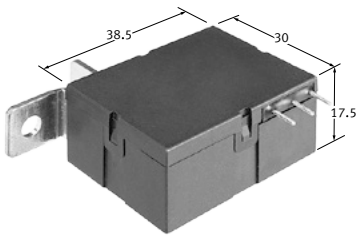
RoHS

IEC62055-31 UC3 compliant 1 Form A 90A power latching relays

DZ-S RELAYS(ADZS)

Protective construction：Dust cover type



(Unit：mm)

FEATURES

1. **IEC62055-31 UC3 compliant**
2. **High switching capacity**
   90 A 250 VAC (Resistive load)
3. **Low operating power**
   1 coil latching: 1.5 W
   2 coil latching: 3.0 W
4. **Small size:**
   W: 38.5 x L: 30 x H: 17.5 mm

TYPICAL APPLICATIONS

1. **Smart meters**
2. **Charge station**
3. **Time switch**
4. **Other industrial equipment**

ORDERING INFORMATION

ADZS **2** **1** ＿ ＿

- Operating function
  1：1coil latching
  2：2coil latching
- Contact rating
  2：90A
- Contact material
  1：$AgSnO_2$type
- Nominal coil voltage(DC)
  05：5V, 12：12V, 24：24V
- Terminal shape
  Nil：Vertical type

TYPES

Contact arrangement	Rated voltage	Part No.		Standard packing	
		1 coil latching	2 coil latching	Carton	Case
1 Form A	5V DC	ADZS12105	ADZS22105	20 pcs.	200 pcs.
	12V DC	ADZS12112	ADZS22112		
	24V DC	ADZS12124	ADZS22124		

© Panasonic Corporation 2020

RATING

1.Coil data

- Operating characteristics such as 'Operate voltage' and 'Release voltage' are influenced by mounting conditions, ambient temperature, etc. Therefore, please use the relay within ± 5% of rated coil voltage.
- 'Initial' means the condition of products at the time of delivery.

1) 1 coil latching type

Rated voltage	Set voltage *1 (at 20°C)	Reset voltage*1 (at 20°C)	Rated operating current (DC, ±10%, at 20°C)	Coil resistance (±10%, at 20°C)	Rated operating power	Max. allowable voltage (at 20°C)
5V DC	70%V or less of nominal voltage (Initial)	70%V or less of nominal voltage (Initial)	300 mA	16.7Ω	1.5W	130%V of rated voltage
12V DC			125 mA	96 Ω		
24V DC			62.5 mA	384 Ω		

*1. Square, pulse drive

2) 2 coil latching type

Rated voltage	Set voltage *1 (at 20°C)	Reset voltage*1 (at 20°C)	Rated operating current (DC, ±10%, at 20°C)	Coil resistance (±10%, at 20°C)	Rated operating power	Max. allowable voltage (at 20°C)
5V DC	70%V or less of nominal voltage (Initial)	70%V or less of nominal voltage (Initial)	600 mA	8.3Ω	3.0W	130%V of rated voltage
12V DC			250 mA	48 Ω		
24V DC			125 mA	192 Ω		

*1. Square, pulse drive

2. Specifications

Characteristics	Item	Specifications
Contact data	Arrangement	1 Form A
	Contact voltage drop (initial)	Max. 0.09V (at 90A), Max. 0.05V (at 10A)
	Contact material	$AgSnO_2$ alloy
	Contact rating (resistive)	90 A 250 V AC
	Max. switching power (resistive)	24,840 VA
	Max. switching voltage	276 V AC
	Max. switching current	90 A AC
	Min. switching load (reference value)*1	100 mA 125 V AC
Insulation resistance (initial)		Min. 1,000MΩ (at 500V DC) Measured portion is the same as the case of dielectric voltage.
Dielectric strength (initial)	Between open contacts	2,000 Vrms for 1 min. (detection current: 10 mA)
	Between contact and coil	4,000 Vrms for 1 min. (detection current: 10 mA)
Surge withstand voltage (initial)*2	Between contact and coil	12,000 V
Operate time (initial)		Max. 20 ms (at rated voltage, at 20°C, without bounce)
Release time (initial)		Max. 20 ms (at rated voltage, at 20°C, without bounce)
Shock resistance	Functional	300 m/s^2 (half-wave pulse of sine wave: 11 ms; detection time: 10 μs)
	Destructive	1,000 m/s^2 (half-wave pulse of sine wave: 6 ms.)
Vibration resistance	Functional	10 to 55 Hz at double amplitude of 1.5 mm (detection time: 10 μs)
	Destructive	10 to 55 Hz at double amplitude of 2.0 mm
Expected life	Mechanical	Min. 10^5 (at 180 times/min.)
Conditions	Conditions for operation, transport and storage*3 *4	Ambient temperature: –40 to +85°C Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)
Unit weight		Approx. 45 g

Notes: *1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2. Wave is standard shock voltage of ±1.2×50 μs according to JEC-212-1981
*3. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.
*4. Allowable current when ambient temperature over 70°C is 70A

3. Expected electrical life

Type	Load	Switching capacity	Number of operations
1 Form A	Resistive	90 A 250V AC	Min. 1×10^4 (ON:OFF=2s:4s)
	UC3 Class (IEC62055-31)*	90 A 276V AC (COSφ=1.0:5,000 cycles, COSφ=0.5:5,000 cycles)	Min. 1×10^4 (ON:OFF=10s:20s)

*Based on IEC62055-31 UC3, inductive load test was conducted after resistive load test, and expressed as total.

© Panasonic Corporation 2020

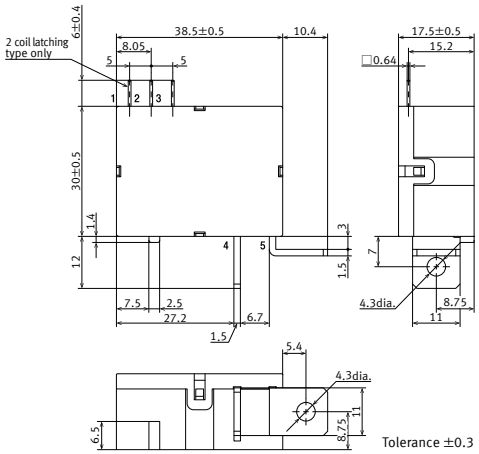
DIMENSIONS (mm)

Vertical terminal type

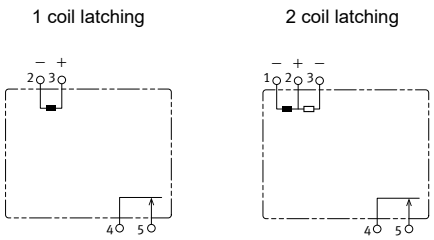
CAD The CAD data of the products with a “CAD” mark can be downloaded from our Website.

CAD

External dimensions



Schematic (Top view)
(Set condition)



SAFETY STANDARDS

This relay is IEC/EN 62055-31 UC3 certified by VDE

NOTES

1. **For cautions for use, please read “GENERAL APPLICATION GUIDELINES”**
2. **This relay is designed to dust cover type. Malfunction and contact failure may result if small insects get inside the relay.**
3. **Do not apply excessive pressure on the terminals. This could adversely affect relay performance. Use a washer in order to prevent deformation.**
   Keep the installation torque to within 1.2 to 1.4 N·m (12 to 14 kgf·cm). Also, use a spring washer to prevent it from loosening.
4. **It is recommended to apply rated coil voltage for Min. 100ms pulse across the ambient temperature and condition change through service life. the coil to secure the sure operation considering**
5. **Please do not continuously energize to coil over 10 seconds.**

Please refer to **"the latest product specifications"** when designing your product.
• Requests to customers :
https://industrial.panasonic.com/ac/e/salespolicies/

© Panasonic Corporation 2020

GUIDELINES FOR POWER, HIGH-CAPACITY DC CUT OFF AND SAFETY RELAYS USAGE

■For cautions for use, please read "GUIDELINES FOR RELAY USAGE".
https://industrial.panasonic.com/ac/e/control/relay/cautions_use/index.jsp

Precautions for Coil Input

■Long term current carrying

A circuit that will be carrying a current continuously for long periods without relay switching operation. (circuits for emergency lamps, alarm devices and error inspection that, for example, revert only during malfunction and output warnings with form B contacts)
Continuous, long-term current to the coil will facilitate deterioration of coil insulation and characteristics due to heating of the coil itself. For circuits such as these, please use a magnetic-hold type latching relay. If you need to use a single stable relay, use a sealed type relay that is not easily affected by ambient conditions and make a failsafe circuit design that considers the possibility of contact failure or disconnection.

■DC Coil operating power

Steady state DC current should be applied to the coil. The wave form should be rectangular. If it includes ripple, the ripple factor should be less than 5%.
However, please check with the actual circuit since the electrical characteristics may vary. The rated coil voltage should be applied to the coil and the set/reset pulse time of latching type relay differs for each relays, please refer to the relay's individual specifications.

■Coil connection

When connecting coils of polarized relays, please check coil polarity (+,-) at the internal connection diagram (Schematic). If any wrong connection is made, it may cause unexpected malfunction, like abnormal heat, fire and so on, and circuit do not work. Avoid impressing voltages to the set coil and reset coil at the same time.

■Maximum allowable voltage and temperature rise

Proper usage requires that the rated coil voltage be impressed on the coil. Note, however, that if a voltage greater than or equal to the maximum continuous voltage is impressed on the coil, the coil may burn or its layers short due to the temperature rise. Furthermore, do not exceed the usable ambient temperature range listed in the catalog.

■Operate voltage change due to coil temperature rise

In DC relays, after continuous passage of current in the coil, if the current is turned OFF, then immediately turned ON again, due to the temperature rise in the coil, the pick-up voltage will become somewhat higher. Also, it will be the same as using it in a higher temperature atmosphere. The resistance/temperature relationship for copper wire is about 0.4% for 1°C, and with this ratio the coil resistance increases. That is, in order to operate of the relay, it is necessary that the voltage be higher than the pick-up voltage and the pick-up voltage rises in accordance with the increase in the resistance value. However, for some polarized relays, this rate of change is considerably smaller.

Ambient Environment

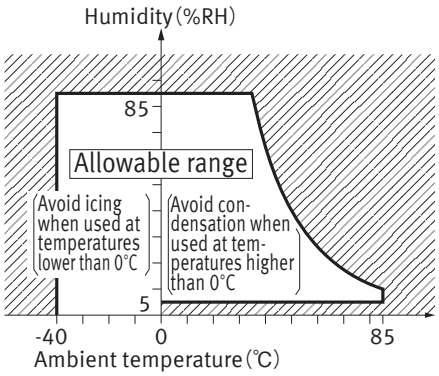
■Usage, Transport, and Storage Conditions

During usage, storage, or transportation, avoid locations subjected to direct sunlight and maintain normal temperature, humidity and pressure conditions.

●Temperature/Humidity/Pressure

When transporting or storing relays while they are tube packaged, there are cases the temperature may differ from the allowable range. In this case be sure to check the individual specifications. Also allowable humidity level is influenced by temperature, please check charts shown below and use relays within mentioned conditions. (Allowable temperature values differ for each relays, please refer to the relay's individual specifications.)

1) Temperature:
The tolerance temperature range differs for each relays, please refer to the relay's individual specifications
2) Humidity: 5 to 85 % RH
3) Pressure: 86 to 106 kPa



●Dew condensation

Condensation occurs when the ambient temperature drops suddenly from a high temperature and humidity, or the relay is suddenly transferred from a low ambient temperature to a high temperature and humidity. Condensation causes the failures like insulation deterioration, wire disconnection and rust etc.
Panasonic Corporation does not guarantee the failures caused by condensation.
The heat conduction by the equipment may accelerate the cooling of device itself, and the condensation may occur.
Please conduct product evaluations in the worst condition of the actual usage. (Special attention should be paid when high temperature heating parts are close to the device. Also please consider the condensation may occur inside of the device.)

●Icing

Condensation or other moisture may freeze on relays when the temperature become lower than 0°C.This icing causes the sticking of movable portion, the operation delay and the contact conduction failure etc. Panasonic Corporation does not guarantee the failures caused by the icing.
The heat conduction by the equipment may accelerate the cooling of relay itself and the icing may occur. Please conduct product evaluations in the worst condition of the actual usage.

●Low temperature and low humidity

The plastic becomes brittle if the switch is exposed to a low temperature, low humidity environment for long periods of time.

●High temperature and high humidity

Storage for extended periods of time (including transportation periods) at high temperature or high humidity levels or in atmospheres with organic gases or sulfide gases may cause a sulfide film or oxide film to form on the surfaces of the contacts and/or it may interfere with the functions. Check out the atmosphere in which the units are to be stored and transported.

©Panasonic Corporation 2019

●Package

In terms of the packing format used, make every effort to keep the effects of moisture, organic gases and sulfide gases to the absolute minimum.

●Silicon

When a source of silicone substances (silicone rubber, silicone oil, silicone coating materials and silicone filling materials etc.) is used around the relay, the silicone gas (low molecular siloxane etc.) may be produced.

This silicone gas may penetrate into the inside of the relay. When the relay is kept and used in this condition, silicone compound may adhere to the relay contacts which may cause the contact failure.

Do not use any sources of silicone gas around the relay (Including plastic seal types).

●NOx Generation

When relay is used in an atmosphere high in humidity to switch a load which easily produces an arc, the NOx created by the arc and the water absorbed from outside the relay combine to produce nitric acid.

This corrodes the internal metal parts and adversely affects operation.

Avoid use at an ambient humidity of 85%RH or higher (at 20°C). If use at high humidity is unavoidable, please contact our sales representative.

Others

■Cleaning

• Although the environmentally sealed type relay (plastic sealed type, etc.) can be cleaned, avoid immersing the relay into cold liquid (such as cleaning solvent) immediately after soldering. Doing so may deteriorate the sealing performance.

• Cleaning with the boiling method is recommended(The temperature of cleaning liquid should be 40°C or lower).

Avoid ultrasonic cleaning on relays. Use of ultrasonic cleaning may cause breaks in the coil or slight sticking of the contacts due to ultrasonic energy.

Please refer to **"the latest product specifications"** when designing your product.

•Requests to customers:

https://industrial.panasonic.com/ac/e/salespolicies/

©Panasonic Corporation 2019

Please contact .....

Panasonic Corporation
Electromechanical Control Business Division
■1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan
industral.panasonic.com/ac/e/

Panasonic®

©Panasonic Corporation 2020

ASCTB389E 202006

Specifications are subject to change without notice.