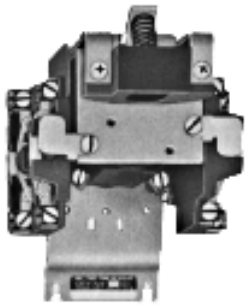


Basic 4-Contact Type KC Relay

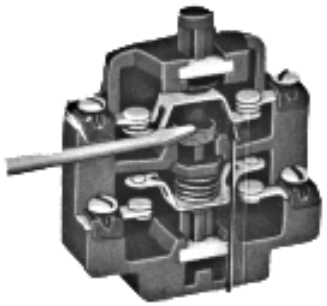
Product Description

The Type KC line of control relays complements the mill-type, front connected DC contactors (Bulletin 7400, Type K). Each device is completely assembled and ready for mounting on metal panels without additional insulators or special hardware.

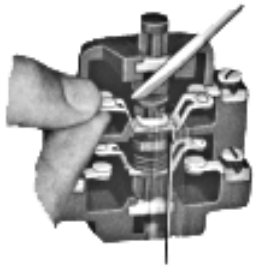
These dc mill type relays are designed for heavy industry service and are suitable for use on moving machinery. They are arranged for steel panel mounting with front connections. Unit circuit blocks have two captive mounting screws and are interchangeable between relays. They are easily convertible from normally open to normally closed or vice versa. Visible contacts are of double break design.

Contact Conversion

The fully visible contacts have NEMA ICS-2-125 heavy-duty interrupting ratings and are easily converted in the field using just a screwdriver as illustrated in **Figure 35**. Pressure terminals permit quick installation of up to two #12 wires, solid or stranded, per terminal. The molded operating coils provide maximum protection against moisture and mechanical abuse.



Slide Movable Contact Out



Flip Over and Insert Contact

Figure 35. Contact Conversion

Features

- Contacts are easily field convertible from NO to NC operation and vice versa.
- Melamine molded contact blocks feature wear-resistant nylon guides and stainless steel springs.
- Retained knife-edge design for reliable alignment.
- Contacts rated 15 amperes continuous.
- No adjustments to maintain — armature spring and air gap are fixed.
- Encapsulated coils feature pressure type saddle terminals.
- Basic relays are available with 2, 4, 6 or 8 contacts.
- All relays in the line have same mounting dimensions.

Standards and Certifications

- NEMA ICS3-212.20.21.
- NEMA ICS2-125.21.02.

Technical Data and Specifications

- Voltage: 600 Vdc maximum.
- Operation: Magnetic.
- Mounting: Steel panel.
- Electrical Ratings:
  - 15 amperes continuous
  - 2.2 amperes inductive breaking at 115 V
  - 1.1 amperes inductive breaking at 230 V

Accessories

Table 127. ac/dc Rectifier Kits ① — 50/60 Hertz

AC Supply Voltage	Relay Coil Required	Part Number	*
120	95 Vdc	**C81EB**	

① For operating relay from ac supply voltage.

Dimensions

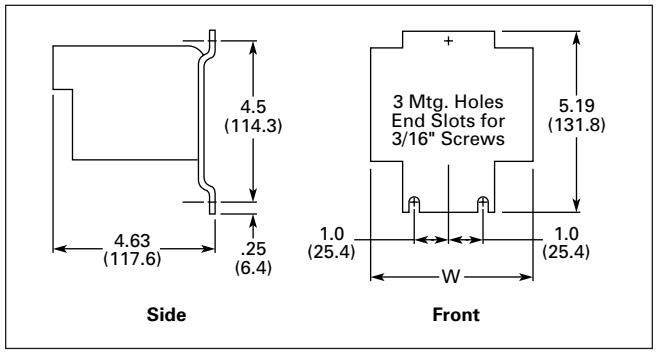


Figure 36. Approximate Dimensions in Inches (mm)

Table 128. Type KC

Part Number Series	"W" Approximate Dimensions in Inches (mm)
407251	2.88 (73.2)
407252	4.50 (114.3)
407253	7.50 (190.5)
407254	8.00 (203.2)

Product Selection

When Ordering Specify

■ Part Number of relay from **Table 129**.

Table 129. Type KC Heavy-Duty Mill Relays ②

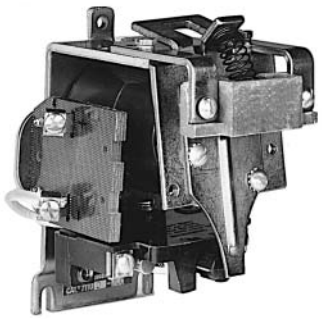
Number of Contacts	Contact Arrangement		Open Type Relay	
	NO	NC	Part Number	*
2	2	0	**A073-407251-0001**	
	1	1	**A073-407251-0002**	
	0	2	**A073-407251-0003**	
4	4	0	**A073-407252-0001**	
	3	1	**A073-407252-0002**	
	2	2	**A073-407252-0003**	
	1	3	**A073-407252-0004**	
	0	4	**A073-407252-0005**	
6 ③	6	0	**A073-407253-0001**	
	5	1	**A073-407253-0002**	
	4	2	**A073-407253-0003**	
	3	3	**A073-407253-0004**	
	2	4	**A073-407253-0005**	
8 ③	8	0	**A073-407254-0001**	
	7	1	**A073-407254-0002**	
	6	2	**A073-407254-0003**	
	5	3	**A073-407254-0004**	
	4	4	**A073-407254-0005**	

② Price includes assembled relay complete with operating coil rated 240 V. Consult factory for other voltage ratings.

③ The maximum number of NC contacts satisfactorily operated by the magnet is 4.

Discount Symbol **18CD-4**

* Consult Sales Office for Pricing



DC Plugging Relay

Product Description

Type KPR Plugging

The Type KPR Relay features a diode assembly mounted on the relay base and wired in series with the relay operating coil. The relay detects when a dc motor is being plugged. (Plugging is the sudden reversal of the polarity applied to a relay motor causing it to rapidly stop and reverse rotational direction.)

The coil circuit of the plugging relay is connected to parallel with the motor armature and monitors armature voltage. During normal dc motor operation, the diode is non-conducting and the relay is de-energized. During motor plugging, polarity reverses, causing the diode to conduct and operate the relay. The contacts of the relay cause motor circuit contactors and resistors to properly plug the motor.

Type KFL Field Loss

The Type KFL relays are no longer manufactured. The suggested replacement is the Type 901 single-pole normally open relay. Refer to **Page 74** for application and ordering information.

Standards and Certifications

- NEMA Standard 5-24-1960.
- NEMA Standard 5-29-1960.
- NEMA Standard 1-5-1977.

Technical Data and Specifications

- Voltage: Maximum 600 Vdc.
- Operation: Magnetic.
- Mounting:
  - Steel panel or insulated panel
- Contact Ratings:
  - 5 amperes at 240 V
  - 10 amperes at 120 V
- Duty: Continuous.

Dimensions

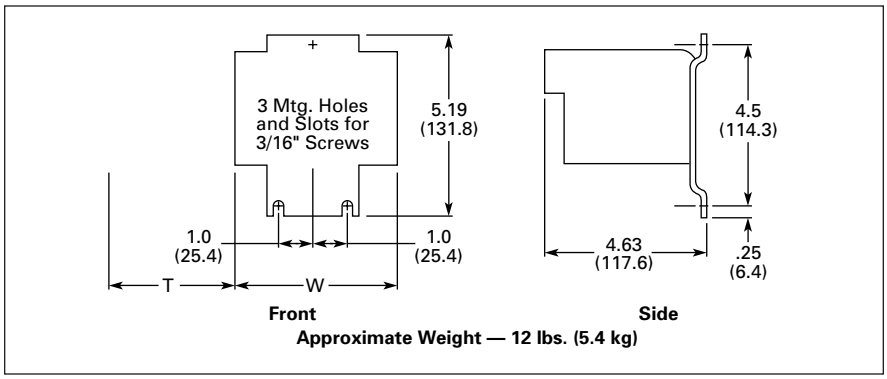


Figure 37. Approximate Dimensions in Inches (mm)

Table 130. Type KPR Plugging

Description	Approximate Dimensions in Inches (mm)	
	W	T
Type KPR-1 Relay	3.25 (82.6)	—
Type KPR-2 Relay	2.87 (72.9)	2.75 (69.9)

Product Selection

When Ordering Specify

- Complete Catalog or Part Number

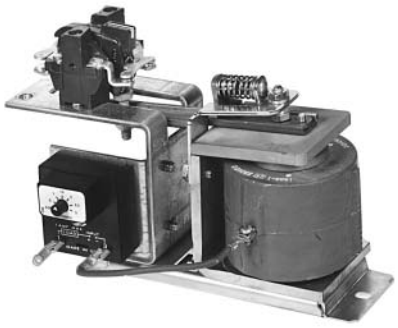
Table 131. Type KPR Plugging Relay (Open Type)

Motor Voltage	Relay Type	Catalog Number	*
240 Vdc 550 Vdc	KPR-1 KPR-1	**7311UD-240** **7311UD-550**	
240 Vdc 550 Vdc	KPR-2 ① KPR-2 ①	**7311UE-240** **7311UE-550**	

① KPR-2 relays are for 2-step or graduated plugging. Consult factory for application details.

Discount Symbol **18CD-4**

* Consult Sales Office for Pricing



Timing Relay Replacement

Product Description

The replacement Type 7313 heavy-duty DC relays provide adjustable ON-delay timing factory set to duplicate the time delay provided by the previous type CTH and VTH timers. These relays are supplied with equivalent pilot duty contact ratings and configuration.

Product Selection

Table 132. Challenger Bulletin 7313 VTH Timing Relay Data (Sorted by Old Part Number)

Contacts	Timing (Seconds)	Old Part Number	New Part Number	*
2NO	.25	A073-260931-1001	**7313ED1**	
2NO	.50	A073-260931-1002	**7313ED1**	
2NO	.75	A073-260931-1003	**7313ED1**	
2NO	1.0	A073-260931-1004	**7313ED1**	
2NO	2.0	A073-260931-1006	**7313ED1**	
2NO	3.0	A073-260931-1007	**7313ED1**	
2NO	4.0	A073-260931-1008	**7313ED2**	
2NO	6.0	A073-260931-1010	**7313ED2**	
2NO	10.0	A073-260931-1013	**7313ED2**	
1NO/1NC	.25	A073-260931-2001	**7313ED3**	
1NO/1NC	.50	A073-260931-2002	**7313ED3**	
1NO/1NC	.75	A073-260931-2003	**7313ED3**	
1NO/1NC	1.0	A073-260931-2004	**7313ED3**	
1NO/1NC	2.0	A073-260931-2006	**7313ED3**	
1NO/1NC	3.0	A073-260931-2007	**7313ED3**	
1NO/1NC	4.0	A073-260931-2008	**7313ED4**	
1NO/1NC	6.0	A073-260931-2010	**7313ED4**	
1NO/1NC	10.0	A073-260931-2013	**7313ED4**	
2NC	.25	A073-260931-3001	**7313ED5**	
2NC	.50	A073-260931-3002	**7313ED5**	
2NC	.75	A073-260931-3003	**7313ED5**	
2NC	1.0	A073-260931-3004	**7313ED5**	
2NC	2.0	A073-260931-3006	**7313ED5**	
2NC	3.0	A073-260931-3007	**7313ED5**	
2NC	4.0	A073-260931-3008	**7313ED6**	
2NC	6.0	A073-260931-3010	**7313ED6**	
2NC	10.0	A073-260931-3013	**7313ED6**	
4NO	.25	A073-260931-4001	**7313ED7**	
4NO	.50	A073-260931-4002	**7313ED7**	
4NO	.75	A073-260931-4003	**7313ED7**	
4NO	1.0	A073-260931-4004	**7313ED7**	
4NO	2.0	A073-260931-4006	**7313ED7**	
4NO	3.0	A073-260931-4007	**7313ED7**	
4NO	4.0	A073-260931-4008	**7313ED8**	
4NO	6.0	A073-260931-4010	**7313ED8**	
4NO	10.0	A073-260931-4013	**7313ED8**	
3NO/1NC	.25	A073-260931-5001	**7313ED9**	
3NO/1NC	.50	A073-260931-5002	**7313ED9**	
3NO/1NC	.75	A073-260931-5003	**7313ED9**	
3NO/1NC	1.0	A073-260931-5004	**7313ED9**	
3NO/1NC	2.0	A073-260931-5006	**7313ED9**	
3NO/1NC	3.0	A073-260931-5007	**7313ED9**	
3NO/1NC	4.0	A073-260931-5008	**7313ED10**	
3NO/1NC	6.0	A073-260931-5010	**7313ED10**	
3NO/1NC	10.0	A073-260931-5013	**7313ED10**	
2NO/2NC	.25	A073-260931-6001	**7313ED11**	
2NO/2NC	.50	A073-260931-6002	**7313ED11**	
2NO/2NC	.75	A073-260931-6003	**7313ED11**	
2NO/2NC	1.0	A073-260931-6004	**7313ED11**	
2NO/2NC	2.0	A073-260931-6006	**7313ED11**	
2NO/2NC	3.0	A073-260931-6007	**7313ED11**	
2NO/2NC	4.0	A073-260931-6008	**7313ED12**	
2NO/2NC	6.0	A073-260931-6010	**7313ED12**	
2NO/2NC	10.0	A073-260931-6013	**7313ED12**	

Discount Symbol **18CD-4**

* Consult Sales Office for Pricing

Table 133. Challenger Bulletin 7313 CTH Timing Relay Data (Sorted by Old Part Number)

Contacts	Timing (Seconds)	Old Part Number	New Part Number	*
2NO	.25	A073-260930-1001	**7313ED13**	
2NO	.50	A073-260930-1002	**7313ED13**	
2NO	.75	A073-260930-1003	**7313ED13**	
2NO	1.0	A073-260930-1004	**7313ED13**	
2NO	2.0	A073-260930-1006	**7313ED13**	
2NO	3.0	A073-260930-1007	**7313ED13**	
1NO/1NC	.25	A073-260930-2001	**7313ED14**	
1NO/1NC	.50	A073-260930-2002	**7313ED14**	
1NO/1NC	.75	A073-260930-2003	**7313ED14**	
1NO/1NC	1.0	A073-260930-2004	**7313ED14**	
1NO/1NC	2.0	A073-260930-2006	**7313ED14**	
1NO/1NC	3.0	A073-260930-2007	**7313ED14**	
2NO/2NC	.25	A073-260930-3001	**7313ED15**	
2NO/2NC	.50	A073-260930-3002	**7313ED15**	
2NO/2NC	.75	A073-260930-3003	**7313ED15**	
2NO/2NC	1.0	A073-260930-3004	**7313ED15**	
2NO/2NC	2.0	A073-260930-3006	**7313ED15**	
2NO/2NC	3.0	A073-260930-3007	**7313ED15**	

Discount Symbol **18CD-4**
* Consult Sales Office for Pricing