Panel Mount

# KIS70

## Solid State Relay

CE


## DESCRIPTION

KIS70, the single-phase error diagnosis module, is the special solid state relay for single-phase control. The module offers 4~32VDC input voltage option and SCR output with high dv/dt capability, and it provides output current ratings from 40A to 80A and output voltage range 150~530VAC with photoelectric isolation between input and output. Meanwhile the module is equipped with the built-in error diagnosis circuit and an LED for indicating the operation status and the over-temperature protection function.

## FEATURES

- Photoelectric isolation
- Built-in RC snubber circuit
- LED status indicator
- Built-in error diagnosis function
- Dielectric strength 2500V

## INSTALLATION

1. Please make sure that the heatsink surface is clean and smooth.
2. Please Coat the module metal base with some thermal grease or a thermal pad, and firmly press the module against the heatsink to ensure the full adherence, and then screw the module to the heatsink.
3. Please wire the screw terminals and tighten the screws properly.

## PRECAUTIONS

1. If the load connected to the module will produce high surge current, please assure that the module is able to resist the surge current value.
2. The surge current value shown on this datasheet is the non-repetitive peak value of the surge current of the module. Normally 1/2 of the non-repetitive peak value of the surge current is considered as standard value. If the actual surge current flowing through the module exceeds the standard value, a semiconductor fuse is required to connect to the output terminal in series in order to prevent any damage caused to the module. Meanwhile, the $I^2t$ value of the semiconductor fuse must be smaller than the nominal maximum $I^2t$ value of the module.

## PRECAUTIONS

3. Please ensure that the module can withstand the transient voltage in case inductive loads may generate the high shock voltage.

4. The transient voltage value shown on this datasheet is the non-repetitive peak value of the transient voltage. If the transient voltage applied to the output terminal of the module exceeds the nominal value, a varistor is required to connect to the output terminal in parallel in order to prevent any damage caused to the module. And the recommended varistor voltage is 750~1000V.

5. Please pay special attention to the actual load current and the ambient temperature when doing the type selection. And the module requires proper heat sinking for heat dissipation in full load. When the ambient temperature is high, the load current must be derated. Please refer to the curve of Max. Load Current vs. Ambient Temperature for derating.

6. Tighten the module screw terminals properly. If the screws are loose, the module would be damaged by heat generated from connection. Please refer to the recommended screw mounting torque as follows: the output screw mounting torque range is 0.98~1.37 N·m, and the input screw mounting torque is 0.2N·m. Excessive screw mounting torque may damage the module's internal components.

7. Please do not use the module exceeding the limitation which is specified on this datasheet.

## SELECTION GUIDE

| KIS70 / | D- | 48 | Z | 10- | Y | F | (XXX) |
|---|---|---|---|---|---|---|---|
| TYPE | Control voltage | Load voltage | Switching mode | Load current | Overvoltage protection | Error feedback | Customer special code |
| | D: 4~32VDC | 48: 480VAC | P: Random<br>Z: Zero-cross | 40: 40A<br>50: 50A<br>60: 60A<br>70: 70A<br>80: 80A | Y: Included<br>Nil: Not included | F: Included | |

## INPUT SPECIFICATIONS (Ta = 25°C)

| | | |
|---|---|---|
| Input voltage range | | 4 ~32VDC |
| Must turn-on voltage | | 4VDC |
| Must turn-off voltage | | 1VDC |
| Max. input current | | 25mA |
| Reverse protection voltage | | -32VDC |

## OUTPUT SPECIFICATIONS (Ta = 25°C)

| | | |
|---|---|---|
| Load current | | D-48□40: 40A |
| | | D-48□50: 50A |
| | | D-48□60: 60A |
| | | D-48□70: 70A |
| | | D-48□80: 80A |

## OUTPUT SPECIFICATIONS (Ta = 25°C)

| | | |
|---|---|---|
| Load voltage range | | D-48: 150 ~ 530VAC |
| Max. transient voltage | | 1200Vpk |
| Max. on-state voltage drop | | 1.7Vr.m.s. |
| Min. load current | | 100mA |
| Max. off-state leakage current | | 10mA |
| Min. off-state dv/dt | | D-48: 500V/μs |
| Operating frequency range | | 47 ~ 63Hz |
| Max. turn-on time | Zero-cross | 1/2 Cycle + 1ms |
| Max. turn-off time | | 1/2 Cycle + 1ms |
| Max. surge current (10ms) | | D-48□40: 400Apk |
| | | D-48□50: 500Apk |
| | | D-48□60: 600Apk |
| | | D-48□70: 700Apk |
| | | D-48□80: 800Apk |
| Max. $I^2t$ (10ms) | | D-48□40: 800$A^2s$ |
| | | D-48□50: 1250$A^2s$ |
| | | D-48□60: 1800$A^2s$ |
| | | D-48□70: 2450$A^2s$ |
| | | D-48□80: 3200$A^2s$ |

## GENERAL SPECIFICATIONS (Ta = 25°C)

| | | |
|---|---|---|
| Dielectric strength | Input-Output | 4000VAC, 50Hz/60Hz, 1min |
| | Input/Output/Error-Base | 2500VAC, 50Hz/60Hz, 1min |
| | Input/Output-Error | 2500VAC, 50Hz/60Hz, 1min |
| Insulation resistance | | 1000MΩ (500VDC) |
| Max. capacitance (input/output) | | 10pF |
| Operating temperature | | -30 ~ 80℃ |
| Storage temperature | | -30 ~ 100℃ |
| Ambient humidity | | 45% ~ 85% RH |
| Termination | | Screw |
| Installation method | | Panel mount |
| Unit weight | | Approx. 95g |
| EMC burst immunity | | Input: Red |
| | | Error: Green |

## STATUS OUTPUT FEATURES (Ta = 25°C)

| | | |
|---|---|---|
| Output voltage range | | 1 ~ 32VDC |
| Output current range | | 0 ~ 0.1A |
| Error output delay | | 120ms typ. |
| Error turn-off delay | | 20ms typ. |

## OPERATING CHARACTERISTICS (Ta = 25°C)

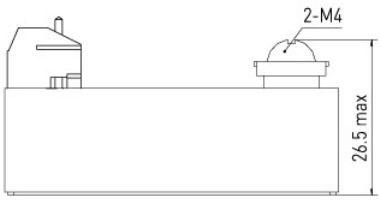
| Number | Control signal | LED indication of input port | Load Power | LOAD STATUS | SSR STATUS | LED indication of output port | MOSFET OUTPUT STATUS FEEDBACK |
|---|---|---|---|---|---|---|---|
| 1 | 0 | ○ | OFF | X | X | ○ | OFF |
| 2 | 1 | ● | OFF | X | X | ○ | OFF |
| 3 | 0 | ○ | ON | OK | OK | ● | ON |
| 4 | 1 | ● | ON | OK | OK | ● | ON |
| 5 | 0 | ○ | ON | DISCONNECTION FAILURE | OK | ○ | OFF |
| 6 | 0 | ○ | ON | OK | DIRECT CONNECTION FAILURE | ○ | OFF |
| 7 | 1 | ● | ON | DISCONNECTION FAILURE | OK | ○ | OFF |
| 8 | 1 | ● | ON | OK | DIRECT CONNECTION FAILURE | ○ | OFF |

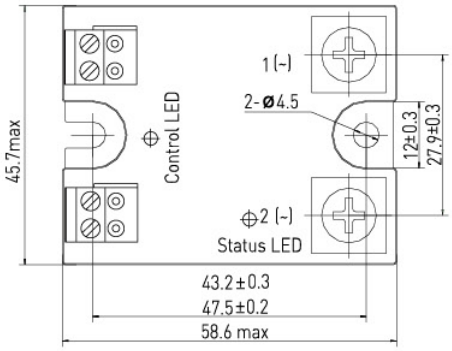
Remark: '●'means the LED of input illumes, '●'means the LED of output illumes,'○'means the LED does not illume.

## OUTLINE DIMENSIONS & WIRING DIAGRAM

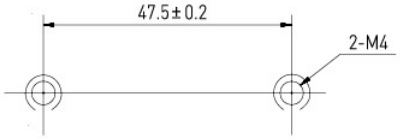
Unit: mm

Outline Dimensions

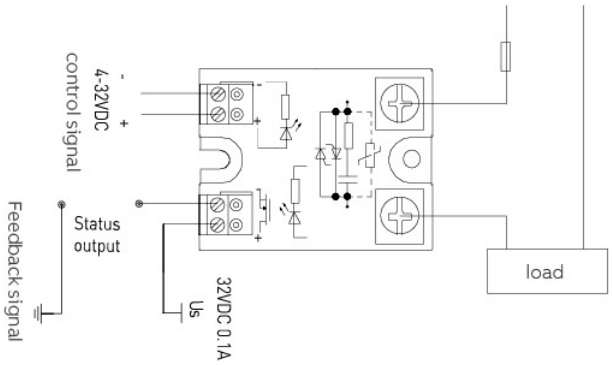



Mounting hole dimensions

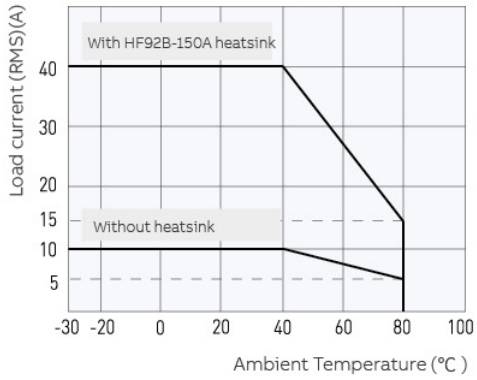



Wiring Diagram

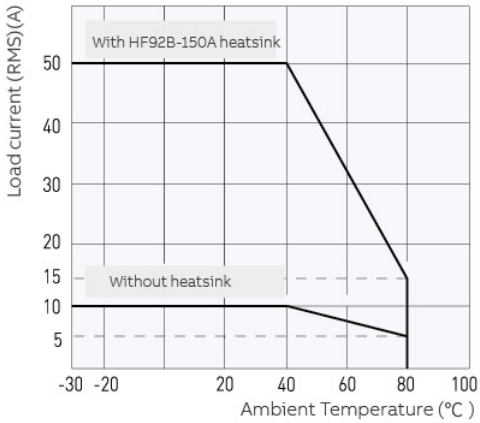


## CHARACTERISTIC CURVES

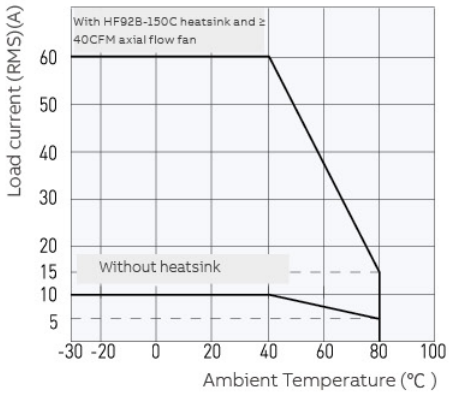
Max. Load Current
vs. Ambient Temperature (40A)



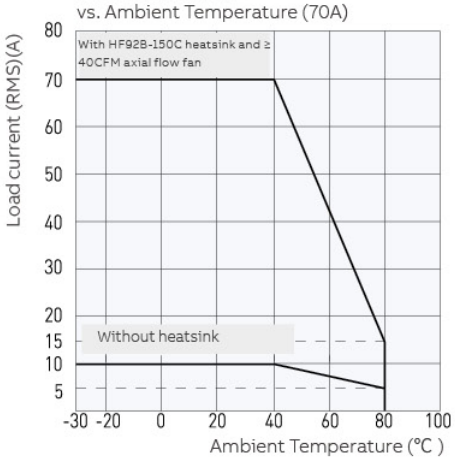

Max. Load Current
vs. Ambient Temperature(50A)



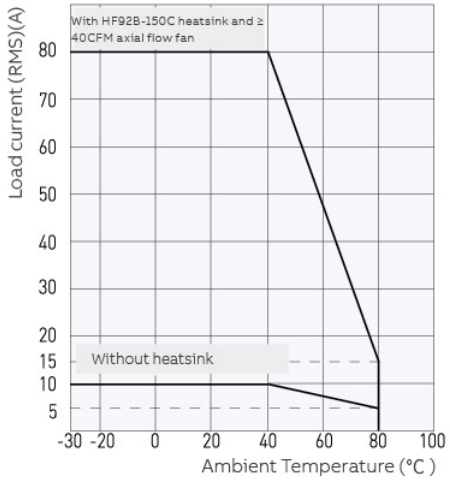

Max. Load Current
vs. Ambient Temperature (60A)




Max. Load Current
vs. Ambient Temperature (70A)




Max. Load Current
vs. Ambient Temperature (80A)




Max. Permissible Non-repetitive Peak Surge
Current vs. Continuance Time