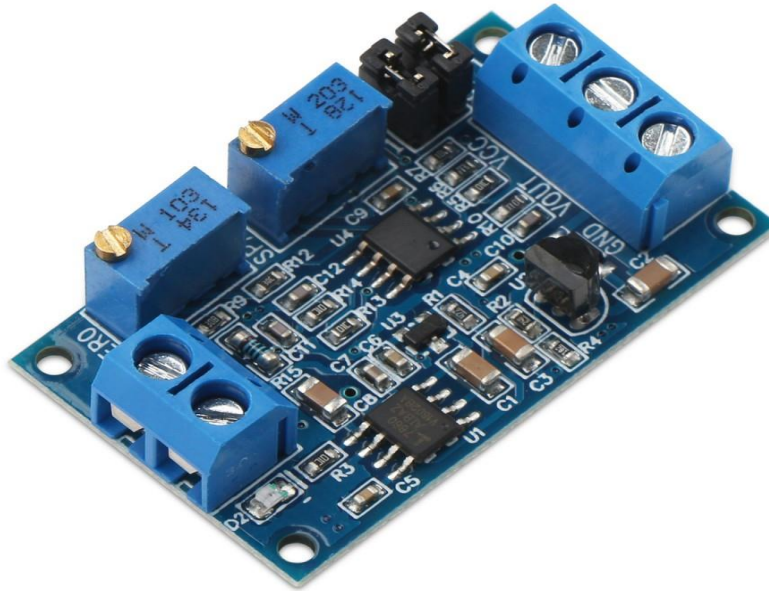


Current Loop to Voltage Converter Module  
(4-20mA to 0-3.3V/ 0-5V/ 0-10V)



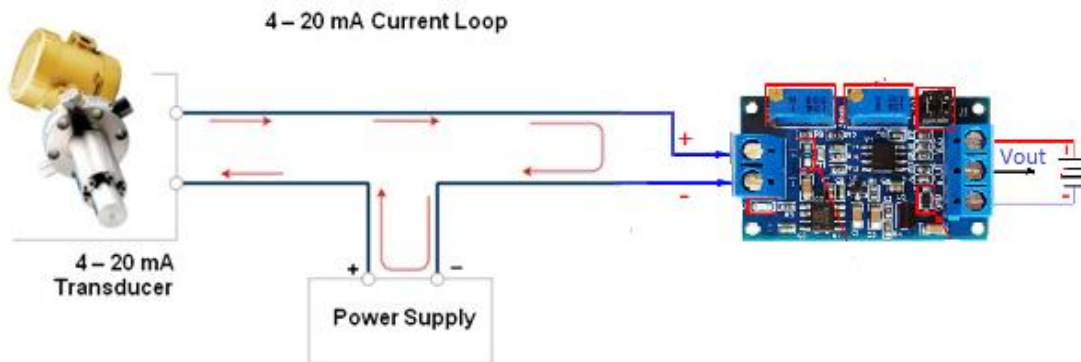
### Why 4-20 mA Current Loop?

Industrial-grade transducers commonly use current signals to transmit data. This is in contrast to most other transducers, such as thermocouples and resistive strain gages, which use a voltage signal. While voltage-based transducers are sufficient in many environments, current-based transducers are at times preferred. For instance, the inherent disadvantage of using voltage to transmit signals in an industrial environment is voltage drops over long cable lengths due to wire resistance. The 4-20 mA current loop is the main method for transmitting the sensor's information over a long distance in industrial sensors.

Now as shown below figure there is a sensor that measures the physical parameters such as temperature, pressure, speed, flow, etc. The sensor has to transfer this information in the form of electrical signals like voltage or current. Transmitting sensor information over a long distance in the form of

## FUTURE ELECTRONICS EGYPT

current is more useful. Transmitting sensor information in the form of voltage over a long distance has several drawbacks. There may be a chance of voltage drop due to wire internal resistance and receiving low voltage at the receiving end.



The sensor's output voltage is converted into a proportional current, 4 mA represents the zero level of the output and 20 mA represents the full-scale output. Then a receiver (current to voltage converter module) at the remote location end converts this 4-20 mA signal back to the voltage which is then processed by a controller (PLC for example) or a display signal.

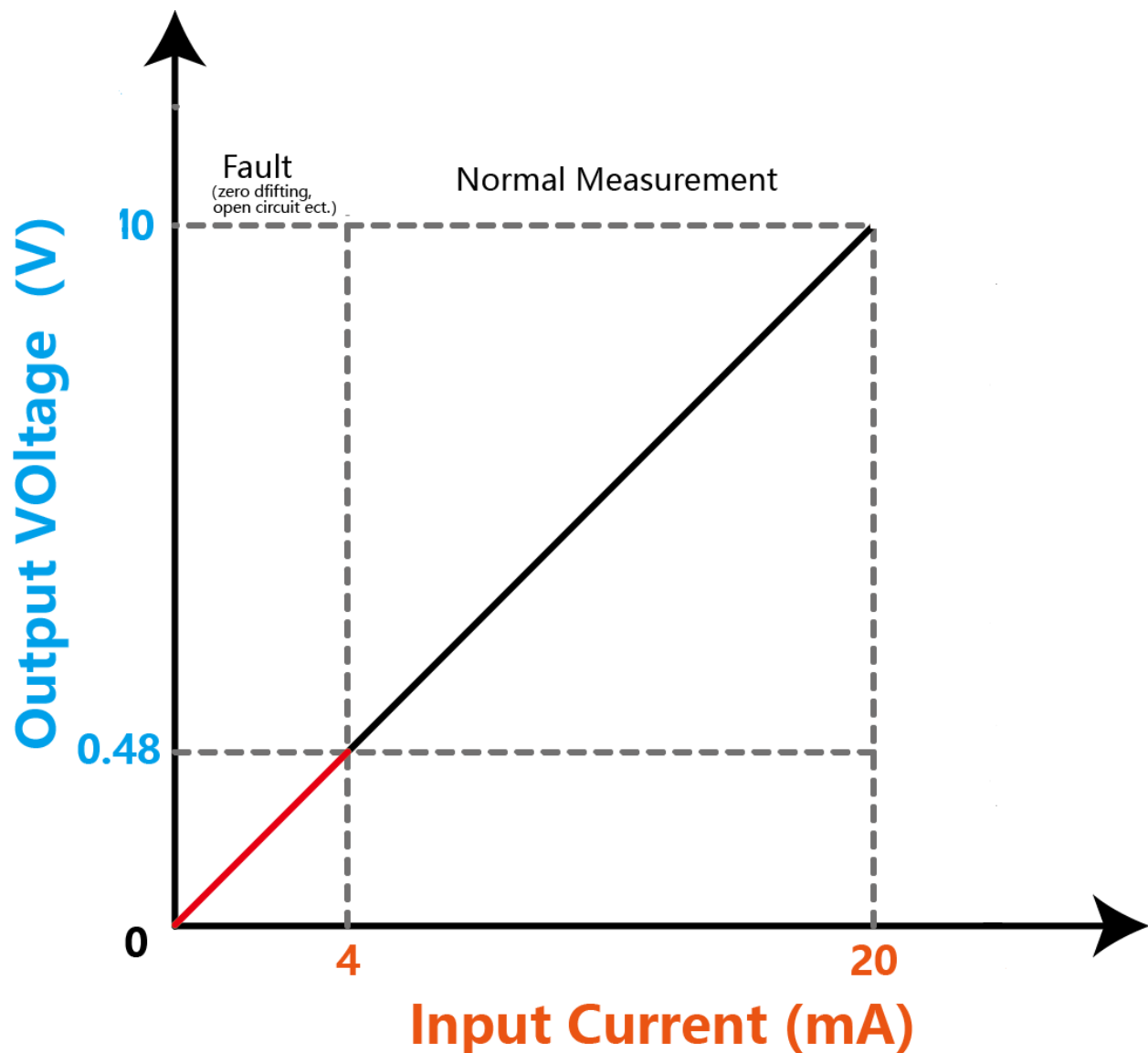
### **What does the current to voltage converter do?**

This current-to-voltage module linearly converts 4-20mA current signals into 0-3V or 0-5V or 0-10V (Industrial signal). Industrial sensors or devices usually have the current signal output of 4-20 mA. With this current-to-voltage module, your main control board can easily read the current signals output from industrial sensors or devices.

Normally, current signals lower than 4mA can be used for fault diagnosis, Therefore, this module is designed with a wide range of 0-20mA detection range, which is compatible with fault detection applications. This module uses 0.1% high precision sense resistor and ultra-low noise rail-to-rail zero-drift op amp, so it is high accuracy, no need to calibration, and easy to use.

## FUTURE ELECTRONICS EGYPT

Simply connect the board to DC Power supply, connect your current source 4-20mA to the input and our board will convert it to linear voltages



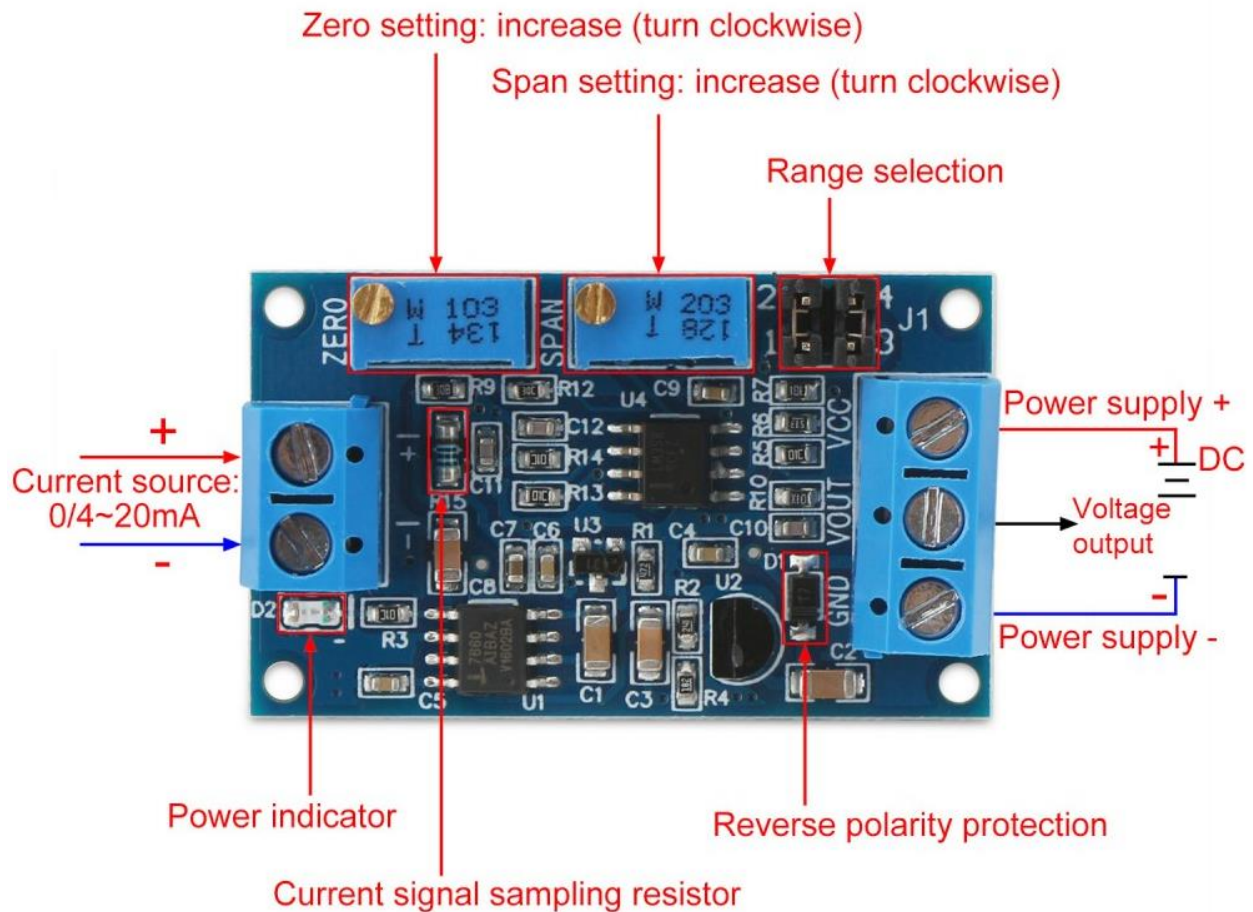
### Specification

- Current Input support 4-20Ma & 0-20mA
- Voltage output support 0-3.3V / 0-5V / 0-10V
- High stability, good linearity, industrial grade
- Zero and maximum sensor output range can be adjusted
- Current signal sampling resistor with high precision color ring resistance, high precision, temperature drift small, high power

## FUTURE ELECTRONICS EGYPT

- Power supply: DC 7~36V (if the output needs to be 10V, the input must be over 12V)
- Reverse polarity protection.

### How does the current to voltage module work?



When the current input is at minimum (0mA or 4mA), adjust the Zero potentiometer to make the voltage output to be the minimum value (0.0V or others).

When the current input is at maximum (20mA), adjust the Span potentiometer to make the voltage output to be the maximum value (3.3V or 5V or 10V; the output can be as low as 2.5V when the current input is within 4 -20mA).

According to your needs, select the appropriate span through the jumper cap:

ON: jumper cap buckles on the two jumper pins

OFF: two jumper pins without the jumper cap

**4 -20mA Range**

0 -3.3V range: pin 1, 2 OFF pin 3, 4 OFF

0 -5.0V range: pin 1, 2 ON pin 3, 4 ON

0 -10.0V range: pin 1, 2 ON pin 3, 4 OFF

**0 -20mA Range**

0 -3.3V range: pin 1, 2 ON pin 3, 4 ON

0 -5.0V range: pin 1, 2 ON pin 3, 4 ON

0 -10.0V range: pin 1, 2 ON pin 3, 4 OF