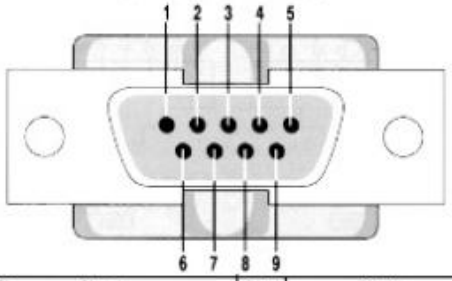
What is RS-232

- RS-232 is a popular communications interface for connecting modems and data acquisition devices (i.e. GPS receivers, electronic balances, data loggers, ...) to computers.
- RS-232 can be plugged straight into the computer's serial port (know as COM or Comm port).

RS-232 Signals

- Architecturally RS-232 is a bi-directional point to point link.
  - Two independent channels are established for two-way (full-duplex) communications.
  - RS-232 can also carry additional signals used for flow control (RTS, CTS) and modem control (DCD, DTR, DSR, RI).

(serial port - PC side)

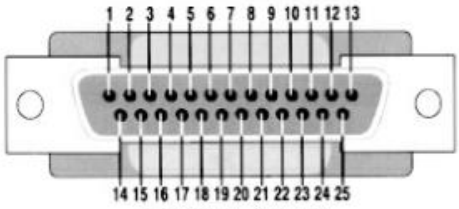


Pin	Signal	Pin	Signal
1	Data Carrier Detect	6	Data Set Ready
2	Received Data	7	Request to Send
3	Transmitted Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Signal Ground		

RS-232 Signals

- Common 25 pin D-shell connector pinout used for asynchronous data communications.

Pin	Signal
1	PGND Protective Ground
2	TXD Transmit Data
3	RXD Receive Data
4	RTS Ready To Send
5	CTS Clear To Send
6	DSR Data Set Ready
7	SG Signal Ground
8	CD Carrier Detect
20	DTR Data Terminal Ready
22	RI Ring Indicator



(serial port - PC side)

The RS-232 interface complies with the interface standard for serial data communication established by the Electronic Industries Alliance (EIA). The original number is EIA-RS-232 (232, RS232 for short). It is widely used for

computer serial interface peripheral connections. Connect cables and mechanical, electrical, signal, and transfer processes.

The data transmission rate specified by the RS-232-C standard is 50, 75, 100, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 baud per second

RS232 features:

RS-232 is one of the mainstream serial communication interfaces. Due to the early appearance of the RS232 interface standard, it is inevitable that there are deficiencies, mainly the following four points:

(1) The signal level of the interface is high, which is easy to damage the chip of the interface circuit. The voltage of any signal line on the RS232 interface is in a negative logic relationship. That is: the logic "1" is -3 – 15V; the logic is "0": +3 – +15V, and the noise margin is 2V. That is, the receiver is required to recognize a signal higher than +3V as a logic "0", a signal lower than -3V as a logic "1", a TTL level of 5V as a logic positive, and 0 as a logic negative. Incompatible with the TTL level, a level shifting circuit is required to connect to the TTL circuit.

(2) The transmission rate is low. In asynchronous transmission, the bit rate is 20Kbps; therefore, in the 51CPLD development board, the integrated program baud rate can only be 19200, which is also the reason.

(3) The interface uses a signal line and a signal return line to form a common ground transmission form. This common ground transmission is prone to common mode interference, so the noise immunity is weak.

(4) The transmission distance is limited. The maximum transmission distance is 50 feet. In fact, it can only be used at about 15 meters.

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