向插入按照逆时针方向旋转然后把消弧盖拆下。(请注意如果用用力过猛, 有可能导致消弧盖破损。)
- (2) 安装按照 (Fig. 10), 请把四个角同时压入。请注意此时消弧盖不能浮于瓦形垫片上面。

8. 短路保护装置 (SCPD)

请参照 Table 3。  
Type 1: 选择该型协调保护, 短路后触头会焊熔或损坏。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。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。

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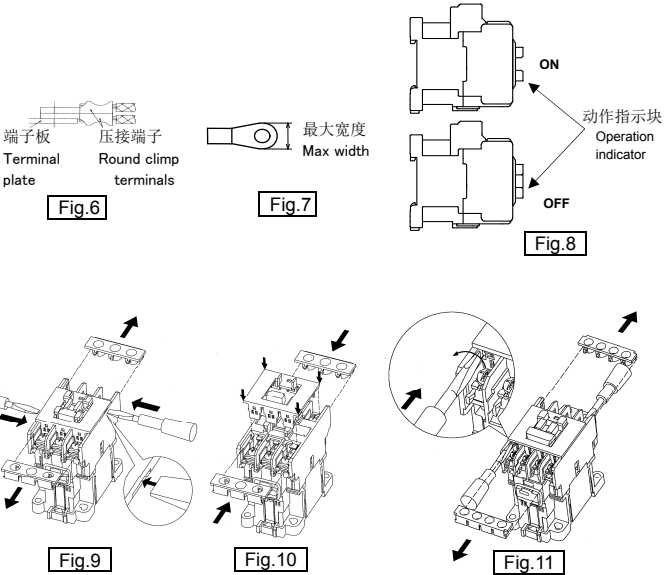


Table 3

Type		GB14048.4, IEC60947-4-1			
		Type“1”		Type“2”	
		短路电流 Prospective Current	CM1 断路器额定电流 Breaker Max Rating	短路电流 Prospective Current	RT16 熔断器额定电流 Fuse Max Rating
		“Iq”		“Iq”	
		[kA]	[A]	[kA]	[A]
CK3-09F	CK3-09F/G	5	32	50	32
CK3-12F	CK3-12F/G				40
CK3-09	CK3-09/G	10			
CK3-12	CK3-12/G	50			63
CK3-18F	CK3-18F/G				
CK3-25F	CK3-25F/G				
CK3-18	CK3-18/G				
CK3-25	CK3-25/G				

5. Connection

Connectable wire size and proper tightening torque  
See Table 2.

6. Usage

Operation indicator shows contactor operates or not. (Fig.8)  
Do not touch the operation indicator. Electric shock or burns may result.

7. Maintenance and inspection

7.1 Inspection before operation

- Check that all screws are tightened.
- Check that there is no foreign matter in the unit, such as wire chips or washers.
- Check that the operating circuit voltage is within the allowable voltage fluctuation range of the coil voltage. The allowable voltage fluctuation range is 85 to 110% of the coil voltage. It is 80 to 110% at the ambient temperature 40°C or less for/G type.
- In AC operation, check that operation power supply is sinusoidal waveform (50Hz or 60Hz) without distortion or cave-in etc.
- Be sure to apply an electric interlock when using a reversing type.

7.2 Periodic inspection

- Perform initial inspection early, and perform subsequent inspections on a regular basis.
- Check that all terminals are tightened with the proper torque periodically.
- Dark and rough contacts can still function. Do not refinish or grease them. If the contact facings are so badly eroded that the carrier material is visible, replace the product.

7.3 The removal and installation of arc chamber.

- CK3-09, 12, 18, 25 (Fig.9, 10)
- (1) Removal of arc chamber (Fig 9): After removing the terminal covers to slide in the direction of wiring, insert a flat-bladed screwdriver straightly from the direction of the side in the corner hole in the arc chamber side, so arc chamber will be removed. Be careful not to add superfluous power to the arc chamber, or the arc chamber is broken.
- (2) Installation of arc chamber (Fig. 10): Push the four corners of the arc chamber at the same time so as not to get on washer.
- CK3-09F, 12F, 18F, 25F (Fig.11, 10)
- (1) Removal of arc chamber (Fig 11): After removing the terminal covers to slide in the direction of wiring, insert a flat-bladed screwdriver from the direction of wiring in the guide hole and turns anti-clockwise, so arc chamber will be removed. Be careful not to add superfluous power to the arc chamber, or the arc chamber will be broken.
- (2) Installation of arc chamber (Fig. 10): Push the four corners of the arc chamber at the same time so as not to get on washer

8. Short circuit protective device (SCPD)

See Table 3.  
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 may result. Check if the contacts are welded. Separate the contacts by driver or its equivalent in case of welding.

CHANGSHU SWITCHGEAR MFG. CO., LTD  
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