make a figure

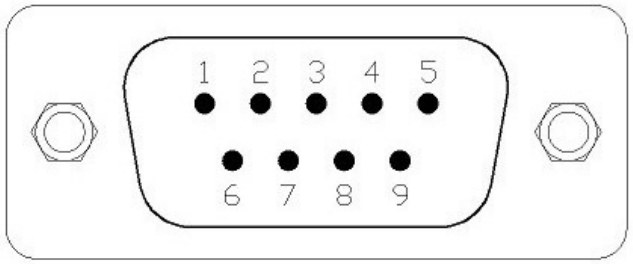
Robotics and Electronics

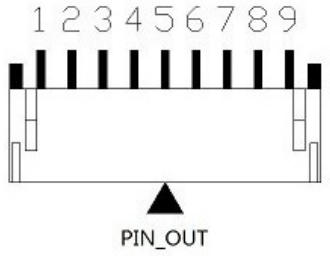
Gicren’s Device-Standard (GDS)

Connector

For all the **Gicren**’s devices except for the adapter and the customized device, there are only three types of connectors for communication : USB, DB9(Male) and JST-PH2.0-9P(Male).

- **DB9** : The continuous current is up to 10A (5A for single pin), this connector is typically applied in the high-current device, such as motor controllers.
- **JST-PH2.0-9P** : The continuous current is up to 4A (2A for single pin), this connector is typically applied in the low-current device, such as sensors.
- **Pin-Definition** :
  1. RS485-A(D+)
  2. RS485-B(D-)
  3. I2C-SDA
  4. I2C-SCL
  5. GND
  6. VCC
  7. VCC
  8. Error-Output
  9. GND

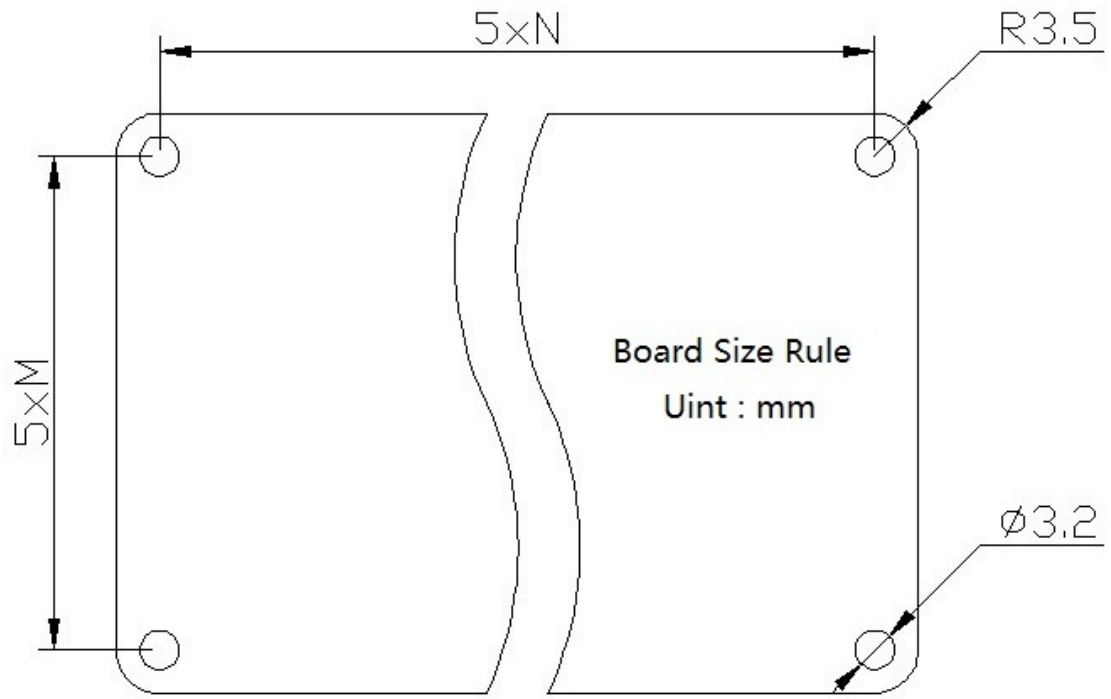




PS: A set of all the devices that connected to the same RS485(I2C) bus is called a RS485(I2C) system, they are designed in strict compliance with the Master-Slave structure. It is called “***System-Master***” that plays a leading and coordinating role in the RS485(I2C) system, while the other devices are called “***System-Slave***”. The RS485 and I2C interfaces are integrated in one connector, which makes all the **Gicren**’s devices more integrated and standardized. This Pin-Definition not only diversifies the communication interfaces, but also takes both the short-distance and long-distance applications into account. The Pin-8(open drain output) is normally high, it will go low once an error occurs. The *System-Master* can get all the error sources by traversing all the *System-Slave*.

Board Size

M and N are integers, M is typically 6 or 8.



LED Indication

In order to make all the **Gicren**'s devices easy to use, the baud rate is detected automatically(1200~115200bps). Furthermore, the DIP switches and jumpers are reduced as possible, there are typically only four LEDs which are shown as follows:

Reverse : It indicates the reverse connection of power supply.
Error : It indicates one or more errors occur in the device. In the meantime, the device goes into the standby mode, you can awaken it by clearing the error word.
Rx : It indicates data is being received.
Tx : It indicates data is being transmitted.

Protocol

Both the RS485 and I2C communication protocols only have four types of packet identifiers as follows(please refer to the corresponding communication protocols for details):

- **RPID** : For the *User-Register-Read* and *User-Register-Write* operations.
- **HPID** : For checking the instruction packet.
- **EPID** : For getting the error word form the *System-Slave*.
- **SPID** : It is used to perform some setting operations(depends on the protocol).