

## OPERATIONAL MANUAL – YD40K\*\*\*QH-A3 SPD for Three-Phase Power Supply System

### 1. Cautions

- 1.1, This equipment should be installed by authorized professional person. Before performing installation, power supplied to the equipment should be cut off in order to avoid accidental contact to hazardous live parts.
- 1.2, This equipment must be installed in a restricted access location where access to this location is only through the use of tool or key; Or other means of security, and is controlled by the authority responsible for the location.
- 1.3, Only authorized person can be gained access to the restricted access location, who should be well-instructed about the reasons for the restriction applied to the location and about any precautions that shall be taken against touching the hot surface and hazardous live parts.
- 1.4, Wires with minimum 16mm<sup>2</sup> cross-sectional area should be used for earthing connected to the equipment, Wires with minimum 10mm<sup>2</sup> cross-sectional area should be used for power supply conductors connected to the equipment. Using "V" type wiring (see figure 3) (Kevin wiring), the carrying capacity of the conductors must accord with the locale load, according to IEC60364-5-523.
- 1.5, Overcurrent protective device (for example, circuit-breaker, fuse and so on) should be used at the power supply side of SPD. If the overcurrent protective device is in the route of surge current, its rate current should be 63A. Besides, overcurrent protective device should be selected according to IEC60364-4-43.
- 1.6, Protective earthing conductors should be connected earlier and disconnected later than the mains conductors (L/N).

### 2. Functions and Principle

YD40K\*\*\*QH-A3 type SPD for three phase power supply system is designed located at the interface of lightning protect area, protected the equipment against lightning over-voltage. Its protective diagram show as Figure 1;

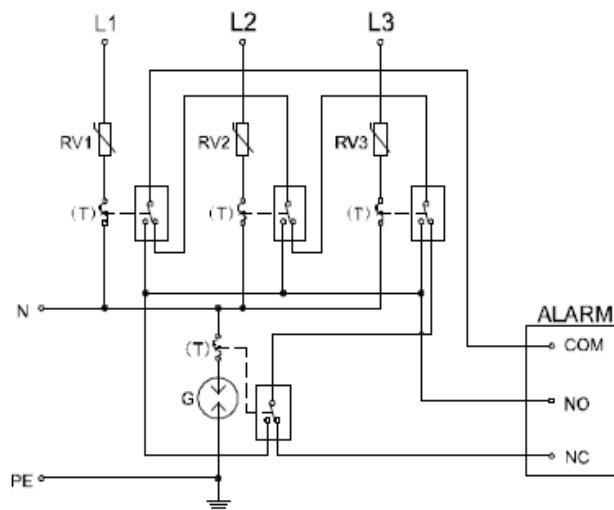


Figure 1

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Model	YD40K275QH-A3	YD40K320QH-A3	YD40K385QH-A3	YD40K480QH-A3
Location category	Indoor			
Number of ports	1			
Method of mounting	Fixed(DIN 35mm railway)			
Maximum Continuous operating voltage (U <sub>c</sub> )	275 V~ 50/60Hz (L1-N,L2-N,L3-N), 255 V~ 50/60Hz (N-PE)	320 V~ 50/60Hz (L1-N,L2-N,L3-N), 255 V~ 50/60Hz (N-PE)	385 V~ 50/60Hz (L1-N,L2-N,L3-N), 255 V~ 50/60Hz (N-PE)	480 V~ 50/60Hz (L1-N,L2-N,L3-N), 255 V~ 50/60Hz (N-PE)
Maximum discharge current (I <sub>max</sub> )	Type2, 40kA(L1-N ,L2-N,L3-N , N-PE)			
Nominal discharge current (In)	20kA(L1-N ,L2-N,L3-N,N-PE)			
Protection level (U <sub>p</sub> )	1.5kV (L1-N ,L2-N,L3-N,N-PE)	1.6kV (L1-N ,L2-N,L3-N), 1.5kV(N-PE)	1.8kV (L1-N ,L2-N,L3-N), 1.5kV(N-PE)	2.3kV(L1-N,L2-N,L3-N),1.5kV(N-PE)
Residual voltage level	1.0kV@3KA,8/20μs (L1、L2、L3-N)	1.1kV@3KA,8/20μs (L1、L2、L3-N)	1.2kV@3KA,8/20μs (L1、L2、L3-N)	1.6kV@3KA,8/20μs (L1、L2、L3-N)
TOV (high/medium voltage system)	TOV failure, UT=1200V, tT = 200ms			
TOV (low voltage system)	TOV withstand, UT=385V, tT = 5s			TOV withstand, UT=480V, tT = 5s
Failure indicator	Local indicate green means SPD OK and red means failure.			
	Remote output terminal: open-alarm port(COM&NC): Short means SPD OK and open mean failure. short-alarm port(COM&NO): Open means SPD OK and short mean failure.			
Isolation between separate circuits	The remote alarm interface is isolated from the main circuit by basic insulation on U <sub>0</sub> not exceed 250V condition according to EN 60950-1/All:2009 and with dielectric withstand voltage 3000Vrms.			
Terminal blocks capacity	1.5 mm <sup>2</sup> ~25 mm <sup>2</sup>			
Enclosure material and the class of resistance of fire	reinforced PA66; UL94 V-0			
IP code	IP20			
Dimensions	90 mm×72 mm×68mm			
Applicable power supply system	TT and TN			
Working environments	Temperature -40~+70°C, Relative humidity≤95%,Height≤3Km			
Standard	YD/T1235.1-2002, IEC61643-1: 2005, EN61643-11:2007			

#### 4. Structure & Shape

YD40K\*\*\*QH-A3 is a three phase SPD, it included 3 pcs approved single phase MOV unit , 1 pcs approved single phase GDT unit and 1 pcs base unit. Every unit has a window for showed the unit's state. Detail please reference to figure 2.

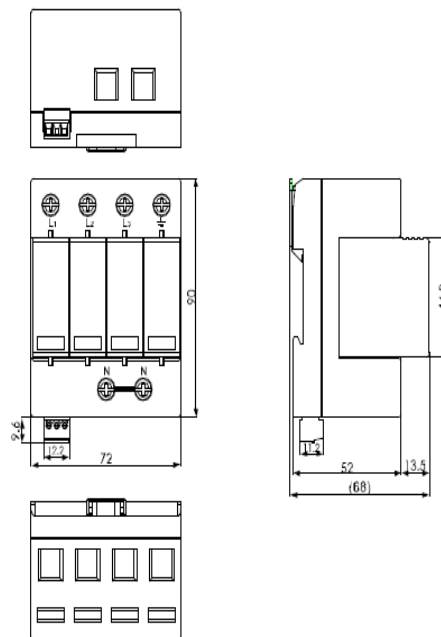


Figure 2.

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## 5. Installation and Wiring

- 5.1. The SPD is rail-mountable and allows mounting on the DIN 35 mounting rail. In a general way, the SPD mounted in power supply distributed compartment of the equipment.
- 5.2. After mounted the SPD, wiring is allowed. We advice you wiring like Figure 3. In some case, if it is difficult to wire like Figure 3, you can wire like Figure 4, but the connected line should short, total length not more than 0.5m.
- 5.3. Remote alarm interfaces for SPD fault are located on the down-left of the base-plate. In case need remote alarm, connected it to open-alarm port or close-alarm port according to the alarm system.

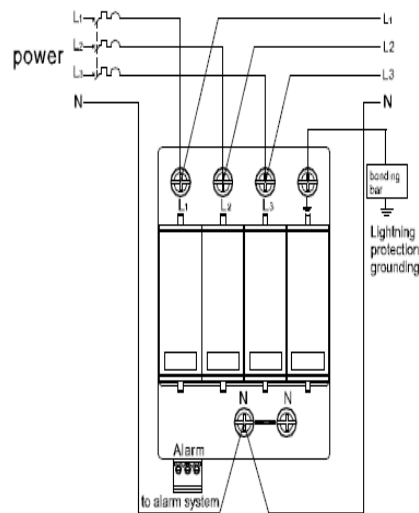


Figure 3.

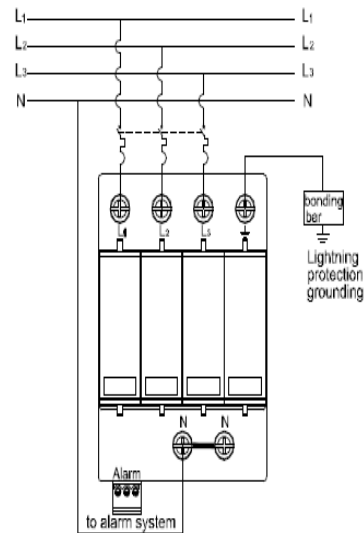


Figure 4.

## 6. Using and Maintenance

- 6.1. SPD should be inspected periodic, especially before the thunderstorm season. Check the connections should reliable, the windows should be green.
- 6.2. Following status means the SPD has a fault and need to be replaced immediately.
  - (1). The MOV unit's/GDT unit's windows are red.
  - (2). COM and NC Remote output terminal is open, or COM and NO is short (alarm system spring).