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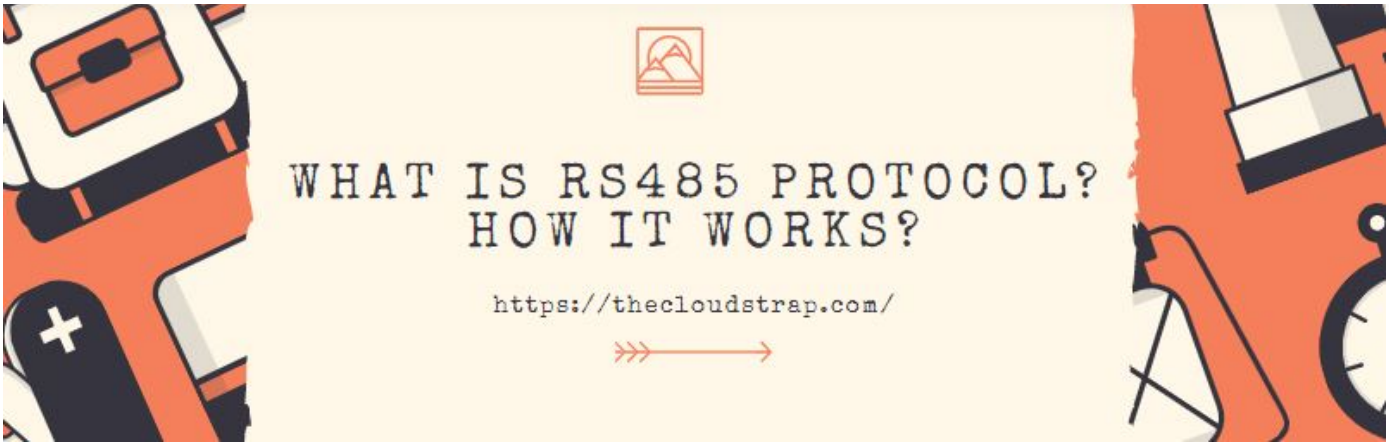
What is the RS485 protocol? | Explained



What is the RS485 protocol? RS485 is a kind of standard electrical characteristic in the serial communication process of transmitters or receivers. Another name of RS-485 is TIA-485(-A) or EIA-485, which provides services in local networks and communicates with multi-drop links.

What is RS-485?

In March 1988, RS485 protocol was invented, which has the characteristics of both RS-232 and RS-422. It sends data from both directions, following a half-duplex communication mode. This type of protocol consists of various kinds of bused transmitters and receivers. When RS485 transmits data through full-duplex communication mode with the help of 4 wires, the functioning can be compared with RS-422. Three conductors and one shield are required to send the data through the RS-485 port; here, two conductors are added for carrying differential signal voltage of RS-485.

Electrical Specifications of RS485 Protocol

- There are 32 receivers and 32 drivers for transmitters that can be connected through an RS-485 serial port, which means 32 nodes assist in transmitting data.
- The capacity to transmit data can be increased with automatic repeaters and extra drivers or transmitters and receivers with high impedance.
- The serial port consists of more than a hundred nodes on a single network.
- The data collision rate can be produced with the help of hardware units, which are connected to the receiver side and used before transmitting data.
- The data can be transmitted with the simple interface converters, it also helps in determining the electrical spikes during transmission.
- The signaling is balanced in the case of RS-485.
- RS-485 can transmit data at 4000 feet distance.
- The driver output current capability of RS-485 is 250 mA.
- While transmitting data, it follows half-duplex communication modes.
- The maximum data rate of RS-485 is 10 Mbps.
- Multidrop type cable is used in RS-485.

Is RS485 Protocol serial or parallel?

RS-485 follows the strategy of serial communication for transmitting data when the distance is between out meters to kilometers. This serial communication method uses a balanced way for transmitting and differential for receiving data. Therefore, it is capable to

ignore common-mode interference.

What is the use of the RS485 protocol?

RS-485 is renowned known as TIA-485(-A) or EIA-485 transmits data serially for computer or similar kinds of devices.

What is the baud rate for the RS485 protocol?

The standard baud rate of RS-475 115,200 bits per second.

Is RS-485 followed by a half-duplex?

Yes, it follows the communication mode of half-duplex, which consists of two wires.

Is RS-485 bidirectional?

The multiple drivers and receivers are connected in RS-485, and the bidirectional communication can be seen in a single cable. It allows bidirectional transmission of data with high speed through one cable and the cable needs two terminations.

Advantages of RS485 Protocol

- The electrical spikes can be removed with the help of a simple interface converter, which works with the help of optical isolation between two circuits.
- It is compatible with transmitting data through large networks.
- The common-mode range can be enhanced in RS-485 in tri-state mode and during the time of power off, and it is possible for both transmitters and receivers.
- The problems of data collision and bus damage condition can be recoverable in the RS-485 port.
- RS-485 is renowned for transmitting data at a higher speed.
- This is mostly used in serial communication as it is impeccable to serve different kinds of applications, whether the requirement of data speed is high.

Disadvantages of RS485 Protocol

- The data collision rate is greater in this serial port for the increased size of the network.
- It can not fulfill the demand for domestic purposes.
- Sometimes bus fault situations occur in Rs-485 serial ports.

Application of RS-485

- It is mainly used for sending data in ordinary networks through 2 to 4 wire mode.
- They are impeccable for developing a multipoint communication network.
- Due to superior performance in four points, it is mainly used in the control system.

- For making a data acquisition system, the usage of RS-485 is consummate.

Connecting network topology with RS485 Protocol

Due to the inclusion of network topology, it is a renowned serial port in data acquisition systems and some control applications. This is the only serial port that can easily make interworking with various transmitters or drivers and receivers in the same network. When the input resistance of RS-485 is 12Kohm, the network can connect more than 32 receivers or transmitters. After using high resistance, the capacity of transmitters on the same network will be increased, and it can be increased up to 256. The same thing can be seen in the case of receivers. It is also extendable. It is one of the effective pot while connecting computers, PLCs, and different kinds of microcontrollers.

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This post was published by Admin.

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