Analog Signal Conditioner
AD-4541-V (Voltage output type), AD-4541-I (Current output type)
Instruction Manual

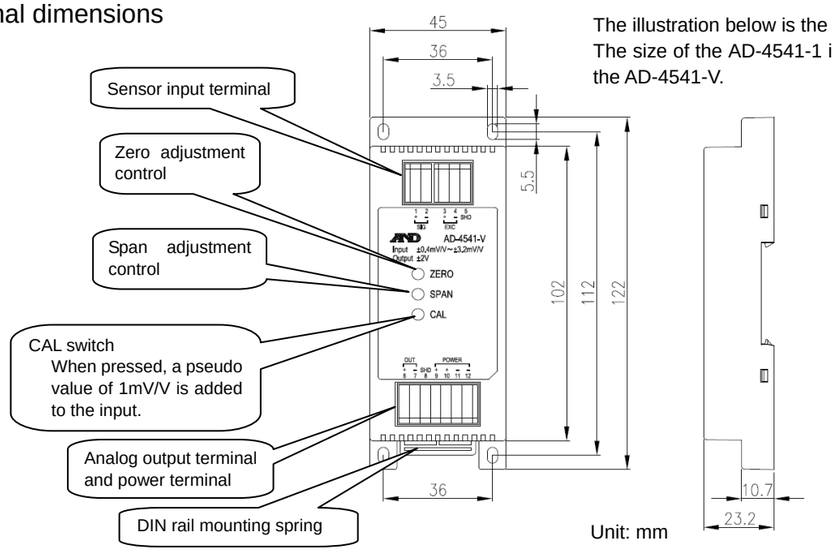
1. Outline

AD-4541-V and AD-4541-I are analog signal conditioners utilizing a load cell or strain gauge as sensor input and converts signals such as mass, acceleration, pressure and torque at the signal level, to an output suitable for a PLC or PC analog input.
The conditioners can be mounted on a DIN rail or on the wall.

2. Specifications

Category	Item	Description
Input	Zero adjustment range	-0.5 mV/V to +0.5 mV/V
	Span adjustment range	0.4 mV/V to 3.2 mV/V
	Non-linearity	0.05% of F.S. typ.
	Loadcell excitation	5 VDC 60 mA max. (Can be used with one loadcell of 120Ω or maximum four loadcells of 350Ω)
	Zero temperature coefficient	2μV/°C RTI typ.
	Span temperature coefficient	200ppm/°C typ.
	Frequency response	DC to 2 Hz（-3dB）
	Response	Approx. 190 ms (0% to 90%)
	Input noise	2μVp-p RTI typ.
	Calibration standard	1 mV/V ±0.2% typ.
Output	Voltage output (AD-4541-V)	-2 V to +2 V (Load 2kΩ or higher)
	Current output (AD-4541-I)	4 mA to 20 mA (Load 250Ω or lower)
Power	Voltage	24 VDC +10%-15%
	Current	100 mA max (Approx. 2.4W)
General	Operating temperature	-5°C to +50°C
	Operating humidity	85%RH or lower (No condensation)
	Storage temperature	-20°C to +70°C
	External dimensions	45W x 122H x 24D mm
	Mass	Approx. 90 g
Others	Terminal	Spring clamp type Wire 0.08 mm^2 to 1.5 mm^2 (AWG 28-14) Maximum outside diameter 3.4 mm
	Installation	DIN rail or screw
	Material (Body)	PBT (V0)
	Isolation	Input output to power supply
	Insulation resistance	500 VDC for 1 min
	Accessories	Flathead screwdriver 1 pc, Instruction manual (this document) 1 pc

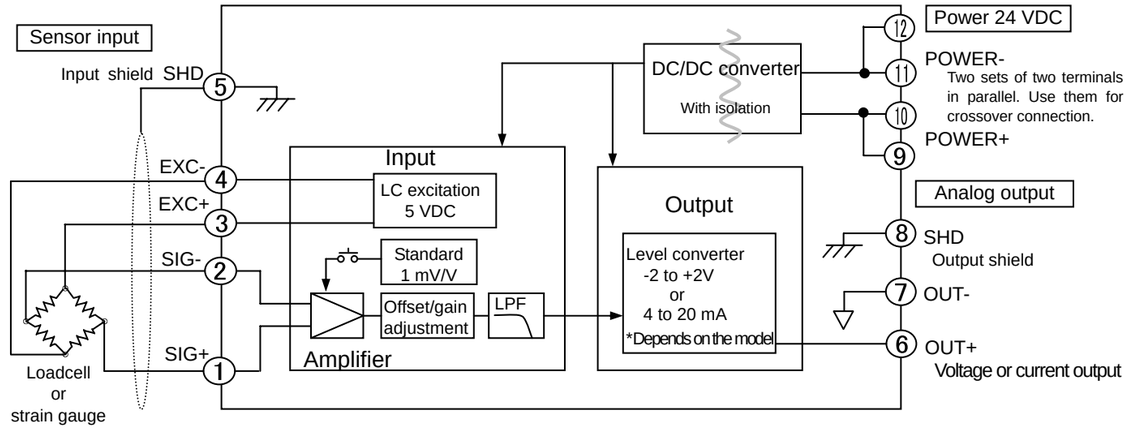
3. External dimensions



The illustration below is the AD-4541-V.
The size of the AD-4541-1 is the same as the AD-4541-V.

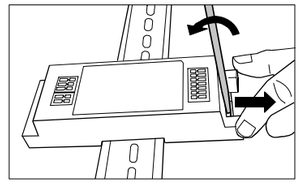
Unit: mm

4. Block Diagram



5. Installation

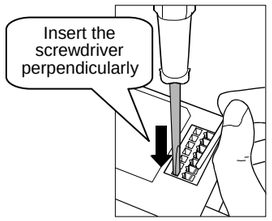
- Mounting on the DIN rail
  Using the accessory screwdriver, push out the DIN rail mounting spring located at the bottom of the casing and secure the casing on the DIN rail.
- Using the screws
  Using the holes on four corners, the casing can be secured on the wall with the screws.

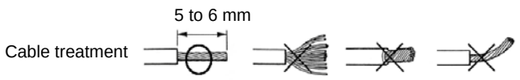


6. Cable connection

Caution: Before cable connection, be sure to turn the power off.

Insert the accessory screwdriver perpendicularly into the terminal block as shown in the illustration to the right, until stopped. At this time, do not rotate or twist the screwdriver.
The screwdriver, when inserted firmly, stands alone.
With the screwdriver inserted, insert the cable and pull out the screwdriver to connect the cable.
To disconnect the cable, insert the screwdriver and pull out the cable.
Remove the insulation from the cable tip to expose cables 5 to 6 mm long. Twist the cables lightly and connect to the terminal block. (See the illustration below.)





7. Calibration

(1) Zero adjustment
With no load on the sensor, use the zero adjustment control to adjust the conditioner so that the analog output will be the zero point.
(2) Span adjustment
With load on the sensor, use the span adjustment control to adjust the conditioner so that the analog output will be the designated value.
If no load is to be applied to the sensor, use the CAL switch to add a pseudo value of 1 mV/V to the input and make an adjustment.
* Repeating the above adjustments several times will improve the accuracy.

8. Precautions

- Install the conditioner securely so that it is free from vibrations and impact.
- Be sure to turn the power off before cable connection.
- Keep the interior free of dust and foreign materials. They may cause the damage to the conditioner.
- When connecting cables or operating the controls and CAL switch, use the accessory screwdriver.
- When operating the controls and CAL switch, be sure to insert the screwdriver perpendicularly. Inserting the screwdriver with a tilt may cause a short circuit.
- The zero adjustment and span adjustment controls have a maximum number of revolutions of 15. Do not rotate them more than necessary.
- Do not disassemble or modify the conditioner. It may cause the damage to the conditioner.
- Avoid condensation during operation and storage.
- Do not immerse the conditioner in water.