

New



RoHS compliant

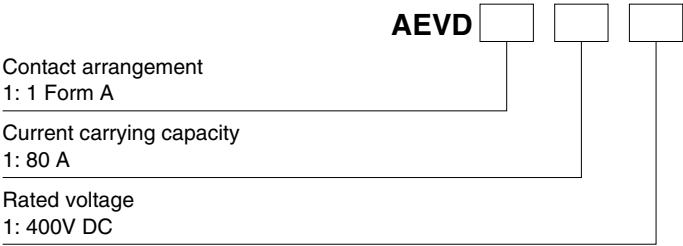
FEATURES

- **High performance with capsule contact technology**
400 A, 400 V DC cut-off
High contact reliability, Dust proof contact
- **High carrying current performance**
Rated carrying current performance:
80 A, 400 V DC
Maximum contact carrying current:
5,560 A (0.03 sec.)
- **Safety function**
Designed with interlock button to prevent false energization

TYPICAL APPLICATIONS

This safety switch is for cut-off the battery power from the system circuit when maintaining hybrid cars, plug-in hybrid cars, electric cars, and hybrid construction machinery, etc.

ORDERING INFORMATION



TYPES

Current carrying capacity	Contact arrangement	Part No.
80 A	1 Form A	AEVD111

Standard packing; Case: 20pcs. (Tray)

EV (AEVD)

RATING

Specifications

Characteristics	Item		Specifications
			80 A type
Contact	Contact arrangement		1 Form A
	Rated voltage		400 V DC
Rating	Rated carrying current		80 A (Wire / Bus bar size is more than 20 mm²)
	Max. carrying current		120 A 600s 5,560A 0.03s (Wire / Bus bar size is more than 20 mm²)
Electrical characteristics	Contact voltage drop (Initial)		Max. 0.16 V (at 80 A)
	Insulation resistance (Initial, Between open contacts, Between contacts and lever surface)		Min. 100 MΩ (at 500 V DC Megger)
	Breakdown voltage (Initial, Between open contacts, Between contacts and lever surface)		2,500 Vrms for 1 min. (Detection current: 10 mA, 50/60Hz)
Mechanical characteristics	Lever operation force		<OFF ⇒ ON> 10N to 25N (Measurement position: center of lever) <ON ⇒ OFF> 3N to 9N (Measurement position: tip of lever)
	Interlock button operation force (when canceling a lock)		4N ± 1N
	Shock resistance (Switch: ON condition)	Functional	490 m/s² {50 G} (Half-wave pulse of sine wave: 11 ms; detection time: 10 μs, 6 detections, 1 time each)
		Destructive	790 m/s² {80.6 G} (Half-wave pulse of sine wave: 6 ms)
	Vibration resistance (Switch: ON condition)	Functional	Acceleration: 44 m/s² {4.5 G} (Detection time: 10 μs)
		Destructive	20 to 200 Hz, acceleration: 44 m/s² {4.5 G} (Sweep time: 15 minutes (log sweep), X, Y, Z direction: 4 hours each)
Expected life	Mechanical life		Min. 100 times (Switching with no current-switching)
	Electrical life (Cut-off performance) * No-load application when ON.	Forward direction (Polarity +)	5 times: 400 A 400 V DC (Resistive load, Time constant: less than 1.0 ms)
		Reverse direction (Polarity -)	5 times: -120 A 200 V DC (Resistive load, Time constant: less than 1.0 ms)
Conditions	Conditions for operation, transport and storage		Ambient temperature: -40 to +80°C -40 to +176°F Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)
Mass (Approx.)			230 g 8.11 oz

DESCRIPTION OF USAGE

1. Application

EV Switch is a safety Switch for cut-off a battery power supply from a system circuit, in order to protect a human body from the electric shock accidents at the time of a maintenance, etc.

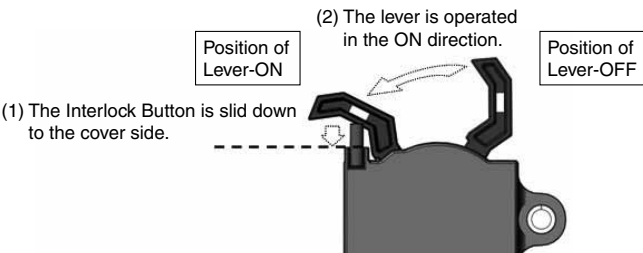
2. How to use

1) When the switch is turned ON and OFF, in principle the battery power is already cut-off by the system side (no current-passing condition). Please turn the lever to the ON side and the OFF side. Do not switch current by contact turning ON. However, the switch can cut-off the power directly, even when power is not cut-off by the system. Please refer to the specification regarding the cut-off performance.

2) When turning the switch ON, the product is designed to prevent malfunction by not allowing it to turn ON unless the interlock button is pressed when the lever is operated.

*1) At the time of OFF operation, the lever can change to OFF position without operation of the interlock button.

*2) Please operate the lever after making the interlock button slide down completely to the side of the cover.



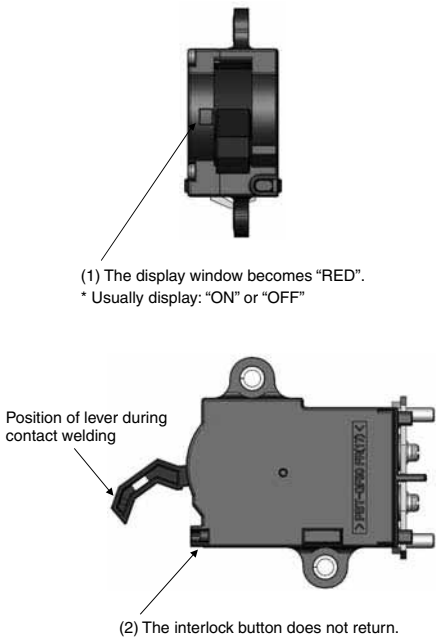
[If contact welding occurs]

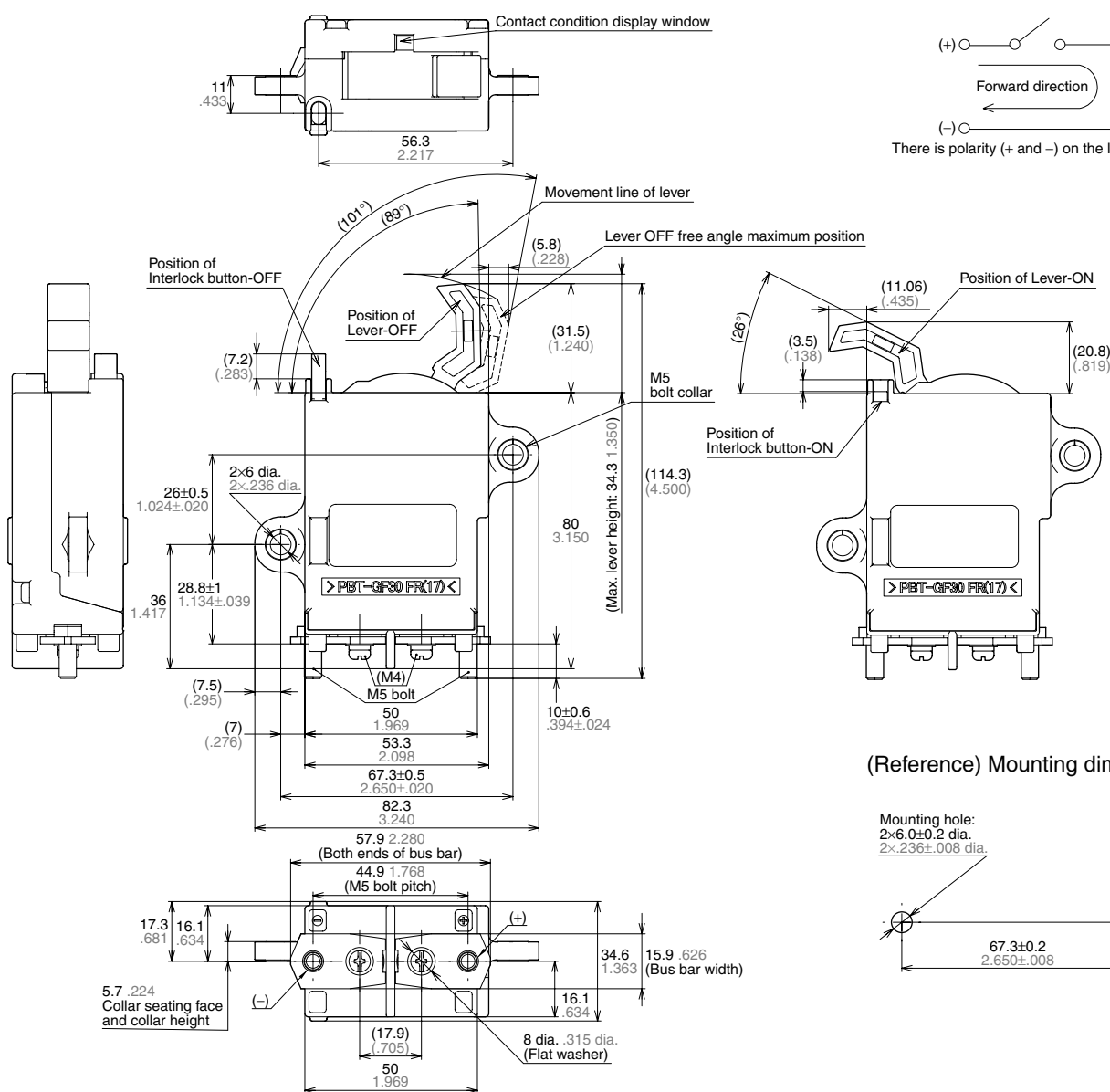
Contact welding may occur if current is switched by contact turning ON or if current that exceeds the specifications is continuously applied when the power is ON. This switch indicates contact welding by doing (1) and (2), below.

(1) The lever will not go all the way to the OFF position when you try to turn it off, and when you release the lever it returns to the window that displays red.

(2) The interlock button does not return.

* Please be careful. In this state the switch's contacts are not OFF.



DIMENSIONS (mm inch)The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>**CAD Data****External dimensions****Schematic (TOP VIEW)****General tolerance:**

less than 10 .394: ±0.3 ±.012

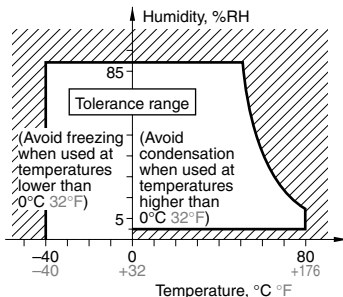
10 to 50 .394 to 1.969: ±0.6 ±.024

more than 50 1.969: ±1.0 ±.039

NOTES

1. Usage, transport and storage conditions

- 1) Temperature: -40 to $+80^{\circ}\text{C}$ -40 to $+176^{\circ}\text{F}$
 - 2) Humidity: 5 to 85% RH (Avoid freezing and condensation.)
 - 3) Atmospheric pressure: 86 to 106 kPa
- The humidity range varies with the temperature. Use within the range indicated in the graph below.
(Temperature and humidity range for usage, transport, and storage)



4) Condensation

Condensation forms when there is a sudden change in temperature under high temperature and high humidity conditions. Condensation will cause deterioration of the switch insulation.

5) Freezing

Condensation or other moisture may freeze on the switch when the temperatures is lower than 0°C 32°F . This causes problems such as sticking of movable parts or operational time lags.

6) Low temperature, low humidity environments

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

2. Attachment environment

<Attached position>

- Same as the automotive vehicle interior environment
- Please consider the prevention of dew condensation and dusts.

<Mounting arrangement>

Body: Fastening and fixing with a bolt. ($M5 \times 2$)

Terminal: Fastening and fixing with a nut. ($M5 \times 2$)

<Screw-fastening torque>

Body: 3.5 ± 0.5 N·m

Terminal: 3.5 ± 0.5 N·m

3. Please do not remove the assembly screw of the switch. Otherwise the performance cannot be guaranteed.

Moreover, in order to prevent from removing the assembly screw easily, please attach the assembly screw showing its backside.

4. Please note the polarity of the terminal. Please abide by the connection of polarity described to this catalog. The performance cannot be satisfied when reversely connected. It becomes a cause of the accident.

5. The screws for fixing switch-body and for additional terminal should be tightened with a specified torque.

6. The switch should not be installed near strong magnetic fields (transformers, magnets, etc.) and should not be installed near heat source.

7. If the several switches are mounted closely or a heat-generation object is close to the switch, take care to check the abnormal temperature-rise and the insulation distance between the terminals outside of the switch.

8. The switch contacts are encapsulated type filled with gas. Therefore, care must be exercised when the switch is to be used or stored at high ambient temperature.

9. If the switch is used for an inductive load (L load) such that $L/R > 1\text{ms}$, add surge protection in parallel with the inductive load. If this is not done, the electrical life will decrease and cut-off failure may occur.

10. When the short-circuit current is large, there is possibility that the switch will be destroyed by the time the power supply is intercepted with the fuse. Therefore, please confirm it enough with the system.

11. There is a possibility of performance change due to transfer effect through terminal from connected components and radiation heat (e.g. fuse) around the switch.

12. Please consider the layout which avoids conductive liquid on solvent such as water etc. from the switch for the prevention of electric shock.

13. If the switch is used exceeding the contact rating or cycle lifetime, this may result in the risk of overheating.

14. Contact welding may occur if current is switched by contact turning ON or if current that exceeds the specifications is continuously applied when the power is ON.

The switch indicates 'RED' on the display window if contact welding occur. (Please refer to 'Description of usage') However when abnormalities such as fuse disconnection etc. occurred, even if the display window does not become RED, please check the OFF state of the contact with a tester etc. and be sure to wear protective equipment before operating.

15. Please consider safety measures such as detection of ON/OFF state of a high voltage circuit, earth fault detection, and temperature detection by a system for high voltage circuit. Moreover, please consider safety measures that high voltage part work cannot be performed, if it is not in a high voltage circuit OFF state with a system or structure, when operating high voltage part work.

16. If the switch is dropped, it should not be used again.

17. Take care to avoid cross connections as they may cause malfunctions or overheating.

18. Use the suitable wire/bus bar according to the current.

*Recommendation: more than 20 mm²

Moreover, please consider the layout that the wire/bus bar can fix to the plate and please do not free the load-side electric wire/bus bar linked to a switch.

When terminal of switch and load-side wire/bus bar have a clearance gap, please do not carry out Screw-fastening with force. Please set up the order of fixation and layout which can make the smallest clearance gap at the time of screw-fastening.

19. Do not use this product in such atmosphere where any kind of organic solvent (as benzene, thinner and alcohol) and the strong alkali (as ammonia caustic soda) might be adhered to this product.

20. Although the gas enclosure type seal contact is used inside the switch (capsule contact), since the product itself is not a seal type, please do not use it under dust environment or the environment where direct water and a solvent adhere to the product.

21. Be careful that oil or foreign matter do not stick to the main terminal part because it is likely to cause the terminal part to give off unusual heat.

22. Do not make additional manufacturing upon the switch housing.

23. For AC cut-off there is no contact polarity, but confirm the electric life using the actual load.