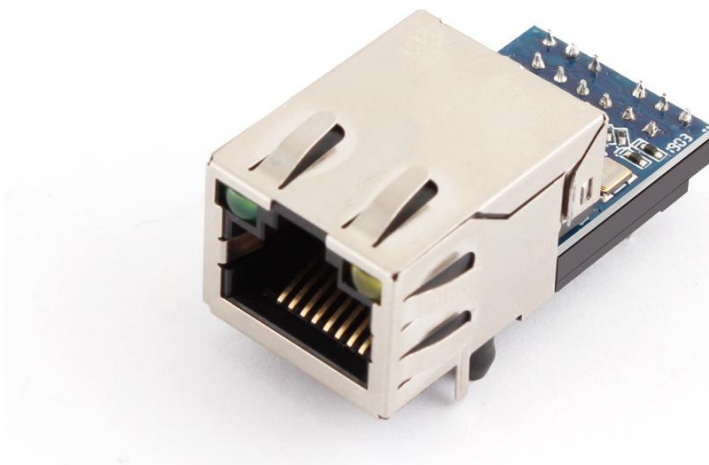


USR-K5 INTEGRATION GUIDE

File Version: V1.0.1



Content

USR-K5 INTEGRATION GUIDE.....	1
1. Product overview.....	3
1.1. Product introduction.....	3
2. Specifications and dimensions.....	3
2.1. Electrical parameters.....	3
2.2. Operating temperature.....	3
2.3. Mechanical characteristics.....	4
3. Hardware interface.....	5
3.1 Pin description.....	5
3.2 Network port operating indicator light description:.....	6
4. The suits for development.....	7
5. Hardware reference design.....	8
5.1.Hardware connections are typically applied, as shown in figure 5.....	8
5.2.power interface.....	8
5.3.UART interface.....	9
5.4.Reference to encapsulate.....	10
6. Contact information.....	11
7. Disclaimer.....	12

1. Product overview

1.1. Product introduction

Usr-k5 is a new, small serial port to Ethernet module for data transmission between TCP/UDP packets and UART interface.

This product is integrated with TCP/IP protocol stack, users can use it to easily complete the networking function of embedded devices, save manpower, material resources and development cycle in the development process, so that the product can be put into the market faster, enhance competitiveness

This product in volume, width is the same as the ordinary RJ45 seat, is less than twice the length of the ordinary network port seat, has the industry leading ultra-small volume, when working at full speed current 235mA.

This product has been rigorously tested and has been successfully applied in Banks, highways, large corporate networks, busy networks of cameras, and complex network environments such as fiber-to-Ethernet.

2. Specifications and dimensions

2.1. Electrical parameters

Parameter name	rating value			units
	minimum value	typical value	maximum	
Operating voltage (dc)	3.0	3.3	3.6	V
Operating current	-	175	-	mA
Operating current	-	300	-	mA
Low input logic level (VIL)	-0.4	-	0.7	V
Input logic level high (VIH)	2.0	-	VDD+0.4	V
Low output logic level (VOL)	-	-	0.40	V
Input logic level high (VOH)	VDD-0.4V	-	-	V

2.2. Operating temperature

Parameter name	rating value			units
	minimum value	typical value	maximum	
Operating temperature	-40	Normal temperature	85	°C
Storage Temperature	-40	Normal temperature	125	°C

2.3. Mechanical characteristics

Mechanical dimensions are shown in FIG. 2 (in mm).

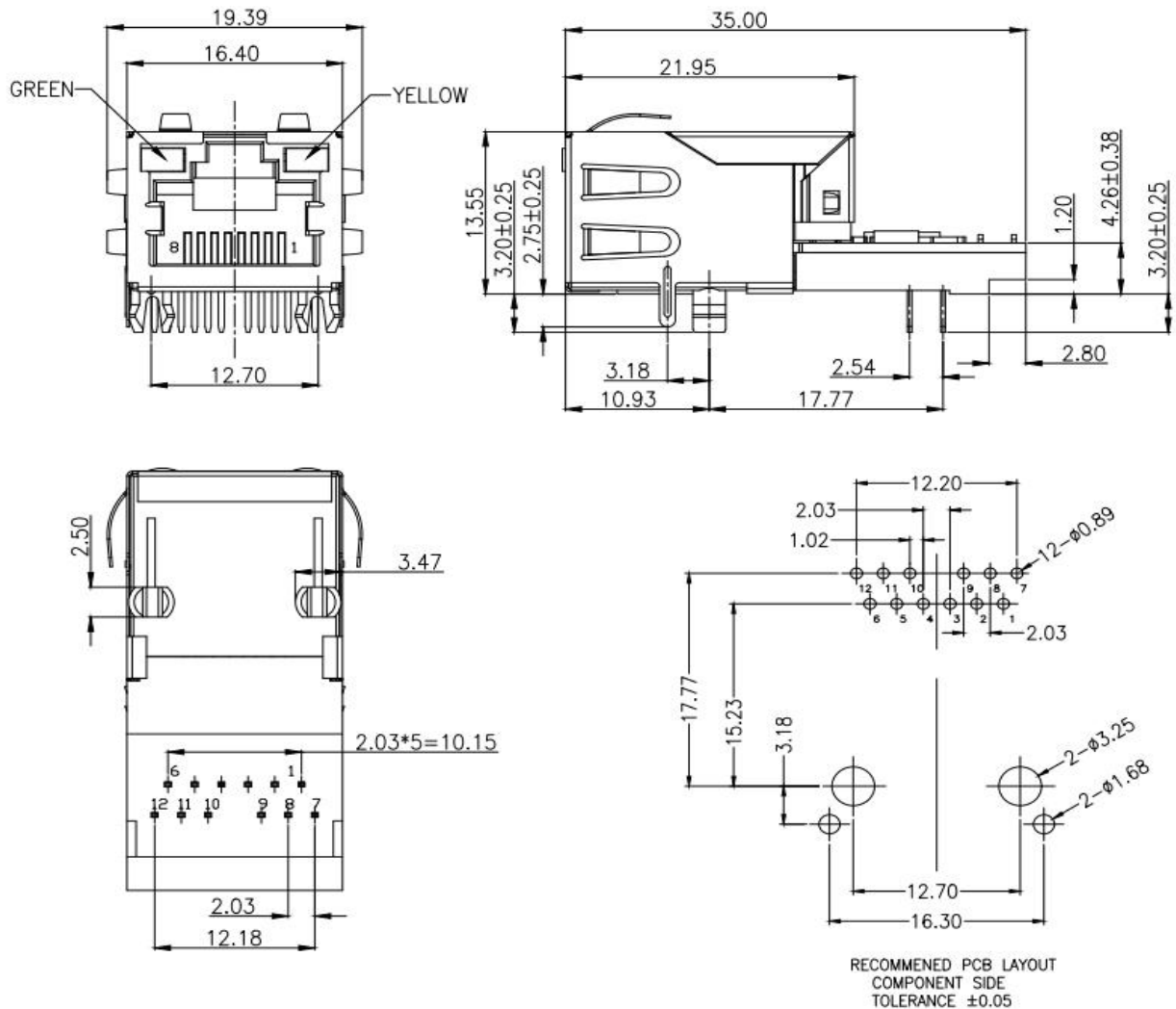


Figure2 Machine dimension

3. Hardware interface

3.1 Pin description

The usr-k5 module is in a straight insert package with 16 external pins, two of which are fixed pins and two are metal shell base pins. The pin that is not used is NC, which can be suspended in the application. See figure 3.

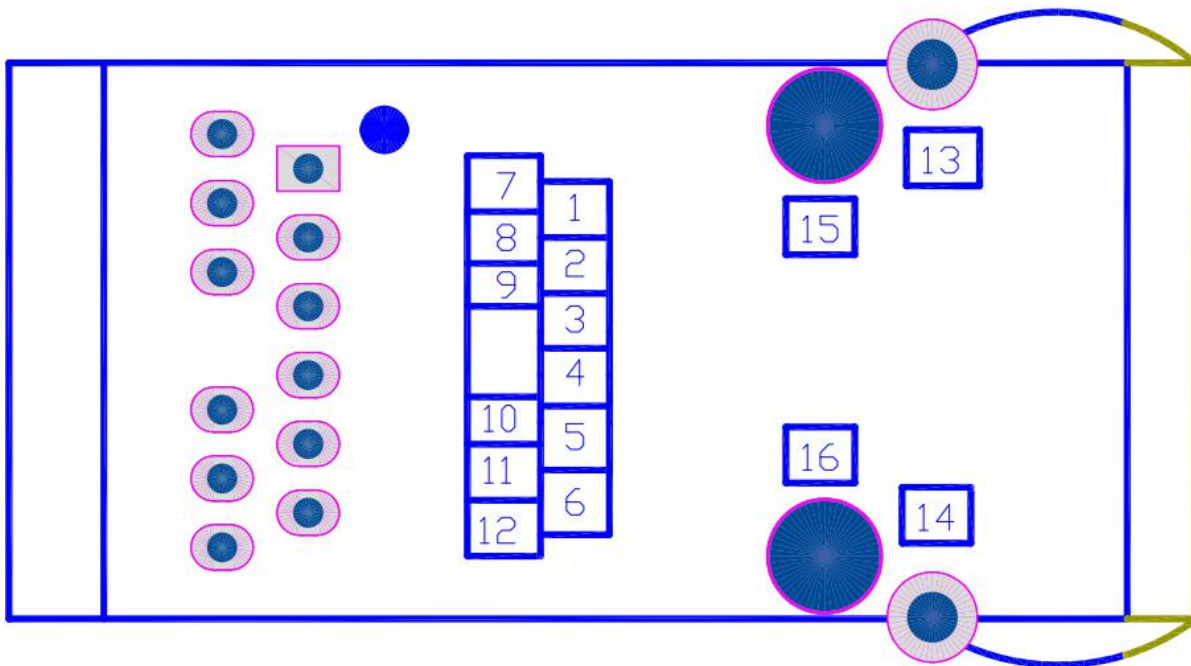


Figure3 USR-K5 Pin elevation diagram

Pin description is shown in table 3.1

Diagram3.1 USR-K5 Pin Definitions

Number	Name	Type	Description
1	NC	\	Pin dangling
2	NC	\	Pin dangling
3	CTS	0	The default TCP connection indicator, which lights up when there is a TCP connection, can be configured as hardware flow CTS (clear to send)
4	RST	I	Module reset (apply a low-level pulse of 200ms or more to restart the module)
5	RTS	0	The default is 485 send and receive control, high level send. Configurable as hardware flow control RTS (request to send)
6	Reload	I	The module can restore the factory Settings. In the case of module power

			failure (or reset), pull down the Reload, then power on, keep the Reload 5s low, pull up after 5s, and restore the factory Settings successfully.
7	NC	\	Closed for now. Please hang
8	RXD	I	Serial port reception (3.3v, TTL level)
9	TXD	0	Serial port (3.3v, TTL level)
10	GND	Power	Ground (including power and signal ground)
11	VDD	Power	Power supply (external pin shall be supplied with dc 3.3v power supply)
12	NC	\	Closed for now. Please hang
13	ETH	\	Mesh shield shell pin
14	ETH	\	Mesh shield shell pin
15	Fixed leg	\	Modular fixed column
16	Fixed leg	\	Modular fixed column

3.2 Network port operating indicator light description:

Screen indicator light	function	explain
green light	Connection status indication	The green light is on when connecting to the network correctly.
yellow light	Data Indication	Modules have data to receive or flash when sent, including modules receiving network broadcast packets.

4. The suits for development

This evaluation board is the usr-kx test board used by our company to evaluate and test the super network port series modules. Specific functions are described as follows:

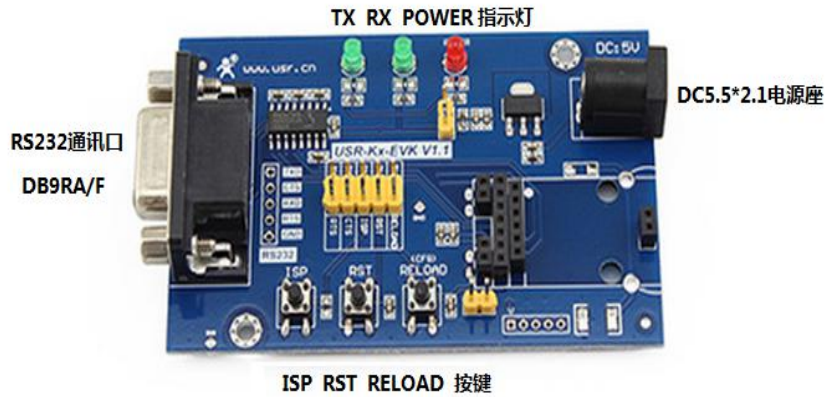


Figure4 USR-Kx-EVK sketch map

function	name	description
External interface	DC 5.5*2.1 Power socket	5VDC IN Jack
	DB9RA/F	9-Pin Female header for connecting to PC serial port
	Module	USR-Kx seat , insert K3 module
LED	Power	3.3V power led
	TXD	TXD indicator light
	RXD	RXD indicator light
Button	Reset	Reset
	Reload	Restore factory Settings
	ISP	nouse

5. Hardware reference design

5.1. Hardware connections are typically applied, as shown in figure 5

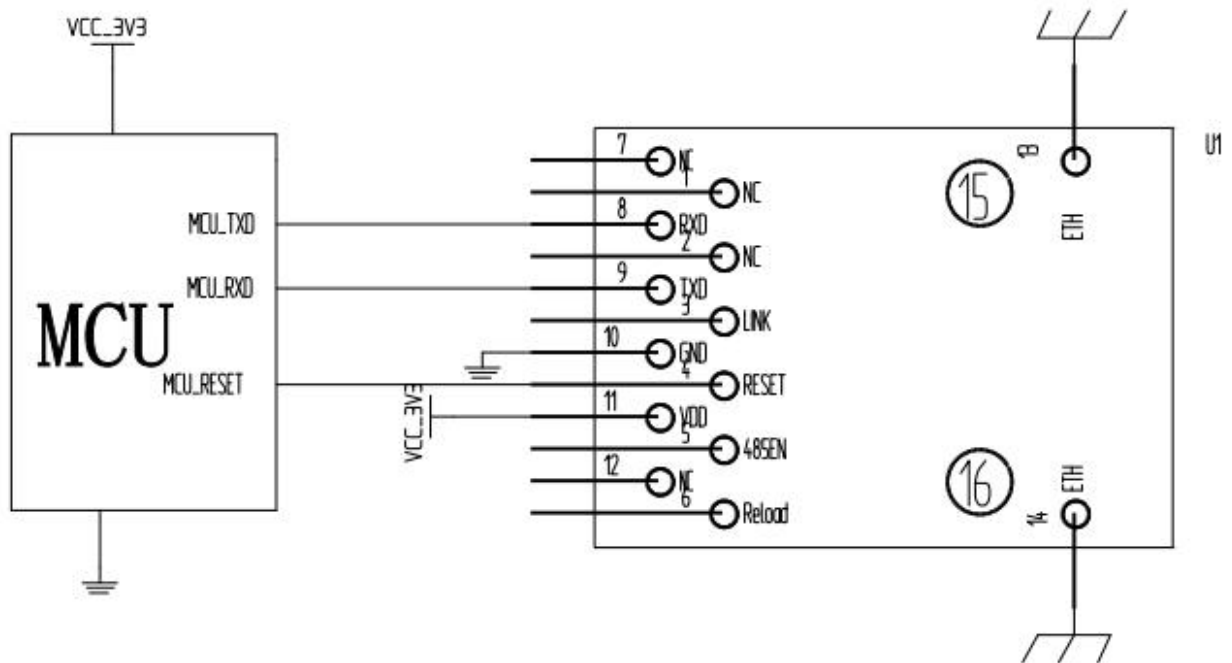


Figure5 USR-K5 Hardware connection

≤explain≥:

When designing hardware connection, customers need to pay attention to:

1. RST: module reset signal, input. Active low level, with 10K resistor inside the module pulling up to 3.3v. When the module is powered on or fails, the MCU needs to reset the module, pull it down at least 300ms and then pull it up.
2. TXD/RXD: serial data transceiver signal. Internally connected with a pull up resistance of 10K.

5.2. power interface

Usr-k5 is powered by 3.3v, and the working current is 235mA@3.3V. Pin 11 is the power supply pin 3.3v. It can be connected to 10UF/6V3/10% and 100nF/50V/10% bypass patch capacitor stability module. See figure6

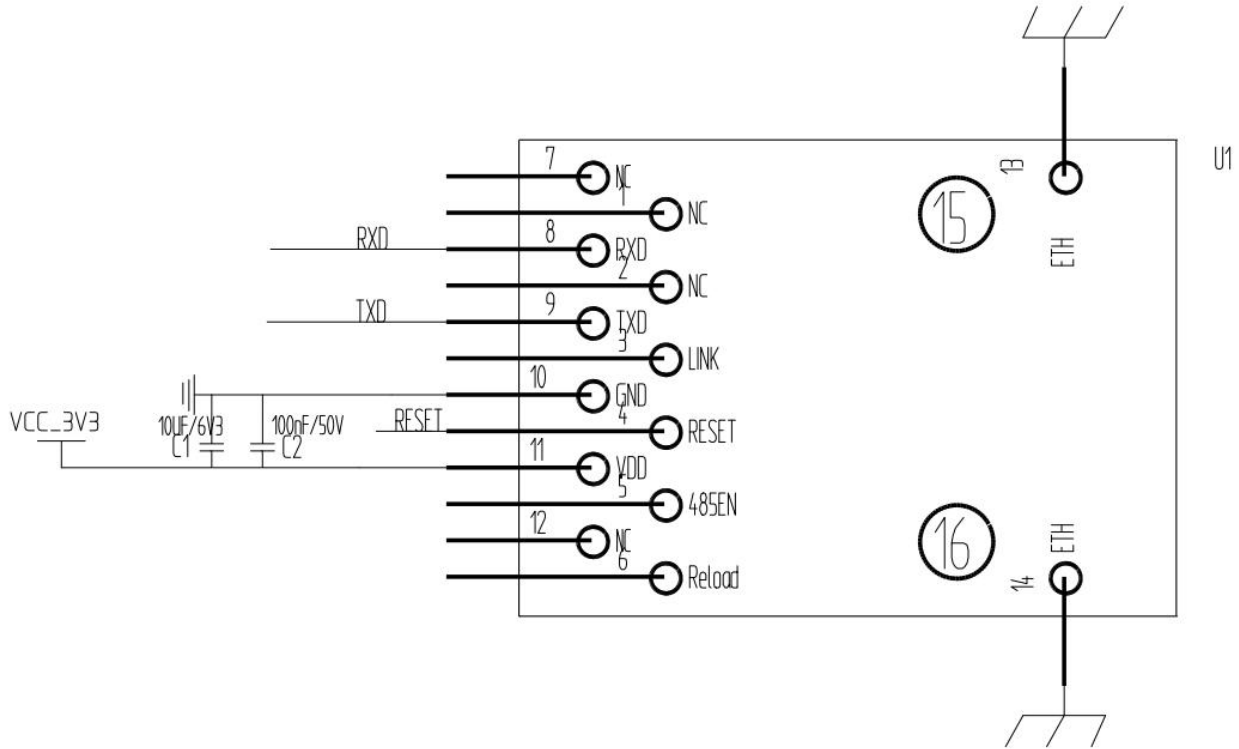


Figure6 USR-K5 Power interface diagram

5.3.UART interface

UART is a serial data interface, which only supports ttl3.3v level. It can connect rs-232 chip to rs-232 level and connect external devices. The UART interface of this module includes TXD/RXD signal line. Taking rs-232 level as an example, the reference circuit is as follows:

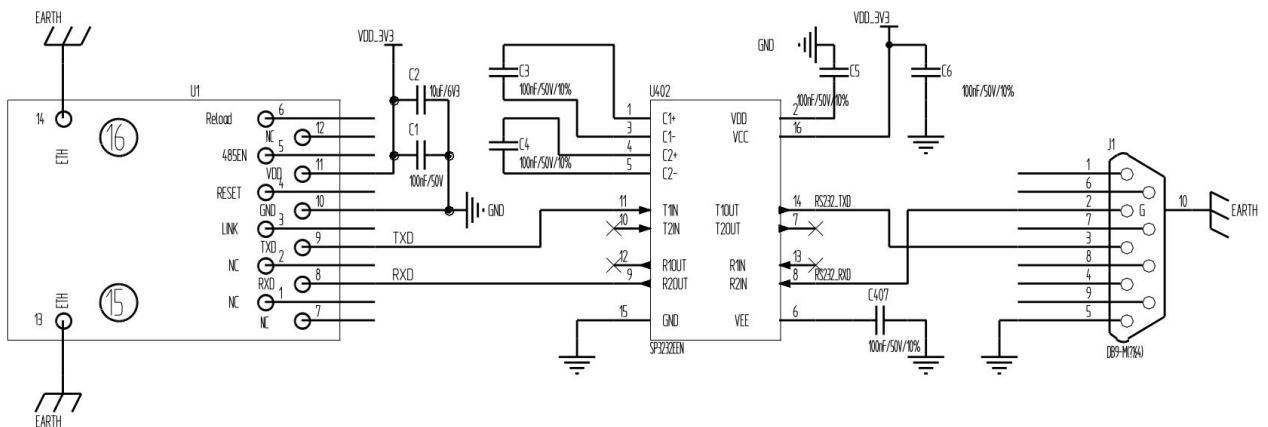


Figure7 UART Interface reference design

If you are communicating directly with MCU (3.3v level), you only need to add the TXD of the module to the RXD of MCU, and then connect the RXD of the module to the TXD of MCU. If the MCU is 5V level, the

conversion circuit needs to be added in the middle, as shown in the figure below:

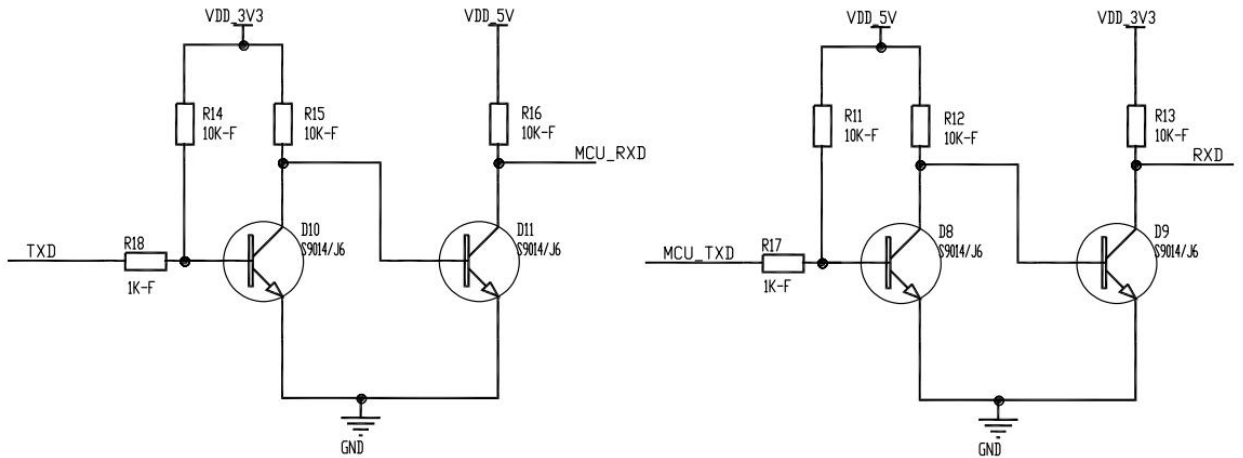


Figure8 UART Level conversion reference design

5.4.Reference to encapsulate

In order to facilitate the customer hardware layout, the corresponding schematic diagram packaging library and PCB packaging library. Please download the specific files from the official website

:<http://www.usr.cn/Download/52.html>

6. Contact information

Jinan USR IOT Technology Limited

Web: <http://www.usriot.com>

Tel.: +86 531 88826739-819 Fax: +86 531 88826739-808

E-Mail: freda@usriot.com Skype: fredacui526

Cell/Wechat: +86 15269189756

Network Communication Device: Serial to Ethernet, Serial to WiFi, Serial to 2G/3G/4G modem, LTE 4G Router

7. Disclaimer

This document provides information about usr-k5 and does not grant any intellectual property rights license, express or implied, or by prohibition or otherwise. We accept no liability other than those stated in the terms and conditions of sale of our products. And we make no warranty, express or implied, with respect to the sale and/or use of the products, including fitness for a particular purpose, merchantability or liability for infringement of any patent, copyright or other intellectual property rights. The specifications and descriptions may be modified from time to time without prior notice.

Update History

2020-03-06 Version V1.0.1 is established.