

LAMPIRAN



Uji coba alat



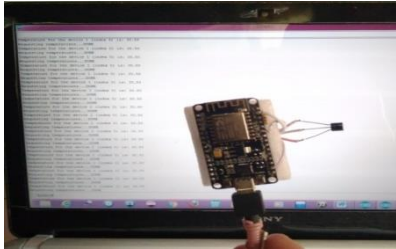
Proses pengambilan data dalam gedung



Proses pengambilan data di lapangan

Pengujian

1. Pengujian sensor suhu menggunakan *serial monitor*



2. Pengujian pengiriman data dengan *access point* menyala



3. Pengujian dilakukan dengan *access point* menyala





www.dalsemi.com

DS18B20
Programmable Resolution
1-Wire® Digital Thermometer

FEATURES

- Unique 1-Wire interface requires only one port pin for communication
- Multidrop capability simplifies distributed temperature sensing applications
- Requires no external components
- Can be powered from data line. Power supply range is 3.0V to 5.5V
- Zero standby power required
- Measures temperatures from -55°C to +125°C. Fahrenheit equivalent is -67°F to +257°F
- ±0.5°C accuracy from -10°C to +85°C
- Thermometer resolution is programmable from 9 to 12 bits
- Converts 12-bit temperature to digital word in 750 ms (max.)
- User-definable, nonvolatile temperature alarm settings
- Alarm search command identifies and addresses devices whose temperature is outside of programmed limits (temperature alarm condition)
- Applications include thermostatic controls, industrial systems, consumer products, thermometers, or any thermally sensitive system

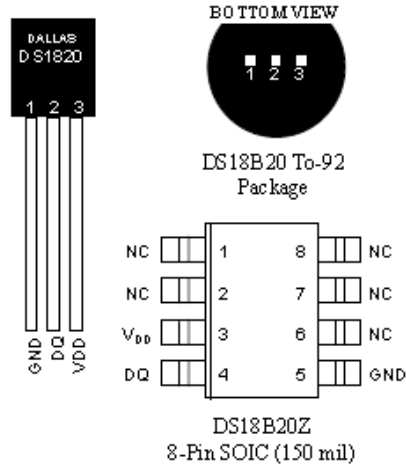
DESCRIPTION

The DS18B20 Digital Thermometer provides 9 to 12-bit (configurable) temperature readings which indicate the temperature of the device.

Information is sent to/from the DS18B20 over a 1-Wire interface, so that only one wire (and ground) needs to be connected from a central microprocessor to a DS18B20. Power for reading, writing, and performing temperature conversions can be derived from the data line itself with no need for an external power source.

Because each DS18B20 contains a unique silicon serial number, multiple DS18B20s can exist on the same 1-Wire bus. This allows for placing temperature sensors in many different places. Applications where this feature is useful include HVAC environmental controls, sensing temperatures inside buildings, equipment or machinery, and process monitoring and control.

PIN ASSIGNMENT



PIN DESCRIPTION

- GND - Ground
- DQ - Data In/Out
- V_{DD} - Power Supply Voltage
- NC - No Connect

DETAILED PIN DESCRIPTION Table 1

PIN 8PIN SOIC	PIN TO92	SYMBOL	DESCRIPTION
5	1	GND	Ground.
4	2	DQ	Data Input/Output pin. For 1-Wire operation: Open drain. (See "Parasite Power" section.)
3	3	V _{DD}	Optional V_{DD} pin. See "Parasite Power" section for details of connection. V _{DD} must be grounded for operation in parasite power mode.

DS18B20Z (8-pin SOIC): All pins not specified in this table are not to be connected.

OVERVIEW

The block diagram of Figure 1 shows the major components of the DS18B20. The DS18B20 has four main data components: 1) 64-bit lasered ROM, 2) temperature sensor, 3) nonvolatile temperature alarm triggers TH and TL, and 4) a configuration register. The device derives its power from the 1-Wire communication line by storing energy on an internal capacitor during periods of time when the signal line is high and continues to operate off this power source during the low times of the 1-Wire line until it returns high to replenish the parasite (capacitor) supply. As an alternative, the DS18B20 may also be powered from an external 3 volt - 5.5 volt supply.

Communication to the DS18B20 is via a 1-Wire port. With the 1-Wire port, the memory and control functions will not be available before the ROM function protocol has been established. The master must first provide one of five ROM function commands: 1) Read ROM, 2) Match ROM, 3) Search ROM, 4) Skip ROM, or 5) Alarm Search. These commands operate on the 64-bit lasered ROM portion of each device and can single out a specific device if many are present on the 1-Wire line as well as indicate to the bus master how many and what types of devices are present. After a ROM function sequence has been successfully executed, the memory and control functions are accessible and the master may then provide any one of the six memory and control function commands.

One control function command instructs the DS18B20 to perform a temperature measurement. The result of this measurement will be placed in the DS18B20's scratch-pad memory, and may be read by issuing a memory function command which reads the contents of the scratchpad memory. The temperature alarm triggers TH and TL consist of 1 byte EEPROM each. If the alarm search command is not applied to the DS18B20, these registers may be used as general purpose user memory. The scratchpad also contains a configuration byte to set the desired resolution of the temperature to digital conversion. Writing TH, TL, and the configuration byte is done using a memory function command. Read access to these registers is through the scratchpad. All data is read and written least significant bit first.

ESP8266 Datasheet

ESP8266 offers a complete and self-contained Wi-Fi networking solution, allowing it to either host the application or to offload all Wi-Fi networking functions from another application processor.

When ESP8266 hosts the application, and when it is the only application processor in the device, it is able to boot up directly from an external flash. It has integrated cache to improve the performance of the system in such applications, and to minimize the memory requirements.

Alternately, serving as a Wi-Fi adapter, wireless internet access can be added to any microcontroller-based design with simple connectivity through UART interface or the CPU AHB bridge interface.

ESP8266 Features

- 802.11 b/g/n protocol
- Wi-Fi Direct (P2P), soft-AP
- Integrated TCP/IP protocol stack
- Integrated TR switch, balun, LNA, power amplifier and matching network
- Integrated PLL, regulators, and power management units
- +19.5dBm output power in 802.11b mode
- Integrated temperature sensor
- Supports antenna diversity
- Power down leakage current of < 10uA
- Integrated low power 32-bit CPU could be used as application processor
- SDIO 2.0, SPI, UART
- STBC, 1×1 MIMO, 2×1 MIMO
- A-MPDU & A-MSDU aggregation & 0.4μs guard interval
- Wake up and transmit packets in < 2ms
- Standby power consumption of < 1.0mW (DTIM3)

