



## The HRC-Series: Hybrid Contactors



Hybrid Contactor 1(2) [HRC]



Hybrid Contactor 3 [HRC]

### General:

KS-HRC hybrid contactors are novel contactors with an extra long service life. They combine an electronic semiconductor control module with a mechanical switch, combining the advantages of low power consumption of a mechanical switch and the non-appearance of arcs in semiconductor relays using advanced, patented control technology. As a result, an arc-free disconnecting or connecting process for contactors and a longer service life can be provided compared to conventional contactors. It is an environmentally friendly, energy-saving, safe and explosion-proof high-tech electricity product.

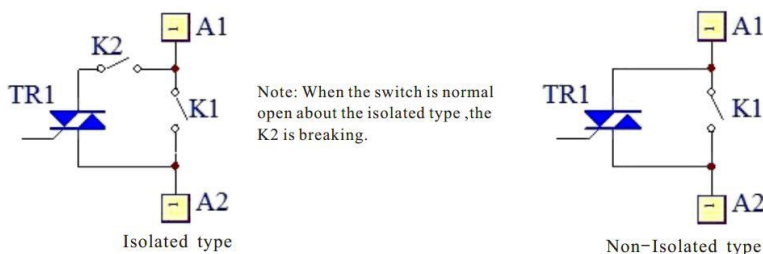
### Application:

This series is applicable to AC current systems in the low-voltage range of 50/60 Hz, a nominal operating voltage of up to 450 V and a nominal output current of a main circuit of 5 to 60A and are used for the remote-controlled disconnection or connection of the main circuit. They are suitable for demanding application scenarios such as switching control of lamps, electric heaters (heating wires), solenoid valves, electric motors and other loads.

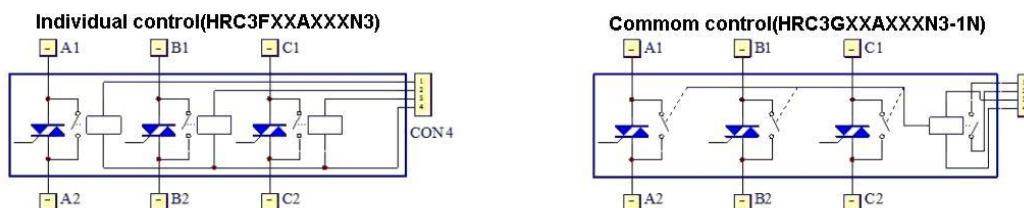
### Features:

1. A number of patented methods, such as the forced-release technique with capacitive coupling, are used so that only a theoretically minimal current flow time for switching arc suppression is required and advantages such as high reliability and short reaction time are achieved.
2. Electronic arc suppression, therefore good explosion protection, no burning of the electrical contacts, low contact resistance, low heating, ultimate service life.
3. These products are characterized by small construction volume, low energy consumption, low weight and noiselessness and can replace a contactor with a nominal current of up to 60 A

### HRC1(2) Interior Structure Type Schematic Diagram:



### HRC3 Common or Individual Control Schematic Diagram:



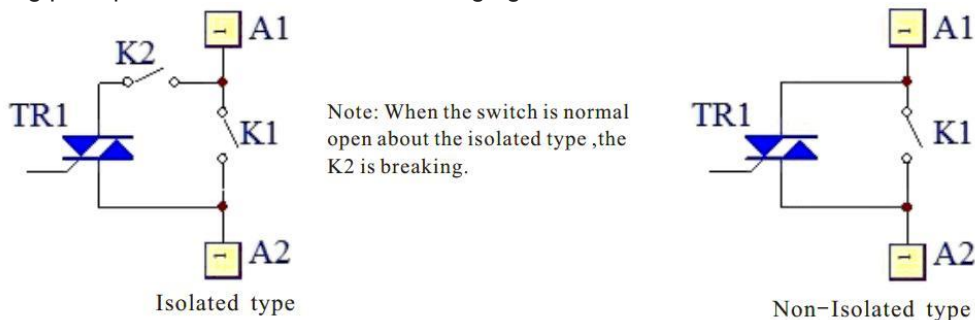
\* Differences between distributed control and common control: each main circuit is independent for distributed control, common control share a control input for each main circuit.

#### Operating Principle:

In the instant of main contact K1 on or off, a voltage difference appears on both ends of the main contactor K1, thyristor TR1 gets to work, through shunting the main contact K1, turn the no arc operation of contactor realized.

Through the voltage difference between both ends of the main contact K1 at the moment of the switching-on or switching-off process of the main contact K1, the thyristor TR1 is activated, whereby the arc-free switching-on or switching-off process of the contactor is made possible by the bypass of the main contact K1 through the thyristor TR1 .

The working principle can be seen in the following figures:

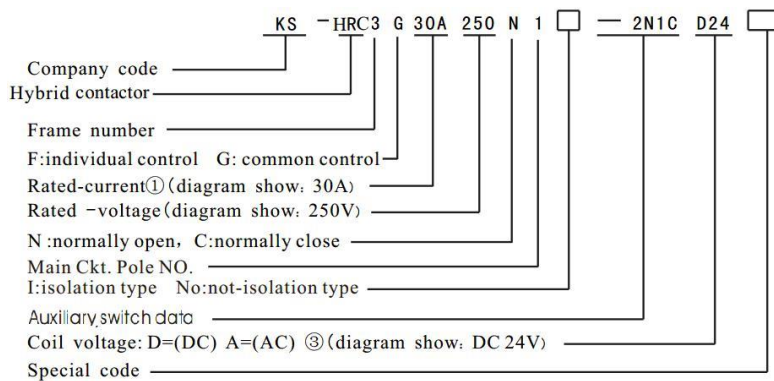
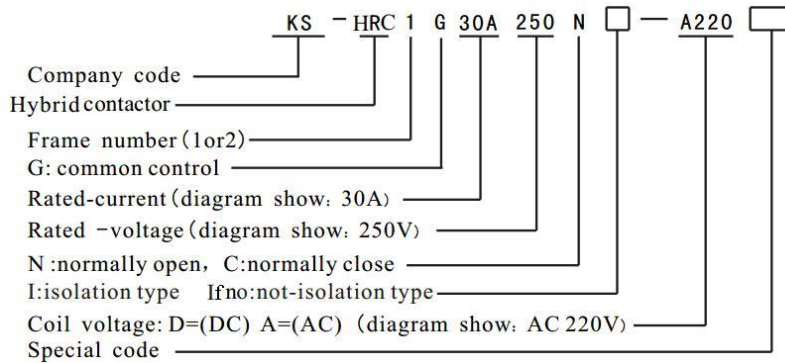


### Main Electrical Ratings Table:

Close Time	< 20ms (Non-Isolated) < 60ms (Isolated)	Opening Time	< 20ms (Non-Isolated) < 100ms (Isolated)
Gap Time from open to close	> 20ms (Non-Isolated) > 100ms (Isolated)	Maximum operating times per hour	1200 cycles
Main-Circuit electrical life	5-10 million times	Main-Circuit mechanical life	>10 million times
Main-Circuit Withstand voltage	2500V/AC	Environmental temperature	-20℃ ~ +45℃



## Product Code:



- ①
- ②

③ Main circuit current choosing: When the number of main circuit is 2~3 poles, the current of no isolated type

is 10~30A, the current of isolated type is 10A. When the number of main circuit is 1, the current of no isolated and isolated type can choose 10~30A.

④ HRC3 has maximum 4 output passageway: Main Arc-less circuits: 3 Auxiliary circuit: 1 If main-circuit used

only 1 or 2 circuits, the rest can be used as auxiliary contacts base on per customer's requirement.

Exp. 1: 2N1C required Model Number: HRC3G30A250VI-2N1CD24

Exp. 2: 1N1C Model Number: HRC3G30A250VI-1N1CD24

Auxiliary contacts ratings: N (Normal Open) 5A, 277VAC / 5A 28VDC C (Normal Close) 2A, 277VAC / 2A 28VDC;

③ Control coil voltage recommendation: 2-3 phase: DC 5V, 6V, 9V, 12V, 15V, 18V, 24V, 48V. (Recommend 24VDC) can be chosen. 1 phase: AC 12V, 15V, 18V, 24V, 48V, 70V, 110V (Recommend 110V), 120V, 220V (Recommend 220V) can be chosen.



**[KS-HRC1] Product - Selection Table 1:**

Parameters \ Items	Main circuit current	Main circuit voltage	Main circuit contact type	Main circuit pole No.	Isolated type	Aux. Switch	coil control voltage
Product type							
KS-HRC1G10A250NI-A220	10A	250V	N normal open	1	Yes	1N/1C (single blade double throw)	220V/AC options: (DC: 5V 6V 9V 12V 15V 18V 24V 48V AC: 12V 15V 18V 24V 48V 70V 110V 120V 220V Recommend: A220 A110
KS-HRC1G20A250NI-A220	20A						
KS-HRC1G30A250NI-A220	30A						
KS-HRC1G10A450NI-A220	10A	450V					
KS-HRC1G20A450NI-A220	20A						
KS-HRC1G30A450NI-A220	30A						
KS-HRC1G5A250CI-A220	5A	250V	C normal close				
KS-HRC1G10A250CI-A220	10A						
KS-HRC1G15A250CI-A220	15A						
KS-HRC1G5A450CI-A220	5A	450V					
KS-HRC1G10A450CI-A220	10A						
KS-HRC1G15A450CI-A220	15A						
KS-HRC1G10A250N-A220	10A	250V	N normal open	1	No	1N/1C (single blade double throw)	220V/AC options: (DC: 5V 6V 9V 12V 15V 18V 24V 48V AC: 12V 15V 18V 24V 48V 70V 110V 120V 220V Recommend: A220 A110
KS-HRC1G20A250N-A220	20A						
KS-HRC1G30A250N-A220	30A						
KS-HRC1G10A450N-A220	10A	450V					
KS-HRC1G20A450N-A220	20A						
KS-HRC1G30A450N-A220	30A						
KS-HRC1G5A250C-A220	5A	250V	C normal close				
KS-HRC1G10A250C-A220	10A						
KS-HRC1G15A250C-A220	15A						
KS-HRC1G5A450C-A220	5A	450V					
KS-HRC1G10A450C-A220	10A						
KS-HRC1G15A450C-A220	15A						

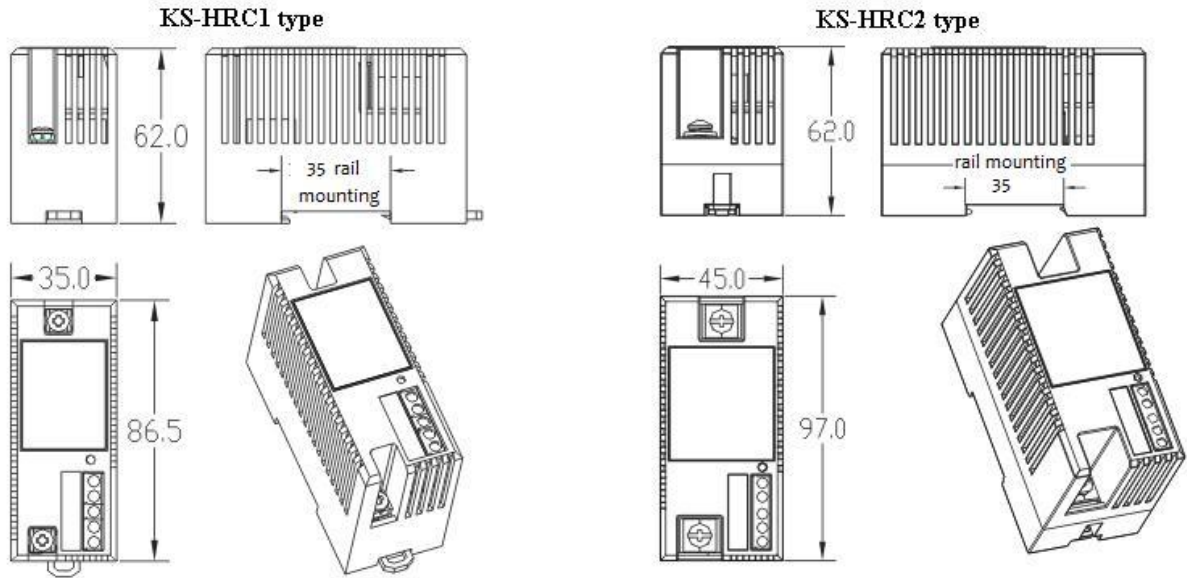
**[KS-HRC2] Product - Selection Table 2:**

Parameters \ Items	Main circuit current	Main circuit voltage	Main circuit contact type	Main circuit pole No.	Isolated type	Aux. Switch	coil control voltage
Product type							
KS-HRC2G40A250NI-A220	40A	250V	N normal open	1	Yes	1N/1C (single blade double throw)	220V/AC options: (DC: 5V 6V 9V 12V 15V 18V 24V 48V AC: 12V 15V 18V 24V 48V 70V 110V 120V 220V Recommend: A220 A110
KS-HRC2G50A250NI-A220	50A						
KS-HRC2G60A250NI-A220	60A						
KS-HRC2G40A450NI-A220	40A	450V					
KS-HRC2G50A450NI-A220	50A						
KS-HRC2G60A450NI-A220	60A						
KS-HRC2G20A250CI-A220	20A	250V	C normal close				
KS-HRC2G25A250CI-A220	25A						
KS-HRC2G30A250CI-A220	30A						
KS-HRC2G20A450CI-A220	20A	450V					
KS-HRC2G25A450CI-A220	25A						
KS-HRC2G30A450CI-A220	30A						
KS-HRC2G40A250N-A220	40A	250V	N normal open	1	No	1N/1C (single blade double throw)	220V/AC options: (DC: 5V 6V 9V 12V 15V 18V 24V 48V AC: 12V 15V 18V 24V 48V 70V 110V 120V 220V Recommend: A220 A110
KS-HRC2G50A250N-A220	50A						
KS-HRC2G60A250N-A220	60A						
KS-HRC2G40A450N-A220	40A	450V					
KS-HRC2G50A450N-A220	50A						
KS-HRC2G60A450N-A220	60A						
KS-HRC2G20A250C-A220	20A	250V	C normal close				
KS-HRC2G25A250C-A220	25A						
KS-HRC2G30A250C-A220	30A						
KS-HRC2G20A450C-A220	20A	450V					
KS-HRC2G25A450C-A220	25A						
KS-HRC2G30A450C-A220	30A						



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## HRC1(2) Installation Size (Unit:mm):





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**KS-HRC3] Product - Selection Table 1:**

Parameters	Items	Main circuit current	Main circuit voltage	Main circuit contact type	Main circuit pole No..	Isolated type	Aux. Switch	coil control voltage
Product type	KS-HRC3G10A250N11-2N1CD24	10A	250V	N normal open	1	Yes	2N/1C You can choose three kinds of the Aux. contacts	24V/DC Options: (DC: 5V 6V 9V 12V 15V 18V 24V 48V AC: 12V 15V 18 V 24V 48V 70V 110V 120V 220V Recommend: D24 A110 A220
	KS-HRC3G20A250N11-2N1CD24	20A						
	KS-HRC3G30A250N11-2N1CD24	30A						
	KS-HRC3G5A250C11-2N1CD24	5A	250V	C normal close				
	KS-HRC3G10A250C11-2N1CD24	10A						
	KS-HRC3G20A250C11-2N1CD24	20A						
Common control type pole No. 2								
Product type	KS-HRC3G10A250N2-1N1CD24	10A	250V	N normal open	2	No	1N/1C You can choose two kinds of the Aux. Contacts	24V/DC Options: (DC: 5V 6V 9V 12V 15V 18V 24V 48V Recommend: D24 A110 A220
	KS-HRC3G20A250N2-1N1CD24	20A						
	KS-HRC3G30A250N2-1N1CD24	30A						
	KS-HRC3G10A250N21-1N1CD24	10A	250V	C normal close				
	KS-HRC3G5A250C2-1N1CD24	5A						
	KS-HRC3G10A250C2-1N1CD24	10A						
	KS-HRC3G20A250C2-1N1CD24	20A	250V	C normal close				
	KS-HRC3G5A250C21-1N1CD24	5A						
	KS-HRC3G10A250C21-1N1CD24	10A						
	Common control type pole No. 3							
Product type	KS-HRC3G10A250N3-1ND24	10A	250V	N normal open	3	No	1N/1C	24V/DC Options: (DC: 5V 6V 9V 12V 15V 18V 24V 48V Recommend: D24 A110 A220
	KS-HRC3G20A250N3-1ND24	20A						
	KS-HRC3G30A250N3-1ND24	30A						
	KS-HRC3G10A250N31-1ND24	10A	250V	C normal close				
	KS-HRC3G5A250C3-1ND24	5A						
	KS-HRC3G10A250C3-1ND24	10A						
	KS-HRC3G20A250C3-1ND24	20A	250V	C normal close				
	KS-HRC3G5A250C31-1ND24	5A						
	KS-HRC3G10A250C31-1ND24	10A						
	Common control type pole No. 3							
Product type	KS-HRC3F10A250N3-D24	10A	250V	N normal open	3	No	NO	24V/DC Options: (DC: 5V 6V 9V 12V 15V 18V 24V 48V Recommend: D24 A110 A220
	KS-HRC3F20A250N3-D24	20A						
	KS-HRC3F30A250N3-D24	30A						
	KS-HRC3F5A250C3-D24	5A	250V	C normal close				
	KS-HRC3F10A250C3-D24	10A						
	KS-HRC3F20A250C3-D24	20A						

**HRC3 Installation Size (Unit:mm):**

