

# HD024



## »» Features

- High voltage DC load control.
- High performance DC relay for photovoltaic power generation systems, energy storage system and xEV charging device, etc.
- Complies with RoHS-Directive 2011/65/EU.



## »» Type List

### ◆ Standard type

Terminal style	Contact form	Designation (provided with)	
		Flux tight	Flanged cover (Flux tight)
PCB terminal	1A (SPDM)	HD024P-1AH-F-C	-----
Screw terminal		-----	HD024S1-1AH-F-C1

### ◆ High sensitivity type

PCB terminal	1A (SPDM)	HD024NP-1AH-F-C	-----
Screw terminal		-----	HD024NS1-1AH-F-C1

## »» Ordering Information

HD024      P   -   1A   H   -   F   -   C  

1   2   3   4   5   6   7   8

1. HD024 -- Basic series designation

2. Blank -- Standard type  
N -- High sensitivity type

3. P -- PCB terminal  
S1 -- Screw terminal (M6)

4. 1A -- Form A, single-pole, double-make (SPDM)

5. H -- Contact material Ag alloy

6. F -- Class F

7. C -- Flux tight  
C1 -- Flanged cover (Flux tight)

8.  -- Coil voltage (please refer to the coil rating data for the availability)

## »» Contact Rating

### ◆ Each 1 form A contact

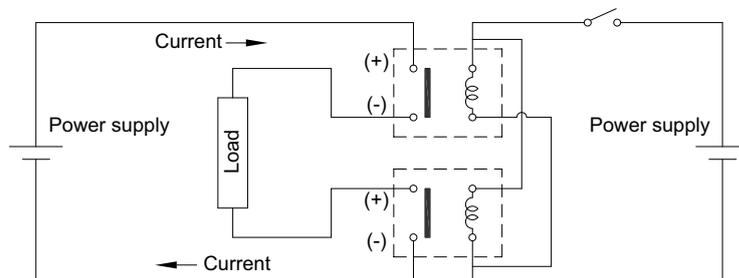
Rated load (Resistive)	120A 400VDC, On 1s / Off 19s, 100 ops.
Breaking voltage	Max. 400VDC
Continuous carrying current	Max. 120A

### ◆ Each 1 form A contact connected in series

Rated load (Resistive)	40A 1000VDC, On 1s / Off 19s, 5 ops. 80A 650VDC, On 1s / Off 19s, 50 ops. 120A 400VDC, On 1s / Off 19s, 300 ops.
Breaking voltage	Max. 1000VDC
Continuous carrying current	Max. 120A

Notes : (1) Reference circuit for above series connection, please refer to figure 1.  
(2) With above 2 cm mounting distance between two relays.

◆ Figure 1



## »» Coil Rating (DC)

### ◆ Standard type

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Pick up voltage (Max.) at 23°C <sup>(1)</sup>	Drop out voltage (Min.) at 23°C	Continuous voltage at 85°C <sup>(2)</sup>	Power consumption at rated / holding voltage
12	500	24	80 % of rated voltage	5 % of rated voltage	50~55 % of rated voltage	approx. 6W / 1.5W <sup>(2)</sup>
24	250	96				

Notes : (1) To energize relay properly apply 100%~120% nominal coil voltage for 200ms.

(2) Coil holding voltage is 50~55% of nominal voltage after applying nominal voltage for 200ms.

### ◆ High sensitivity type

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Pick up voltage (Max.) at 23°C	Drop out voltage (Min.) at 23°C	Max. continuous voltage at 70°C <sup>(1)</sup>	Power consumption at rated voltage
12	414	29	80 % of rated voltage	5 % of rated voltage	100 % of rated voltage	approx. 5W
24	209	115				

Notes : (1) Without continuous contact current.

## »» Specification

Contact material	Ag alloy	
Voltage drop <sup>(1)</sup>	Typ. 10mV at 10A	
Operate time <sup>(1)</sup>	50ms Max.	
Release time <sup>(1)</sup>	30ms Max.	
Insulation resistance <sup>(1)</sup>	100MΩ Min. (DC 500V)	
Dielectric strength <sup>(1)</sup>	Between open contact	: AC 2000V, 50/60Hz 1 min.
	Between contact and coil	: AC 4000V, 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~500Hz, 5.0G
	Damage limits	10~500Hz, 5.0G
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	500,000 ops. (frequency 9,000 ops./hr)
Operating ambient temperature	-40~+85°C (no freezing) for HD024 -40~+70°C (no freezing) for HD024N	
Weight	Approx. 180g, 185g (flanged cover)	

Notes : (1) Initial value. Operate and release time excluding contact bounce.

(2) Load sides with polarities (+) and (-).

(3) Unless otherwise specified, all tests are under room temperature and humidity.

(4) Consider the heat of PCB is necessary, please check the actual condition of PCB.

(5) Applying no diode to this relay. The life expectancy will be lower when a diode is used. To use a varistor (ZNR) could absorb the coil surge of relay that is recommended.

- (6) Do not use the relay exceeding the coil rating, contact rating and life expectancy, or this may cause the risk of overheating.
- (7) To assure optimum performance, avoid the relay from dropping, hitting, or other unnecessary shocks.
- (8) Take care to avoid cross connections as they may cause malfunctions or overheating.
- (9) To avoid mounting the relay in strong magnetic fields (near a transformer or magnet) or close to an object that radiates heat.
- (10) Do not switch the contacts without any load as the contact resistance may become increased rapidly.
- (11) Always keep the oils and fats kind from the main terminal parts.
- (12) Use suitable harnesses and bus bars according to the current as below:  
120A type : Min. 38 mm<sup>2</sup>
- (13) To avoid unexpected damage, when tightening a screw, use no exceeding specified torque range as below:  
M5 screw : 4.5 ~ 5 N.m  
M6 screw : 6 ~ 8 N.m
- (14) Please contact Song Chuan for the detailed information.

### »» Safety Approval

Certified	UL / CUL
File No.	E88991

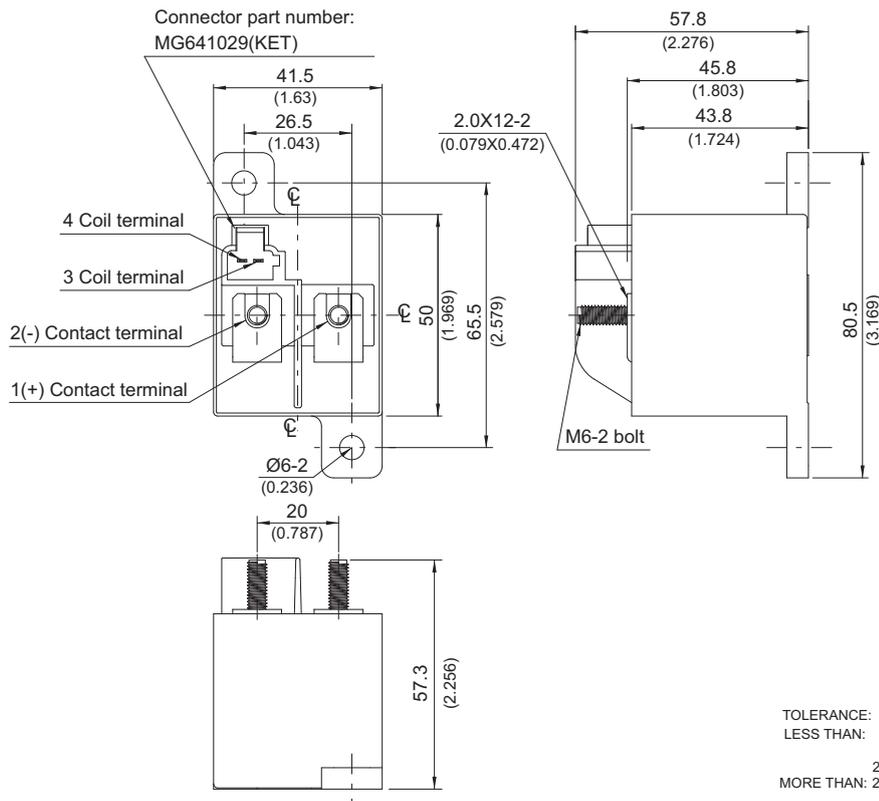
### »» Safety Approval Rating

UL / CUL
50A 450VDC, Resistive, Carrying current 120A
20A 650VDC, Resistive, Carrying current 120A
5A 1000VDC, Resistive, Carrying current 120A
60A 650VDC, Resistive, Carrying current 120A <sup>(1)</sup>
20A 1000VDC, Resistive, Carrying current 120A <sup>(1)</sup>

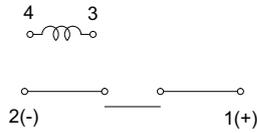
Notes : (1) Operating in a series connection.

### »» Outline Dimensions

#### ◆ Screw terminal (-C1 cover type)



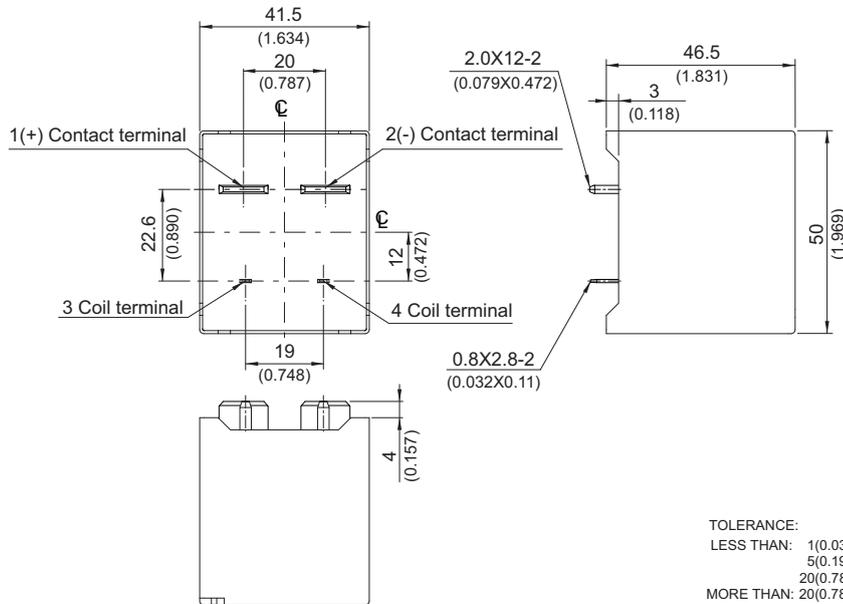
»» **Wiring Diagram  
(Top view)**



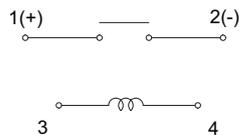
Load sides with polarities (+) and (-).

»» **Outline Dimensions**

◆ PCB terminal (-C cover type)



»» **Wiring Diagram  
(Bottom view)**



Load sides with polarities (+) and (-).

»» **PC Board Layout  
(Bottom view)**

