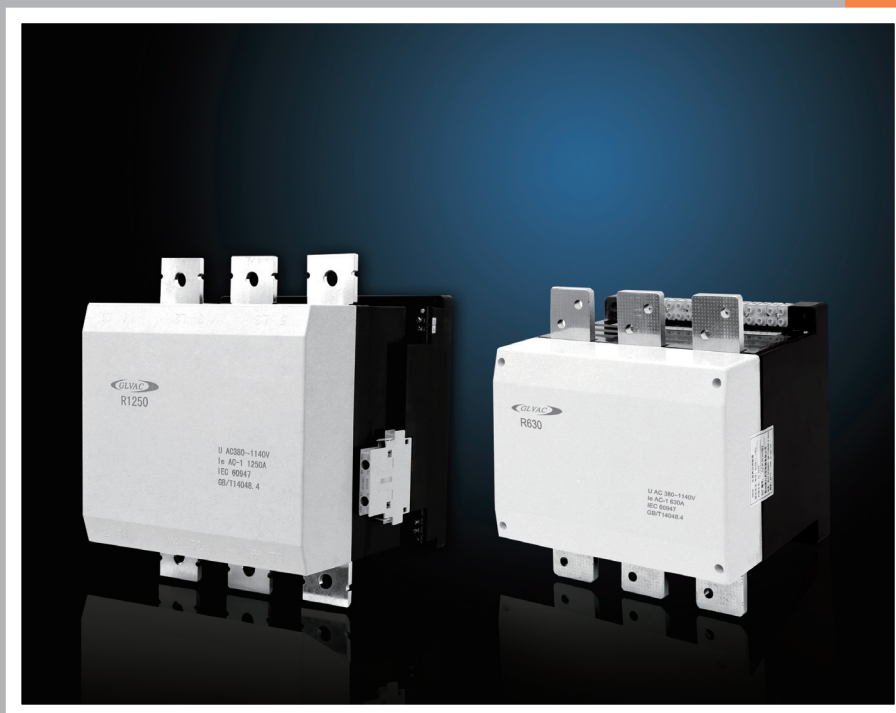




瑞普电气  
Ruipu Electric



## R 系列真空交流接触器 选型应用手册

R Serial 3-phase AC Vacuum Contactors  
Instruction

昆山瑞普电气有限公司  
Kunshan Ruipu Electric Co.,Ltd.

## 公司简介

昆山瑞普电气有限公司成立于 2004 年，是昆山国力真空电器有限公司的全资子公司，主要从事真空灭弧室、真空接触器、断路器、换相开关等真空电器产品的研制和生产。

昆山国力真空电器有限公司具有四十多年电真空元器件及电器研发、制造和销售历史的专业高科技股份制企业，主要产品包括高压继电器、真空电容器、真空灭弧室、直流接触器、交流接触器、断路器、换向开关、氢闸流管、磁控管和触发管等电真空元器件及电器，产品广泛应用于煤矿、航天（空）、广播通讯、新能源（包括汽车）、冶金、电力、医疗、半导体、环保、工业探伤、安检等领域和装置。在国内行业中，国力是产品市场占有率较大的企业之一。公司通过了 ISO9001:2008 质量体系认证；建有产品研发中心和院士工作站，多项产品被评为高新技术产品，并取得多项专利。

昆山瑞普电气占地 35 亩，员工 100 多人，其中研发技术人员超过 20 人，其中领域专家 3 人，高级工程师 5 人；公司采用先进的数字化设计研发手段，拥有完善的生产设备和智能化的检测设备，质量按照 GB/T19001-2008《质量管理体系》(ISO9001 : 2008, IDT) 和中国国家认证认可监督管理委员会发布的《强制性产品认证工厂质量保证能力要求》进行全方位的管理。

目前公司所生产的产品覆盖 380V、690V、1.14kV、3.3kV、7.2kV、12kV 全系列的接触器、断路器以及换相开关产品，并通过了 3C、UL、CE 以及 IEC、TUV 等认证机构权威认证。产品主要应用领域有煤矿行业，化工行业，铁路行业，冶金行业，风电行业以及变频领域等行业和领域。公司以创新研发，精益制造，超预期服务作为公司的核心竞争力，推行“科学管理、科技领先、优质高效、顾客满意”的质量方针，为行业提供高可靠的产品和优质的服务。

## About Us

Kunshan Ruipu Electric Co., Ltd., founded in 2004, is the subsidiary of Kunshan GuoLi Vacuum Electric Co., Ltd., mainly working on developing and manufacturing vacuum interrupters, vacuum contactors, circuit breakers, phase-changing switches, etc. vacuum electrical products.

GuoLi engages in R&D, manufacturing and selling the products of HV Relays, Vacuum Capacitors, Vacuum Interrupters, DC and AC Contactors, Circuit Breakers, Hydrogen Thyratrons, Magnetrons, Spark Gaps and other vacuum electrical apparatuses. These products are mainly used in mining, aviation, broadcast communication, new energy (include motor vehicle), metallurgy, power, medical, semiconductor, environmental protection, industry flaw detection, security inspection and other devices. GLVAC is one of the enterprises who take most shares in domestic market. GLVAC is a professional high-tech stockholding enterprise, has 40 years history of R&D, manufacture and sales in vacuum electrical apparatuses. We get ISO9001:2008, also establish R&D center and academician workstations, many products are awarded as hi-tech products and obtain patents.

The plant of Ruipu is 10000 sq.m., with more than 150 staff, including over 20 R & D staff, 4 domain experts and 6 senior engineers. Ruipu adopts advanced and digitized designing methods with perfect production facilities and intelligent inspection equipment, managing the quality according to GB/T19001-2008 "Quality Management System-requirement(ISO9001 : 2008 , IDT)" and the requirement of 3C certification issued by CNCA.

Currently the main products are 380V, 630V, 1.14kV, 3.3kV, 7.2kV, 12kV series contactors, breakers and phase-changing switches with 3C, UL, CE, IEC, TUV certification, which are mainly used in mine, chemical industry, railway, metallurgy, wind power industry and variable frequency fields. Ruipu focuses on innovation, precise manufacturing and unexpected service as the core competence; the quality policy of "Scientific Management, Superior Technology, High-quality and Efficiency, Customer Satisfaction", supplying the high reliability products and excellent service.



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## R 系列真空三相交流接触器

R Serial 3-phase AC Vacuum Contactors

R160

R250

R400

R500

R630

R800

R1250

R2500

## 产品概述

R 系列真空交流接触器是一种封闭式大功率真空三相交流接触器，该系列真空交流接触器包含型号有 R160、R250、R400、R500、R630、R800、R1250、R2500。

该系列接触器具有三组动合主触点，其中 R160、R250 型接触器具有三组桥式动合和一组桥式动断辅助触点，R400、R500、R630、R800 型接触器具有四组桥式动合和两组桥式动断辅助触点，R1250、R2500 型接触器具有两组桥式动合和两组桥式动断辅助触点，R1250 型接触器可根据用户的使用情况最多扩展为六组桥式动合和六组桥式动断辅助触点。

R 系列真空交流接触器主触点负载额定电流达 160A-2500A、工作电压 380V~1500V，辅助触点负载达 AC 12A、240V。



## 应用范围

R 系列真空三相交流接触器广泛应用于风力发电、新能源、电力系统、石油、化工、煤矿、冶金和电气化铁道等各个领域，用于接通与分断电路，尤其适用于控制三相交流电动机的频繁启动和停止，可与各种保护装置组成磁力起动器。该接触器采用电子控制线圈，无需加上浪涌抑制器。可与国外同类型产品互换使用。

## Intruduction

R series AC vacuum contactor is a enclosed type and high power 3-phase AC contactor, including models of R160, R250, R400, R500, R630 R800 and R1250.

This series of contactors have 3 groups of main make contacts; R160 and R250 have 3 groups of bridge type make auxiliary contacts and one group of bridge type break auxiliary contact; R400, R500, R630 and R800 have 4 groups of bridge type make auxiliary contacts and 2 groups of bridge type break auxiliary contacts; R1250 and R2500 has 2 groups of bridge type make auxiliary contacts and 2 groups of bridge type break auxiliary contact; and R1250 can be extended to 6 groups of bridge type make auxiliary contacts and 6 groups of bridge type break auxiliary contact according to customer's using status.

The rated current of R series AC vacuum contactor's main contact load is up to 160A-2500A, working voltage 380V-1500V, auxiliary contact load up to AC 12A, 240V.

## Range of Application

R series vacuum contactor's load rated current of main contact is upto 160A ~ 1250A, rated voltage 1.5kV, auxiliary contact load 10A, 240V. The series of contactor is widely applied in the field of wind power, new energy, electric power system, petroleum, chemical industry, coal mine, metallurgy and electrified railway, etc., used to making and breaking circuit, especially suitable for the frequent start and stop three-phase AC motors, and constituted to magnetic starter with various of protection devices. These contactors adopt electronic control coil, so no need of surge suppressor, which can replace the same kind products of foreign brand.

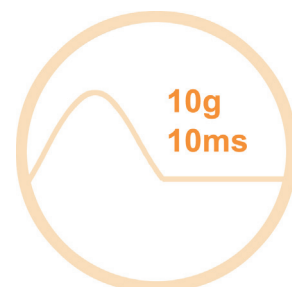
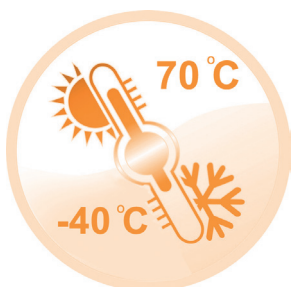
## 使用环境条件

- ▶ 使用环境温度 (标准) : -25°C ~ 45°C
- ▶ 45°C使用环境温度 : -40°C ~ 70°C
- ▶ 贮存温度 : -40°C ~ 80°C
- ▶ 海拔高度 : ≤ 3000 m
- ▶ 冲击 (半正弦波) : 10g、10ms

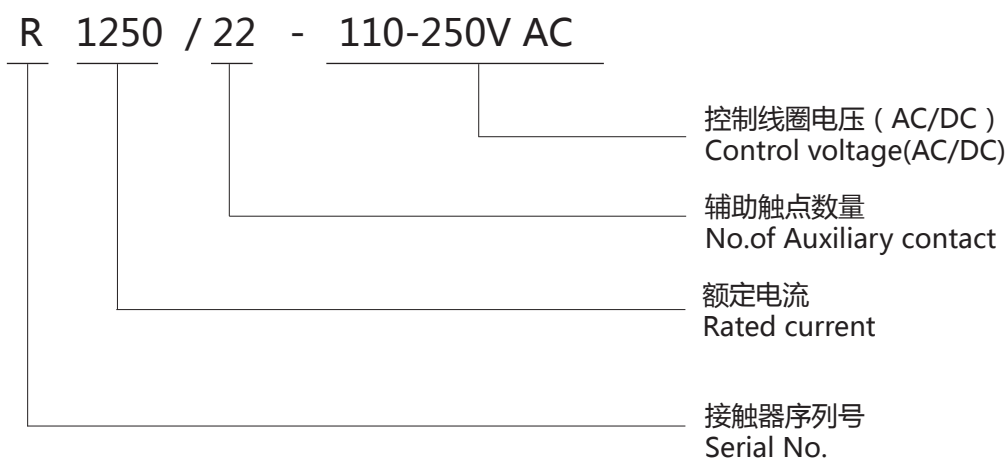
\* 如需特殊运行条件, 请咨询我们  
If you need special operating conditions, please consult us.

## Operating Environmental

- ▶ Ambient temperature (standard): -25°C ~ 45°C
- ▶ Ambient temperature : -40°C ~ 70°C
- ▶ Storage temperature : -40°C ~ 80°C
- ▶ Altitude : ≤ 3000 m
- ▶ Shock (half-sinusoidal) : 10g, 10ms.



## 产品型号及含义 / Type and Designation





## 技术特点

卓越的性能指标  
充分满足您的接触器的要求

- ▶ 真空灭弧技术
- ▶ 交直流通用
- ▶ 宽电压
- ▶ 电子式控制线圈
- ▶ 无论控制电源为交流 50/60Hz 或直流，均可直接接至控制线圈，无需考虑电力网络及控制电源的种类。

## Technology Characteristics

Excellent performance can fully satisfy  
your requirement to VC

- ▶ Vacuum arc technique
- ▶ Can be used both in AC and DC
- ▶ Wide rang voltage
- ▶ Electronic control coil
- ▶ No matter the power supply is AC/DC or 50/60Hz, they can be directly connected to the coil, without considering the power network and the type of control power supply.

## 领先的真空灭弧技术

### 真空灭弧室设计：

国力真空具有 40 多年的电真空器件研发与制造经验，累积生产超过 400 万只真空灭弧室，广泛应用于电力、新能源、煤碳、化工、石油等行业。

R 系列接触器用真空灭弧室采用最新的计算机专业建模软件进行模拟设计，设计更优化。采用完全一次封排工艺，质量更稳定可靠，同时最大限度地减少了生产过程中的污染。

R 系列专用真空灭弧室采用最优质波纹管与低截流值接触器专用电真空触头材料，机械寿命长达 100 万次。



R 系列专用真空灭弧室采用最优质波纹管与低截流值接触器专用电真空触头材料，机械寿命长达 100 万次。

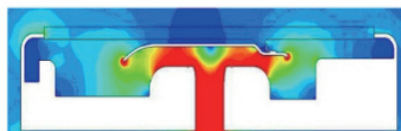
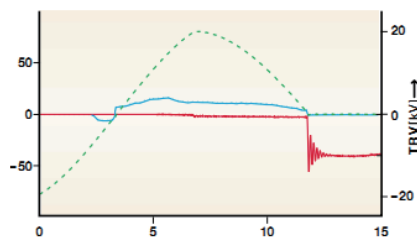
R series dedicated vacuum interrupters use high quality bellows and low chop contactor used special contact material, the mechanical life is upto 1 million times.

## Vacuum Arc Technology

### Vacuum interrupter design

GuoLi has more than 40 years R&D and manufacturing experience in vacuum electric components, cumulatively produced 4 million pieces vacuum interrupter, widely used in electricity, energy, coal, chemical industry, oil, etc.

R series vacuum contactor used vacuum interrupter was designed by the latest professional computer modeling software, adopts "one shut technology", the quality is more stable and reliable, at the same time, minimizing the pollution in the production process.





## 工作原理

真空接触器最重要的 3 个组成部分为真空灭弧室、电磁操动机构和控制电路组件。

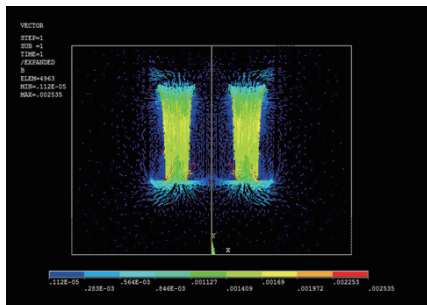
用户的控制系统发出指令，即给真空接触器线圈通电时，静铁芯产生电磁吸力，将动铁芯吸合，由于触头系统是与动铁芯联动的，因此动铁芯带动真空开关管触头同时运行，使触头闭合，从而接通电源。当线圈断电时，吸力消失，动铁芯联动部分依靠弹簧反作用力而分离，使触头断开，切断电源。

## Working Principle

The most important three parts for vacuum contactor are vacuum interrupter, electromagnetic operating mechanism and control circuit components.

User's control system issuing commands, vacuum contactor's coil will be energized, static iron core generated electromagnetic force, which will pick-up the moving iron core, also the contact will be driven to run at the same time, because it is linked with the moving iron core. And then contact closed, the power get through. When the coil is deenergized, electromagnetic force disappeared, the moving iron core linking part will be separated because of the spring reactive force, and then the contact disconnect, the power is off.

## 设计特点 / Design Features

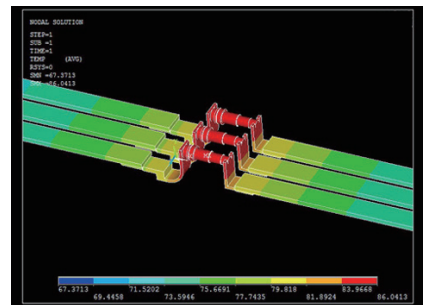


磁通矢量图分布

Magnetic flux vector distribution

通过分析得出铁心吸力并与反力进行分析，使接触器的吸力与反力达到最优，提高产品寿命。

By analyzing the attractive force and antforce of the iron core, making them optimal, and improving the life of products.



模拟温升分布情况

Simulate temperature rise distribution

通过有限元分析模拟接触器温升分布情况，为产品研发提供理论依据并对产品进行优化。使 R 系列真空三相交流接触器的性能更加可靠、安全，让客户使用放心。

Through finite element analysis simulating the temperature rise distribution of the contactor, provided theory basis for product development and optimized the product. Make R series three-phase AC vacuum contactor is more reliable in performance, safe to use for customers.

## 技术参数

- ▶ 主回路接触电阻 ( $\mu\Omega$ ) :  
初始值  $\leq 100$  ; 寿命试验后  $\leq 200$
- ▶ 绝缘电压 : 1500V
- ▶ 工作电压  $U_e$ : AC 380V~1140V

## Technical Specification

- ▶ Main circuit contact resistance ( $\mu\Omega$ ) :  
Initial value  $\leq 100$ ; after life test  $\leq 200$
- ▶ Insulation voltage: 1500V
- ▶ Rated voltage  $U_e$ : AC 380V~1140V

AC-1: 额定工作电流, 三相, 50/60Hz

AC-1: Rated current, 3-phase, 50/60Hz

环境温度 Ambient temp.	电流类型 Current type	产品型号及电流 P/N and current							
		R160	R250	R400	R500	R630	R800	R1250	R2500
40°C	I <sub>e</sub>	160A	250A	400A	500A	630A	800A	1250A	2500A
55°C		140A	220A	350A	440A	555A	700A	1100A	2210A
70°C		110A	180A	290A	340A	430A	580A	850A	2000A

AC-1: 约定自由空气发热电流, 三相,  $U_{max}$ .1140V-50/60Hz

AC-1: Conventional free air thermal current, 3-phase  $U_{max}$ .1140V-50/60Hz

环境温度 Ambient temp.	电流类型 Current type	产品型号及电流 P/N and current							
		R160	R250	R400	R500	R630	R800	R1250	R2500
40°C	I <sub>th</sub>	250A	350A	500A	700A	850A	1000A	1250A	2500A

## 技术参数 / Technical Specification

AC-3: 额定工作电流, 三相, 50/60Hz  
 AC-3: Rated current, 3-phase, 50/60Hz

工作电压 Working voltage	电流类型 Current type	产品型号及电流 P/N and current						
		R160	R250	R400	R500	R630	R800	R1250
220V-230V	Ie	120A	160A	265A	320A	410A	580A	820A
240V		120A	160A	265A	320A	410A	580A	820A
380V-400V		120A	160A	265A	320A	410A	580A	820A
415V		120A	160A	265A	300A	410A	580A	820A
440V		120A	160A	245A	300A	410A	580A	820A
500V		110A	160A	245A	300A	410A	580A	820A
660V-690V		90A	140A	230A	280A	410A	580A	820A
1140V		80A	110A	200A	260A	290A	370A	580A

电动机额定负载 (额定功率)  
 Motor rated load (rated power)

工作电压 Working voltage	功率单位 Unit	产品型号及电动机负载功率 P/N and motor loading power							
		R160	R250	R400	R500	R630	R800	R1250	R2500 (AC-1)
220V-230V	kW	30	50	90	100	120	160	260	1200
240V		30	50	90	100	120	160	285	-
380V-400V		60	80	150	180	210	315	450	2150
415V		65	80	150	180	230	355	500	-
440V		65	80	150	180	230	355	550	-
500V		65	95	190	220	280	400	600	2700
660-690V		80	110	210	250	320	500	750	3750
1140V		45	110	220	260	340	520	800	5400

## 技术参数 / Technical Specification

AC-4: 额定工作电流, 三相, 50/60Hz

AC-4: Rated current, 3-phase, 50/60Hz

工作电压 Working voltage	电流类型 Current type	产品型号及电流 P/N and current						
		R160	R250	R400	R500	R630	R800	R1250
220V-230V	Ie	96A	128A	212A	256A	328A	464A	656A
240V		96A	128A	212A	256A	328A	464A	656A
380V-400V		96A	128A	212A	256A	328A	464A	656A
415V		96A	128A	212A	240A	328A	464A	656A
440V		96A	128A	196A	240A	328A	464A	656A
500V		88A	128A	196A	240A	328A	464A	656A
660V-690V		72A	112A	184A	224A	328A	464A	656A
1140V		64A	88A	184A	208A	232A	296A	464A

电动机额定负载 (额定功率)

Motor rated load (rated power)

工作电压 Working voltage	功率单位 Unit	产品型号及电动机负载功率 P/N and motor loading power						
		R160	R250	R400	R500	R630	R800	R1250
220V-230V	kW	25	40	72	80	96	130	210
240V		25	40	72	80	96	300	285
380V-400V		50	65	120	145	168	250	230
415V		50	65	120	145	185	285	400
440V		50	65	120	145	185	285	440
500V		50	75	150	175	225	320	480
660-690V		65	90	170	200	255	400	600
1140V		35	90	175	210	270	415	840

## 技术参数 / Technical Specification

### 接通、分断电流能力

#### Making and breaking current capability

型号 P/N	额定 电流 ( A ) Rated current ( A )	额定接通 能力 ( A ) Rated making capability ( A )	额定分断 能力 ( A ) Rated breaking capability ( A )	极限分断能力 ( A ) Limited breaking capability ( A ) cosφ=0.45 ( cosφ=0.35 ) 440V ( 690V )	机械寿命 / 电气寿命 ( 万次 ) Mechanical life /electrical life (ten thousand times)	参考 重量 ( kg )
R160	160	1600	1280	960(800)	100/30	3.5
R250	250	2500	2000	1500(1200)	100/30	5.0
R400	400	4000	3200	2600(2400)	100/30	7.5
R500	500	5000	4000	3000(2500)	100/30	10.0
R630	630	6300	5040	4000(3500)	100/30	15.5
R800	800	8000	6400	6000(5000)	100/30	15.5
R1250	1250	12500	10000	7500(----)	100/30	17.0
R2500	2500	20000	15000	8400(----)	100/30	30.0

### 额定短时耐受电流 ( A ) ( 环境温度 40°C , 自由空气从冷态 )

#### Rated short time withstand current(A) (Ambient temp. 40°C , no forced cooling)

型号 P/N	R160	R250	R400	R500	R630	R800	R1250	R2500
时间 Time								
1s	1350	1900	3800	4200	4800	7200	10000	12000
10s	850	1300	2500	3250	4500	6500	8000	10000
30s	550	900	1600	2100	3200	4500	6000	7500
1min	380	700	1200	1500	2600	3500	4500	5500
15min	180	350	600	700	900	1300	1500	2800

### 短路保护 / Short circuit protection

对不带热过载继电器的接触器， 不含电机保护 $U_e \leq 500V_{a.c.}$ For contactors without thermal overload relay, no motor protection $U_e \leq 500V_{a.c.}$	R160	R250	R400	R500	R630	R800	R1250	R2500
	200A	315A	500A	550A	700A	1000A	1350A	2800A

### 极限电气操作频率：

AC-1        360 次 / 小时  
AC-3        300 次 / 小时  
AC-2、AC-4    60 次 / 小时

### Limited electrical operating frequency:

AC-1        360 times/h  
AC-3        300 times/h  
AC-2、AC-4    60 times/h

## 技术参数 / Technical Specification

额定控制回路电压、启动和保持的电流、功率，辅助触点容量

Rated control circuit voltage, start and holding current and power, auxiliary contact capacity.

型号 P/N	控制电压 Control voltage (V)	吸合 (瞬态) Pick up (transient)		保持 Holding		辅助开关 Auxiliary switch			
		电流 Current (A)	功率 Power (W)	电流 Current (A)	功率 Power (W)				
R160	36	4.3	154	0.5	17	三对常开，一对常闭 6 NO, 2 NC Ue:AC380V,Ie:0.8A Ue:DC220,Ie:0.1A			
	110	1.3	147	0.2	17				
	220	1.2	265	0.2	30				
	380	0.5	186	0.1	21				
R250	36	5.5	199	0.6	22		四对常开，二对常闭 8 NO, 4 NC Ue:AC380V,Ie:0.8A Ue:DC220,Ie:0.1A		
	220	1.2	265	0.2	30				
	380	0.6	227	0.1	26				
R400	36	9.5	341	1.1	38			四对常开，二对常闭 8 NO, 4 NC Ue:AC380V,Ie:0.8A Ue:DC220,Ie:0.1A	
	127	1.1	133	0.1	15				
	220	1.2	248	0.2	28				
R500	48	14.4	688	1.6	77				四对常开，二对常闭 8 NO, 4 NC Ue:AC380V,Ie:0.8A Ue:DC220,Ie:0.1A
	110	3.0	335	0.4	38				
	220	1.8	400	0.2	45				
R630	48	14.4	688	1.6	77	两对常开、两对常闭，可根据使用要求 扩展到六常开、六常闭 4 NO, 4 NC, can be extended to 6NO and 6NC according to users' requirement. Ue:AC380V,Ie:0.8A Ue:DC220,Ie:0.1A			
	110	3.0	335	0.4	38				
	220	4.73	600	0.5	117				
R800	220	4.73	600	0.5	117				
R1250	50/60Hz 110-250 DC : 110-350	6.5	650	0.3	5				
R2500	-	-	1900	-	16				

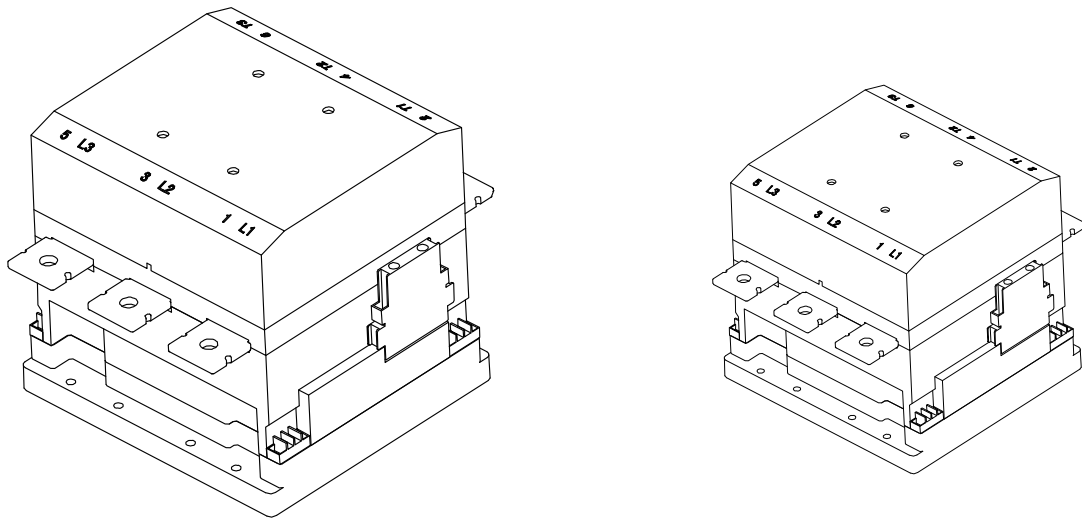
吸合电压范围 (环境温度不大于 70°C) : 0.7Uc(min) ~ 1.1 Uc(max)。

动作时间 (主触点) : 吸合时间 : 100ms, 释放时间 : 110 ms。

Pick-up voltage range (Ambient temperature ≤ 70°C) : 0.7Uc(min) ~ 1.1 Uc(max).

Operating time (main contact): pick-up time 100ms, release time 110ms.

## 安装特性 / Installation Characteristics

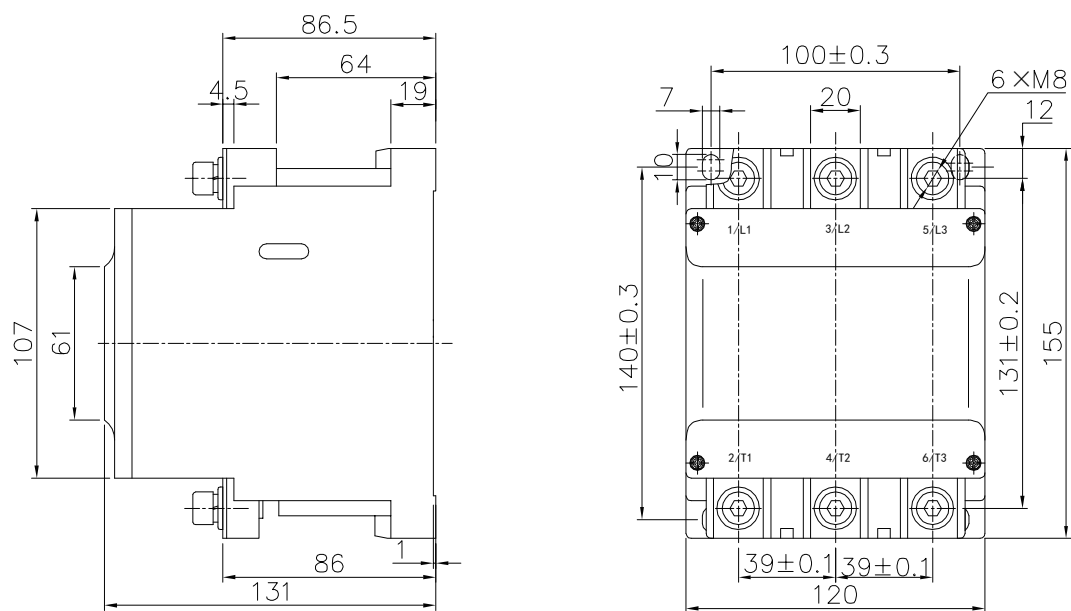


- 1 安装距离：接触器与接触器之间无安装距离；  
There is no mounting distance between contactors.
- 2 接触器安装螺钉（不提供）：4×M6、8×M6 或 4×M8；  
Mounting screw of contactor (not supply): 4×M6、8×M6 or 4×M8；
- 3 主导电排安装螺钉（不提供）：6×M8、6×M10 或 4×M12；  
Mounting screw of main bus bar (not supply) : 6×M8、6×M10 or 4×M12；
- 4 安装扭矩 Mounting torque:

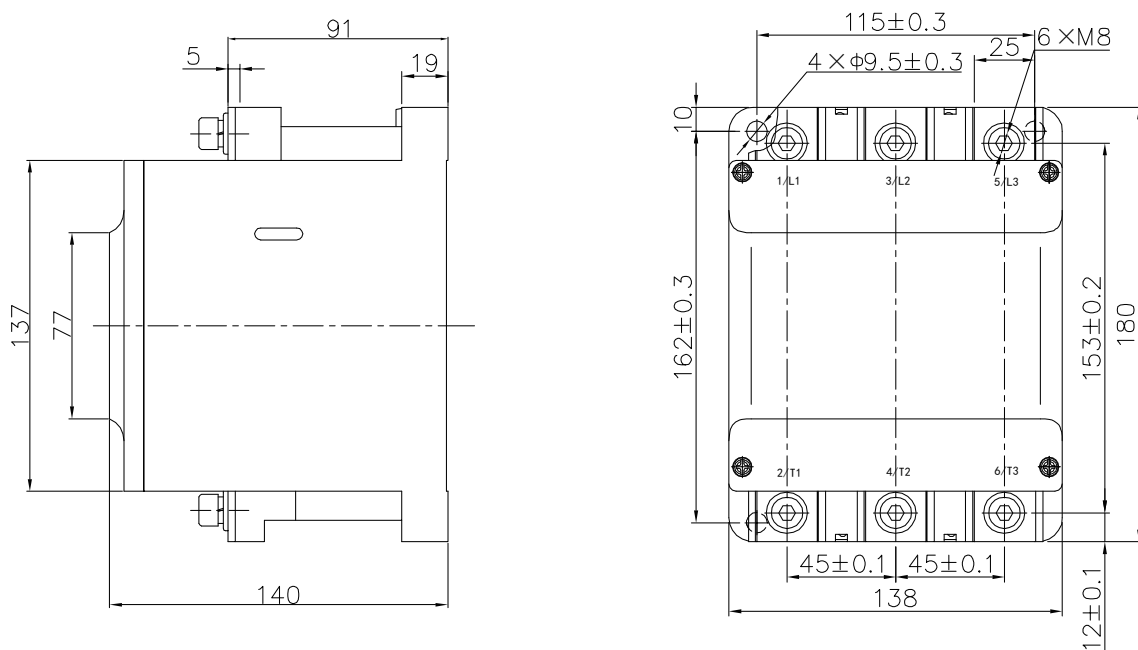
型号 P/N	主回路接线螺栓 Main circuit connection screw		接触器安装螺栓 Mounting screw of contactors	
	螺栓规格 Screw spec.	安装扭矩 Mounting torque ( N.m )	螺栓规格 Screw spec.	安装扭矩 Mounting torque ( N.m )
R160	M8	16±0.5	M6	7.2±0.3
R250	M8	16±0.5	M8	14.5±0.5
R400	M10	20±0.5	M8	14.5±0.5
R500	M10	20±0.5	M8	20±0.5
R630	M10	20±0.5	M8	20±0.5
R800	M8	20±0.5	M8	14.5±0.5
R1250	M12	35±0.5	M6	8±0.5
R2500	M12	35±0.5	M10	24±0.5

- 5 辅助开关安装螺钉为 M3, 其安装扭矩 ( 0.45~0.68 ) N.m ;  
Auxiliary switch mounting screw for M3, its mounting torque (0.45 ~ 0.68) Nm;

## 外形与安装尺寸图 / Outline and mounting dimension



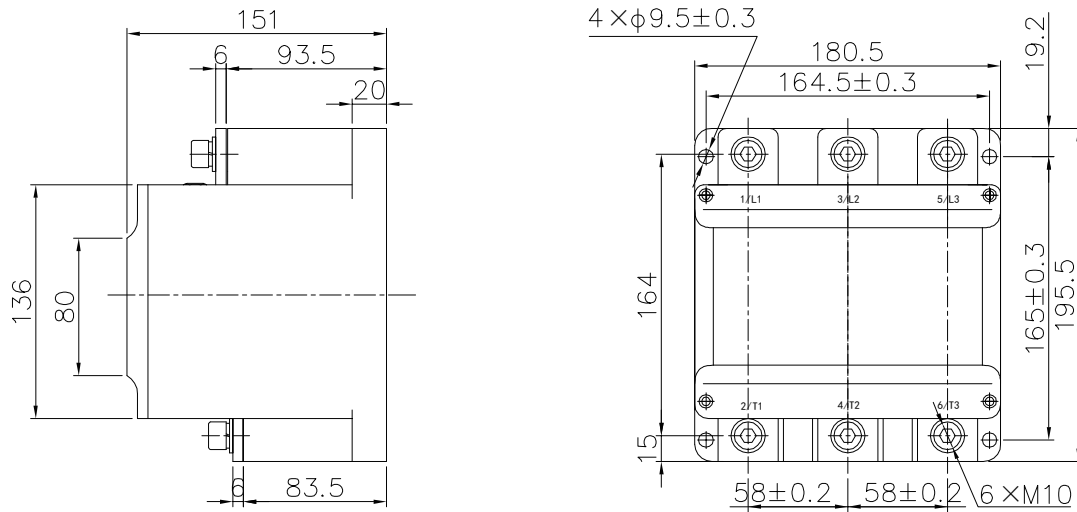
R160 接触器外形及安装尺寸  
R160 Outline and mounting dimension



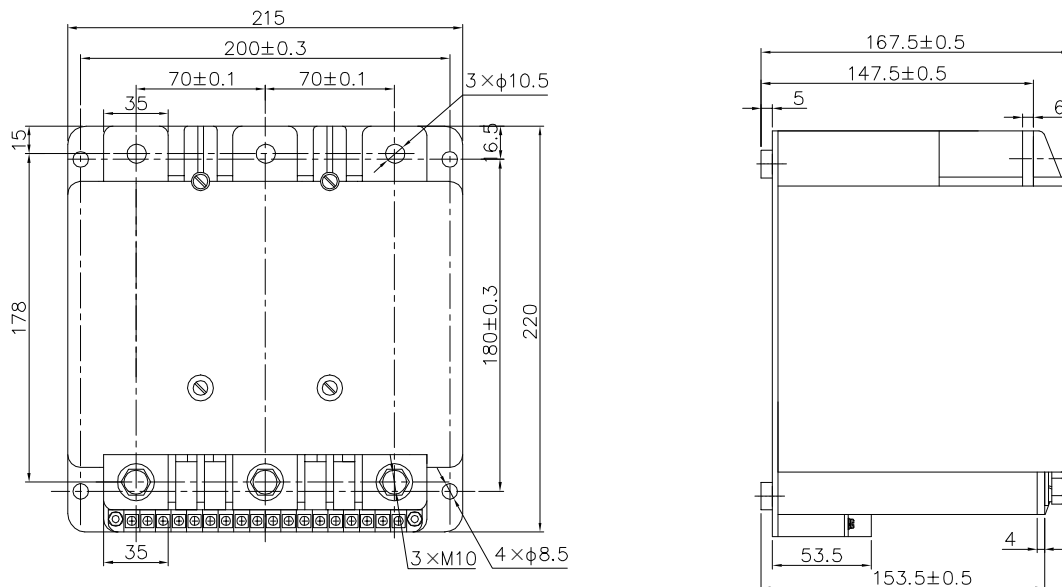
R250 接触器外形及安装尺寸  
R250 Outline and mounting dimension



## 外形与安装尺寸图 / Outline and mounting dimension

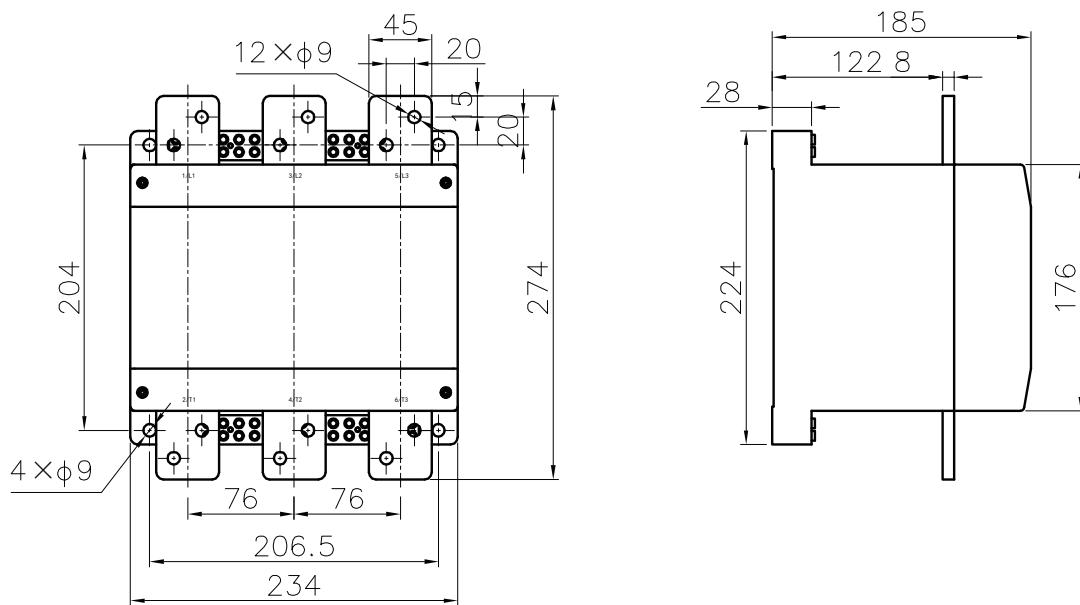


**R400 接触器外形及安装尺寸**  
R400 Outline and mounting dimension

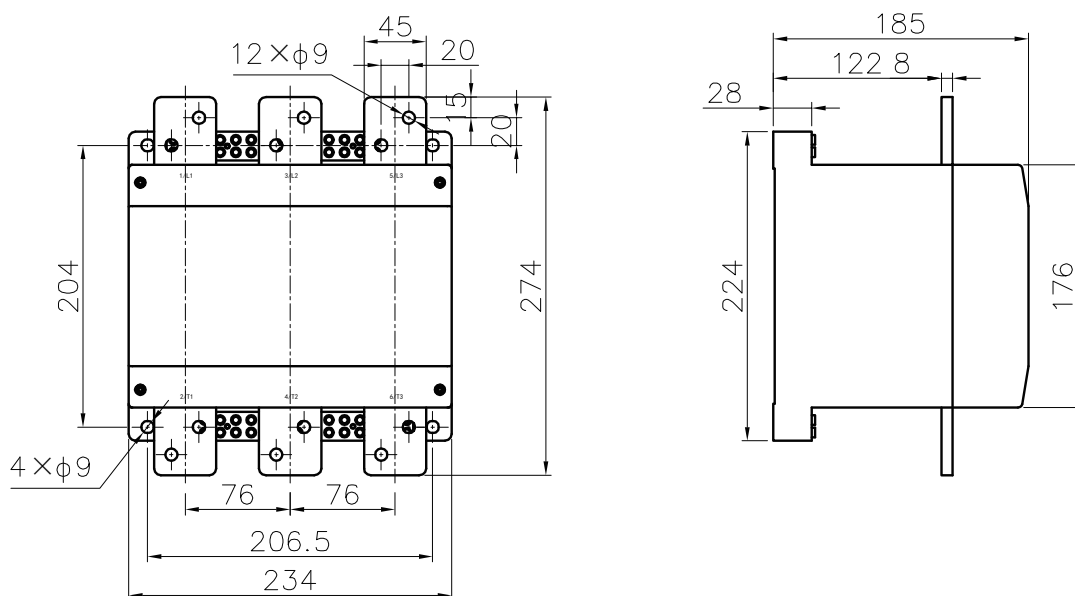


**R500 接触器外形及安装尺寸**  
R500 Outline and mounting dimension

外形与安装尺寸图 / Outline and mounting dimension

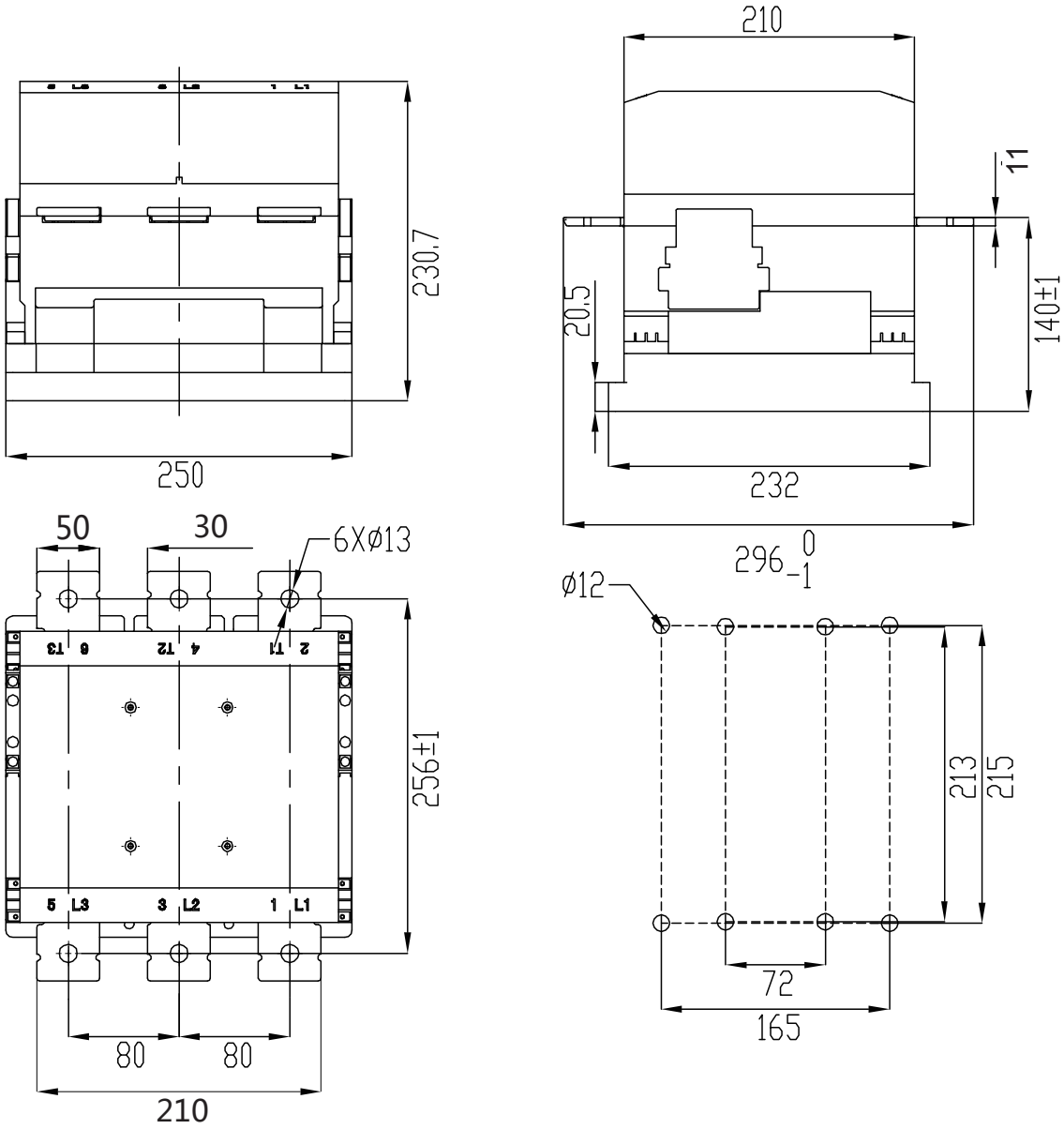


R630 接触器外形及安装尺寸  
R630 Outline and mounting dimension



R800 接触器外形及安装尺寸  
R800 Outline and mounting dimension

外形与安装尺寸图 / Outline and mounting dimension



R1250 接触器外形及安装尺寸  
R1250 Outline and mounting dimension

## 订货须知 \ Odering Information

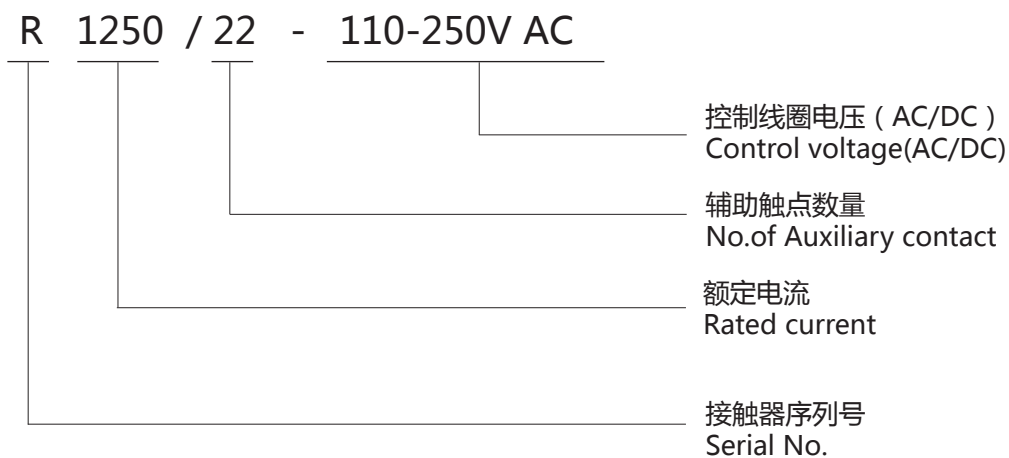
订购产品时必须说明以下内容：

Must specify the following items when ordering products:

1. 产品名称、型号、规格；  
Product name, P/N, specification;
2. 额定工作电压、额定工作电流；  
Rated voltage and rated current;
3. 额定控制电压；  
Rated control voltage;
4. 产品数量；  
Quantity;
5. 备件或其他特殊要求；  
Other special requirement;

附产品型号说明

Product model specification



备忘录 Memo Notes

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