

# KS21

# THREE-PHASE MOTOR REVERSING MODULE



CE

### Features

- Photoelectric isolation
- LED status indicator
- Dielectric strength 4000V
- Built-in RC snubber circuit
- Built-in logic interlock circuit
- SCR output
- High EMC design(EFT 4000V/5KHZ)

### Input Parameters (Ta=25°C)

Control voltage range	(9.6 ~32)VDC
Must turn-on voltage	9.6VDC
Must turn-off voltage	3VDC
Max. input current	32mA
Max. reverse protection voltage	-32VDC

### Output Parameters (Ta=25°C)

Max.load current	48P25: 25A 48P50: 50A
Load voltage range	(48 ~ 530)VAC
Max.transient voltage	1200Vpk
Max.on-state voltage drop	2.1Vr.m.s.
Min.load current	100mA
Max.off-state leakage current	10mA
Min.off-state dv/dt	500V/μs
Turn-on delay time (integrated in module, see time sequence diagram t3)	80ms(Typ.)
Max. turn-off time (see time sequence diagram t1)	1/2cycle + 1ms
Frequency range	(47 ~ 63)Hz
Max.surge current (10ms)	48P25: 250 Apk 48P50: 500 Apk
Max.I <sup>2</sup> t for fusing(10ms)	48P25: 312A <sup>2</sup> s 48P50: 1250A <sup>2</sup> s

### Application Parameter(Ta = 25°C)

Module load current	25A	50A
Motor power	1.5kW	4kW
Heatsink part number	HF92B-150A	HF92B-150C

### INSTALLATION

- 1.Confirm the heat sink surface clean and smooth.
- 2.When mounting modules on the heat sink surface, first apply some heat conductive grease to the baseplate surface of the module. Press the module firmly onto the heat sink to ensure a good seal. Screw the module baseplate.
- 3.Wire the screw terminals and securely tighten the screws. Recommend screw mounting torque (0.98~1.37)N.m

### GENERAL (Ta=25°C)

Dielectric strength (input to output)	4000VAC, 50Hz/60Hz, 1min
Insulation resistance	1000MΩ (500VDC)
Max.capacitance (input to output)	10pF
Operating temperature	-30°C ~ 80°C
Storage temperature	-30°C ~ 100°C
Ambient humidity	45% ~ 85% RH
Termination	Screw
Mounting model	Panel mounting
Unit weight	Approx 335g
Operating status indication	Forward: green Reverse: red
EMC burst Immunity	Test according to GB/T17626.4 (IEC61000-4-4):Grade 4(4000V,5kHz)

### DESCRIPTION

KS21 motor reversing module is a special solid state relay which is only used for reversing control and bucking-connected brake control by three phase motor.It integrates logic interlock circuit and turn-on delay circuit, to avoid destruction from phase-to-phase short circuit caused by input controlling misoperation. As long as the switching time meet the specification, it can protect the power supply system, motor and module itself. In the meantime, the module integrates RC snubber and varistor protection circuit to improve its reliability.

The module offer (48~530)VAC output voltage,with output current at 25A and 50A. It include a double color LED to indicate the running status conveniently. The modules are widely used for industrial application include three phase motor control and electric actuator control, the typical application include blender control, steam valve control,flow control, wind door control, and so on.

## PRECAUTIONS

1. The product datasheet shows the non-repetitive peak value of the surge current. Therefore, in order to prevent the module from short circuit damaging in some accidental circumstances, the user should connect three semiconductor fuses in series to the module power side (such as Xi'an Kaiert's KS series product). At the same time, the  $I^2t$  value of the semiconductor fuse must be smaller than the module nominal value.
2. The module switch the force electricity according to the weak electricity, when using we should turn-on the three-phase power first and then DC control signal. If the turn on sequence is opposite, it would easily produce a high shock voltage in module output terminals, thereby damage the product.
3. When using the module, the minimum switching time offered by user should be larger than 30ms.
4. Please pay more attention to actual load current and ambient temperature for module selection. When the module is used for full load operation, we'd better install an adequate heatsink or take other effective cooling measures. When the ambient temperature is high, please refer to the curve of Max. Load Current vs Ambient Temperature for derating.
5. Tighten the module screw terminals properly. If the screws are loose, the module would be damaged by heat generated from connection. Also excessive screw mounting torque may damage module internal components. Recommended screw mounting torque as follows: output screw mounting torque range is  $(0.98\sim 1.37)N \cdot m$ , input screw mounting torque range is  $(0.3\sim 0.5)N \cdot m$ .
6. It's recommended to use the matched heatsink by Jinxinrong. If the user needs to use home-made heatsink, it's needed to ensure that the module base temperature does not exceed  $85^{\circ}C$ .
7. Since the module internal electronic components are assembled to a whole body by filling epoxy resin, excessive baseplate mounting torque may damage the internal components. Therefore, we recommend using  $(0.98 \sim 1.37)N \cdot m$  torque to fix the module.
8. Please do not use the module beyond the descriptions in the datasheet. If it is a must to use it beyond descriptions, please contact Jinxinrong for more technical support.

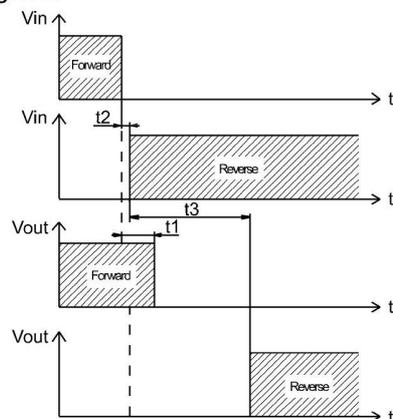
## ORDERING INFORMATION

Type	KS21 / D- 48 P 25 -Y L 2 (XXX)
Control voltage	D: (12~32)VDC
Load voltage	48: 480VAC
Switching type	P: Random turn on
Load current	25: 25A 50: 50A
Overvoltage protection	Y: With Varistor protection
LED indicator	L: With LED
Control Mode	2: Three phase two control type
Customer special code	

## TIME SEQUENCE DIAGRAM, OUTLINE DIMENSIONS, WIRING DIAGRAM

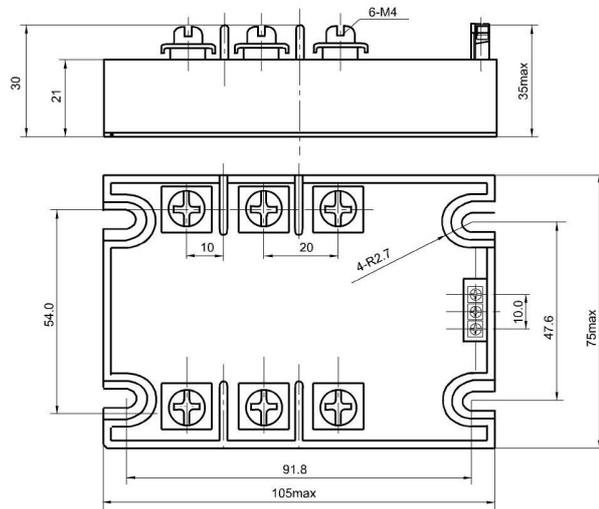
Unit:mm

### Time Sequence Diagram

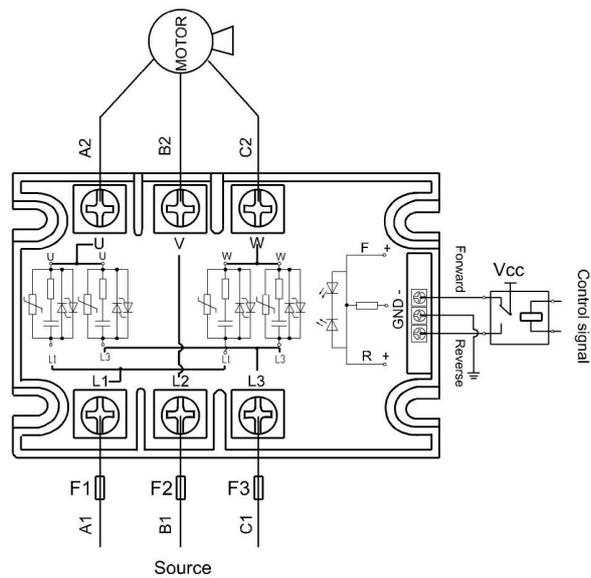


Notes:  
 $t_1$ : turn-off time  
 $t_2$ : switching time  
 $t_3$ : Turn-on delay time

Outline Dimension

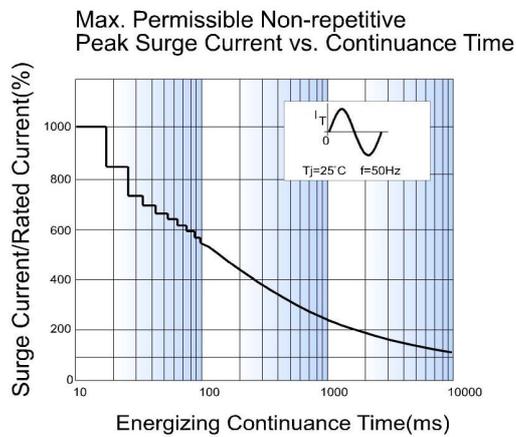
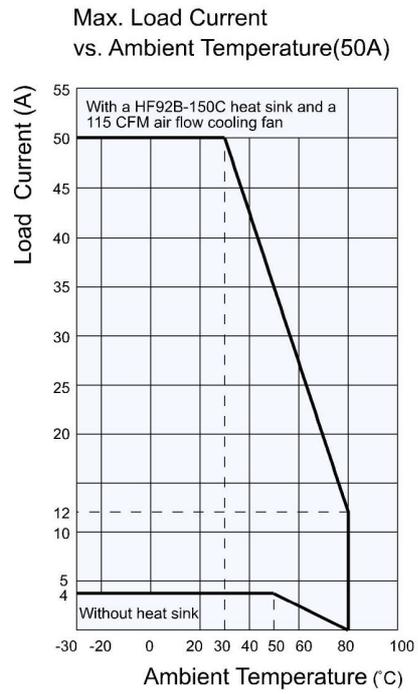
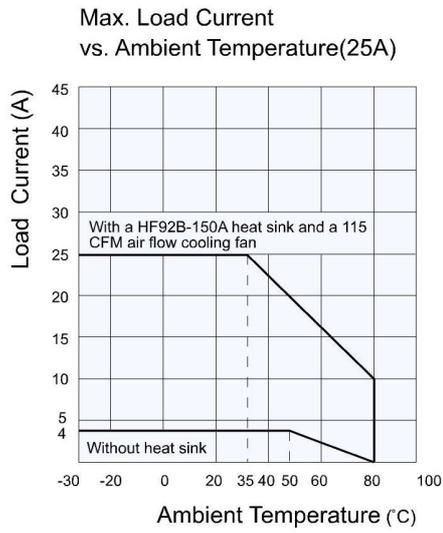


Wiring Diagram



Notes: F1,F2,F3 should be semiconductor fuses

## CHARACTERISTIC CURVES



### Disclaimer:

This datasheet is for the customers' reference. All the specifications are subject to change without notice. Jinxinrong could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Jinxinrong for the technical service. However, it is the user's responsibility to determine which product should be used only.

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