

Max490 RS422 TTL Converter Module

Max490 RS422 TTL Converter Module is used to connect to the RS422 network via TTL. Bidirectional communication is possible with the Max490 chip on it.

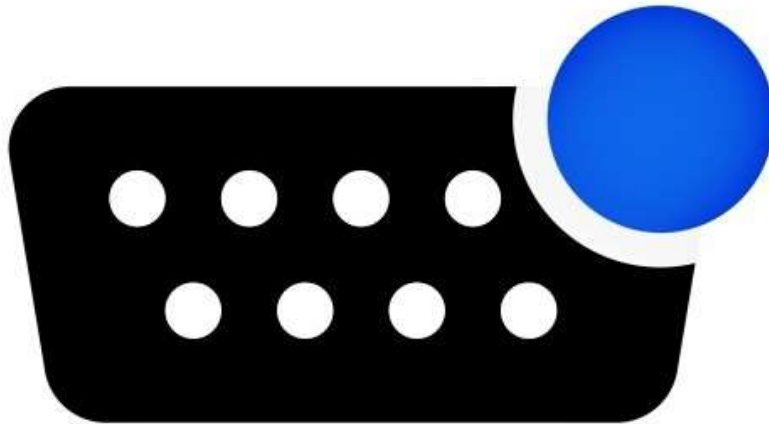
The communication speed is 2.5Mbps. There is a communication distance of up to 1000 meters. It has 15Kv esd protection.

Features

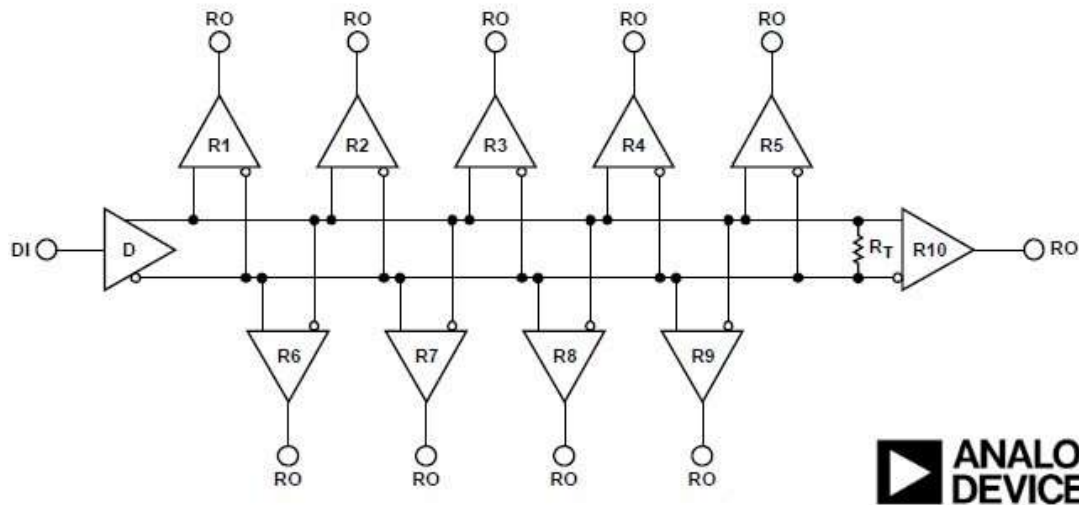
- Supply Voltage: 5VDC
- Chip: MAX490
- Communication Format: RS422
- Communication Speed: 2.5Mbps
- Communication Distance: 1000m
- 15KV ESD protection
- Supply and communication indicator LED
- Size: 50x27mm

RS-422 Quick Overview

RS-422 is an advanced version of RS-232 (<https://en.wikipedia.org/wiki/RS-232>) which enables a balanced voltage in the circuit. It works on a master and slave model, that means one master device is connected to several slave devices. Unlike RS-232, we can send and receive data signals simultaneously, albeit on separate transmission lines.



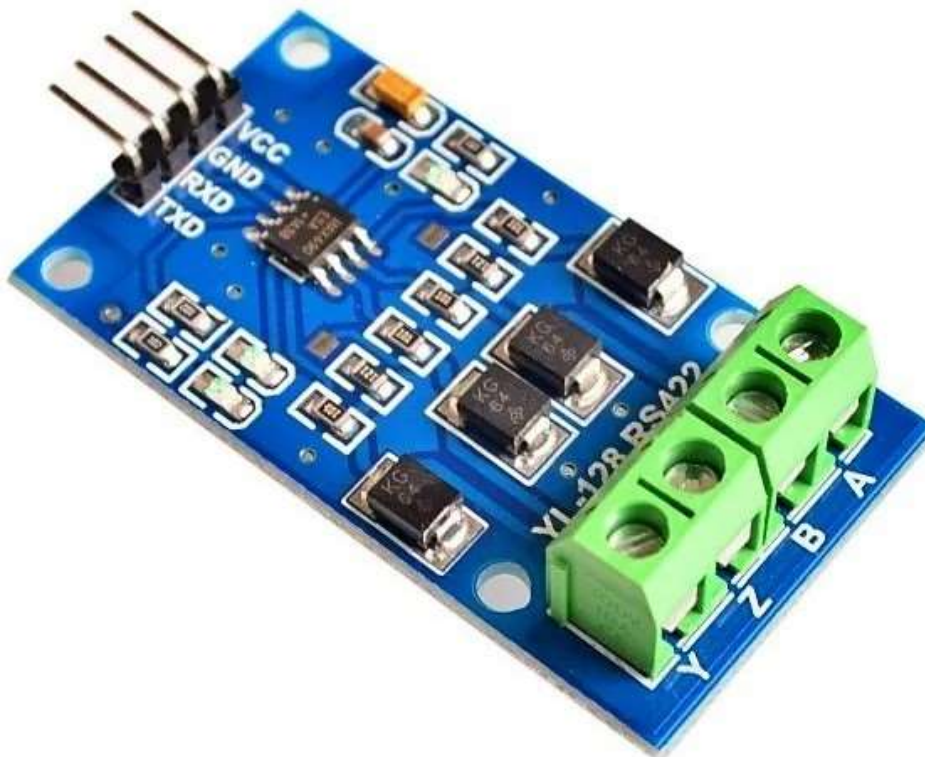
Officially, the RS-422 standard's title is "Electrical Characteristics of Balanced Voltage Digital Interface Circuits", and is published by the ANSI Telecommunication Industry Association/Electronic Industries Association (TIA/EIA). The term RS-422, commonly used rather than the official name, is specified as a simplex multidrop standard, which means only one driver (a single point of communication for other devices) and up to ten receivers can be attached to a bus.



Further Reading <https://www.versitron.com/blog/know-about-the-difference-between-rs232-rs422-and-rs485>

Arduino RS-422 & MAX490

RS-422 is known for the potential of long-distance data communication at very high reliability. Luckily, with an appropriate adapter/interface circuitry, even a novice can now play with RS-422 and Arduino as well. The most common, cheap, and widely known module available for this application is the “MAX490 RS422-TTL” module (see below).



As clearly defined, the design of the MAX490 RS422-TTL module is based on the MAX490 low-power transceiver for RS-485 and RS-422 communication (<https://www.analog.com/media/en/technical-documentation/data-sheets/max1487-max491.pdf>).

Here are the technical specifications of the module (as seen on a seller’s page):

- Communication speed up to 2.5Mbps
- RS422 & RS485 protocol compatibility

- TXD and RXD are compatible with 5V TTL logic signals
- ESD protection for electromagnetic interference up to 15kV
- 120Ω termination resistor

TTL Interface

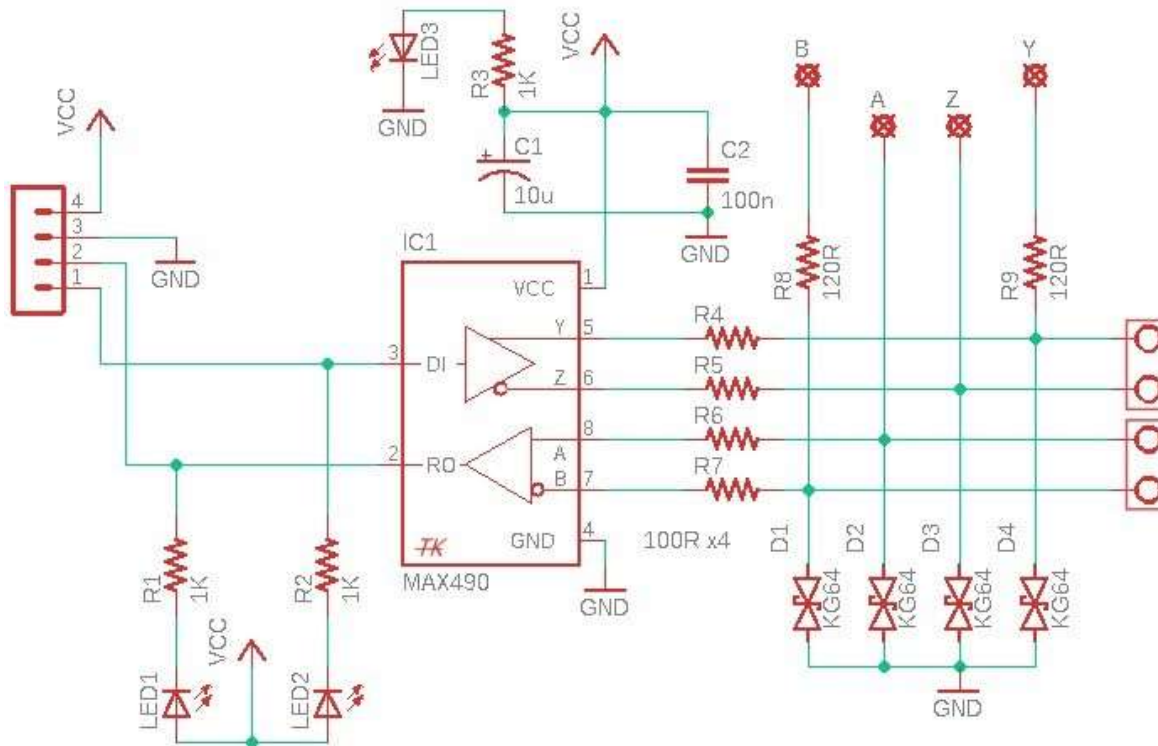
- VCC
- GND
- RXD
- TXD

RS-422 Interface

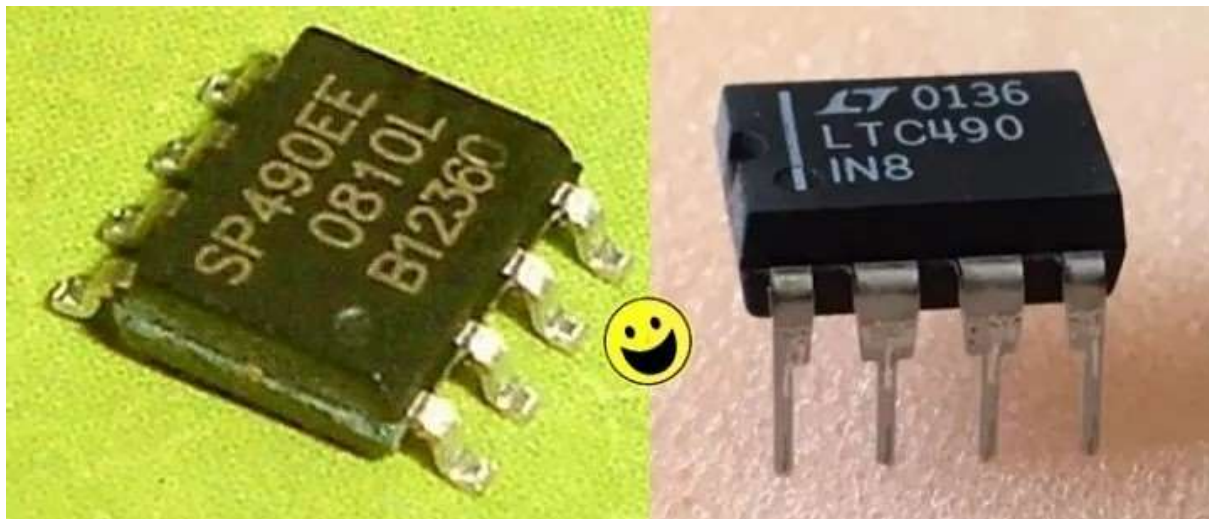
- A
- B
- Z
- Y



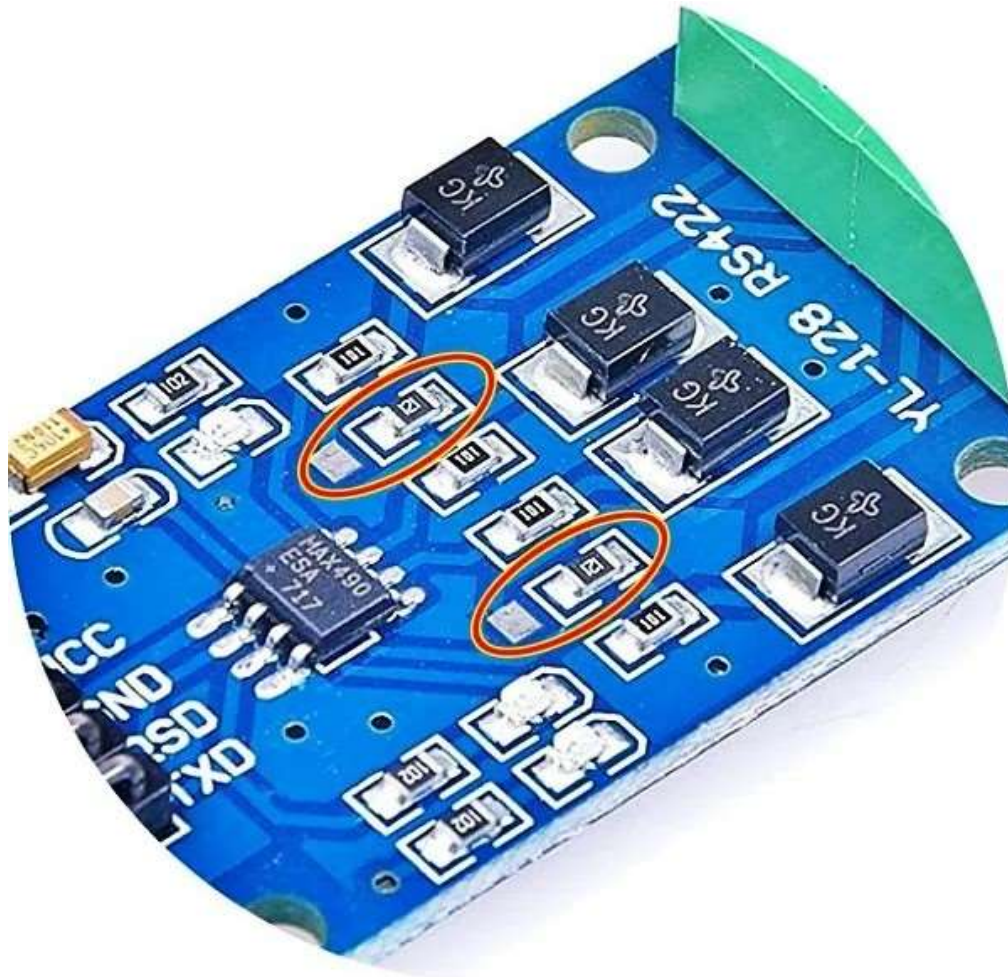
My schematic is below.



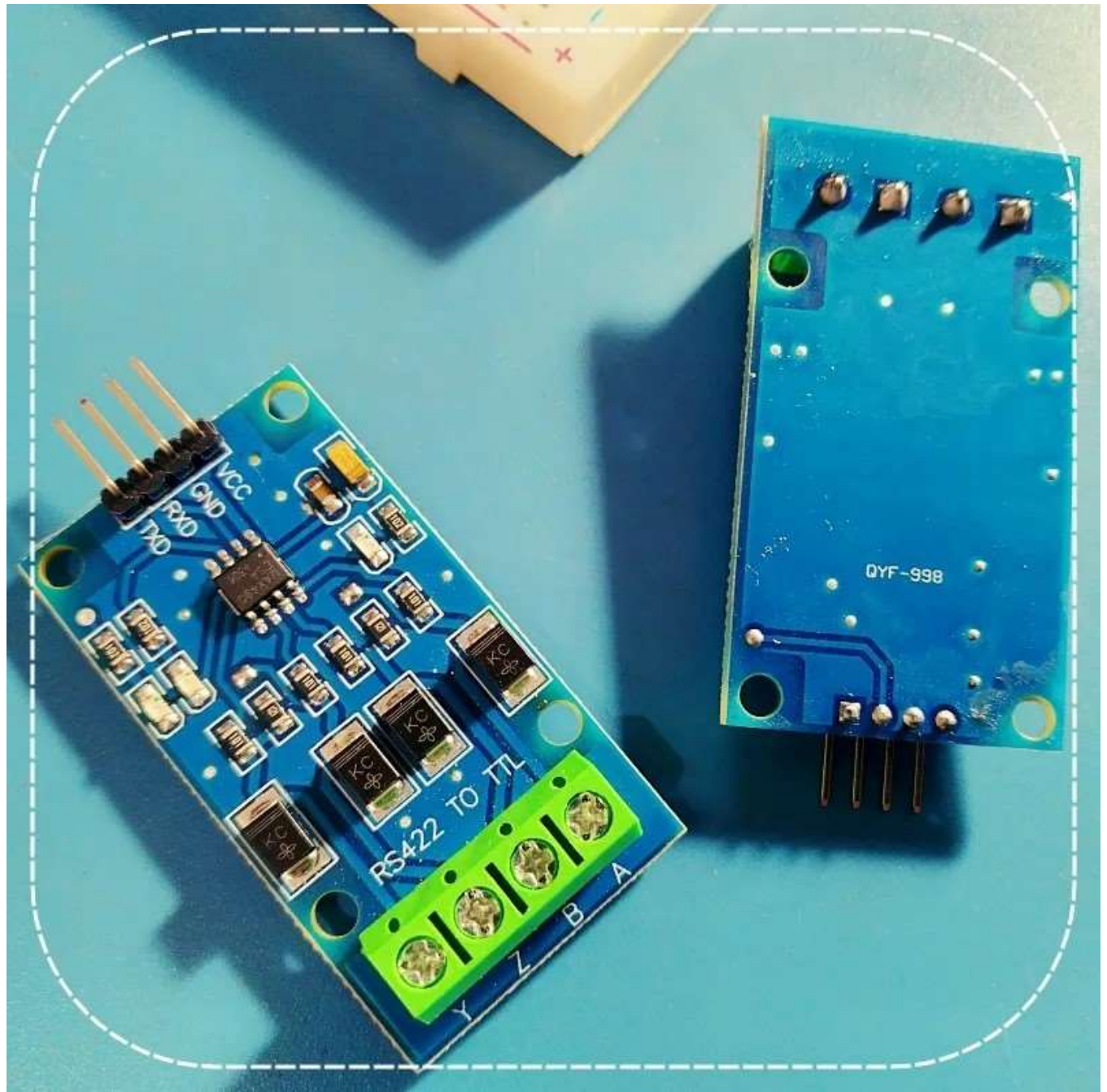
You can find some other Chinese RS422-TTL modules using the SP490 chip from Sipex! The SP490, available in 8-pin plastic DIP and 8-pin NSOIC packages, is a low power differential line driver/receiver meeting RS-485 and RS-422 standards up to 5Mbps. The next chip that caught my attention is the LTC490 differential driver and receiver pair (<https://www.analog.com/media/en/technical-documentation/data-sheets/490fb.pdf>).



Also, as you might noticed, the MAX490 module has two 120Ω termination resistors on board, but, if necessary, their free ends must be connected to the corresponding solder pads to add them to the circuit (see below). As the onboard 120Ω terminators can be turned on or off via solder jumpers, this module is an ideal solution for all types of installations.



I bought a few MAX490 modules out of curiosity. Some are labelled as QYF-998 and others as YL-128.



Jumping to a conclusion, RS-422 is ideal for long distance communication. The MAX490 RS422-TTL module incorporates the famed MAX490 chip for converting TTL/Serial signals to the RS-422 protocol and vice versa. Really nothing much to it, right?

Well, you can easily set up an Arduino-RS422 demonstration project with a pair of these modules and Arduino boards. This is probably the simplest project <https://www.taloselectronics.com/blogs/tutoriales/comunicacion-arduino-rs422-con-modulo-max490> . There are more examples out there, some might be practical