



## MAX31865 MODULE PT100 AND PT1000 RTD PLATINUM RESISTANCE TEMPERATURE

### MAX31865 Module PT100 & PT1000 RTD Platinum Resistance Temperature

#### Description:

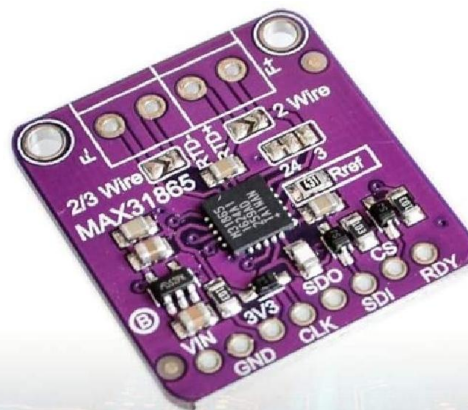
For precision temperature sensing, nothing beats a MAX31865 RTD Platinum Resistance Temperature Detector Module PT100-PT1000. Resistance temperature detectors (RTDs) are temperature sensors that contain a resistor that changes resistance value as its temperature changes, basically a kind of thermistor. In this sensor, the resistor is actually a small strip of Platinum with a resistance of 100 ohms at 0 °C, thus the name PT100.

Compared to most NTC/PTC thermistors, the PT type of RTD is much most stable and precise (but also more expensive) PT100's have been used for many years to measure temperature in laboratory and industrial processes, and have developed a reputation for accuracy (better than thermocouples), repeatability, and stability.

The MAX31865 is an easy-to-use thermistor-to-digital output converter optimized for platinum resistance temperature detectors (RTDs). The external resistor sets the RTD sensitivity, and the high precision  $\Delta$ - $\Sigma$  ADC converts the ratio of the RTD resistor to the reference resistor into a digital output. The MAX31865 has overvoltage protection up to  $\pm 45V$  and provides configurable RTD and cable open and short-circuit condition detection.

#### Features:

1. Integration Lowers System Cost, Simplifies Design
2. Efforts, and Reduces Design Cycle Time
3. High Accuracy Facilitates Meeting Error Budgets
4. 15-Bit ADC Resolution; Nominal Temperature
5. Resolution 0.03125NC (Varies Due to RTD Nonlinearity)
6. Total Accuracy Over All Operating Conditions



- ◆ Supporting platinum resistance RTD (PT100 to PT1000) from 100\_ to 1 k\_ (0 C)
- ◆ Conversion time: 21ms (maximum)
- ◆ Fifteen-bit ADC resolution; nominal temperature resolution is 0.03125 degree C (non-linear change with RTD)
- ◆ Under the whole working conditions, the total accuracy is kept at 0.5 degree C (0.05% full range).
- ◆ SPI compatible interface, compatible with 2-wire, 3-wire and 4-wire sensor connections