Overview

Provide Pico C demo.

Specifications

- Operating voltage: 3.3V~5V
- RS232 Transceiver: SP3232EEN
- Communication bus: UART
- Baud rate: 300 ~ 912600bps
- Dimension: 21.00 (H) x 52.00 (V) mm

Pico-2CH-RS232



2-Channel RS232 Module for Raspberry Pi Pico, SP3232EEN Transceiver, UART To RS232

Pinout



1	/SYS	Power input		
	GND	Ground		
GP0	TXD0	UART TX pin		
GP1	RXD0	UART RX pin		
GP4	TXD1	UART TX pin		
GP5	RXD1	UART RX pin		

Controller

The SP3232E series is a solution for RS232 transceivers for portable or handheld applications such as notebooks or PDAs. the SP3222E/3232E series has a highly efficient charge pump that requires only 0.1F capacitance for operation at an operating voltage of 3.3V.

Pico User Guide

Hardware connection

When connecting PICO, please pay attention not to connect in the opposite direction. The direction can be judged by observing the USB screen printing end of the module and the USB interface of the Pico (also can be judged by the pin label of the platoon master on the module and the pin label of the Pico). You can also wire it according to the table below:

RS485	Pico	Description		
VCC	VSYS	Power input		
GND	GND	Ground		
TXD0	GP0	UART transmit pin		
RXD0	GP1	UART receive pin		
TXD1	GP4	UART transmit pin		
RXD1	GP5	UART receive pin		

Connection

The connection of the RS485 board is the same as the Pico-2CH-RS232.

Pico-2CH-RS232-details-3.jpg

Setup environment

To setup the Pico for working, please refer to the official guide: https://www.raspberrypi.org/documentation/pico/getting-started/

Download example

Open a terminal and run the follow command

```
sudo apt-get install p7zip-full
cd ~
sudo wget https://files.waveshare.com/upload/6/6a/Pico_2CH_RS232_Code.7z
7z x Pico_2CH_RS232_Code.7z -o.
cd ~/Pico_2CH_RS232_Code
cd C/build/
```

Run the examples

C codes

• The following tutorials are operated on the Raspberry Pi, but as CMake has

multi-platforms and is portable, it can be successfully compiled on the PC, but the operation is slightly different, and you need to judge by yourself.

To compile, make sure you are in the c directory:

```
cd ~/Pico_2CH_RS232_Code/c/
```

Create the build folder and add the SDK path to it:

By default, the ../../pico-sdk is the path of SDK.

We have created the build folder in examples, you can just enter it.

Note: If the actual path of your Pi is different, you need to write the correct path.

```
cd build
export PICO_SDK_PATH=../../pico-sdk
```

Run the cmake to generate Makefile file.

cmake ..

Run the make command to build the codes and generate an executable file.

make -j9

After building, an uf2 file is generated. Press and hold the key on the Pico board to connect the Pico to the Raspberry Pi's USB port via the Micro USB cable, then release the key. Once connected, Raspberry will automatically recognize a removable disk (RPI-RP2). Copy the file main.uf2 in the corresponding folder to the recognized removable disk (RPI-RP2).

cp main.uf2 /media/pi/RPI-RP2/

Python codes

Use in Windows

- 1. Press and hold the BOOTSET button on the Pico board, connect the pico to the USB port of the computer through the Micro USB cable, and release the button after the computer recognizes a removable hard disk (RPI-RP2).
- 2. Copy the rp2-pico-20210418-v1.15.uf2 file in the python directory to the recognized removable disk (RPI-RP2).
- 3. Open Thonny IDE (Note: Use the latest version of Thonny, otherwise there is no Pico support package, the latest version under Windows is v3.3.3).
- 4. Click Tools->Settings->Interpreter, select Pico and the corresponding port as

shown in the figure.

eneral	Interpreter	Editor	Theme & Font	Run & Debug	Terminal	Shell	Assistant	
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Port USB	= 串行设备 (CO	M4)			Install or	update	▼	

• 5. File -> Open -> the corresponding .py file, click to run, as shown in the following figure:



This demo provides a simple program...

Run in Raspberry Pi

- Hold the BOOTSET key of Pico board, then connect the Pico to Raspberry Pi by USB cable, then release the key.
- Once the removable disk (RPI-RPI2) is recognized, copy the rp2-pico-20210418v1.15.uf2 file to pico.
- Open the Thonny IDE in Raspberry Pi, update it if it doesn't support Pico
- Configure the port by choosing MicroPython(Raspberry Pi and ttyACM0 port) in

Tools -> Options... -> Interpreter

			Thonr	ny options			×	^ >	
General	Interpreter	Editor	Theme & Font	Run & Debug	Terminal	Shell	Assistant		
Which interpreter or device should Thonny use for running your code?									
MicroF	MicroPython (Raspberry Pi Pico)								
Details	;								
(look If you Port	Connect your device to the computer and select corresponding port below (look for your device name, "USB Serial" or "UART"). If you can't find it, you may need to install proper USB driver first.								
Boar	d in FS mod	e - Board	d CDC (/dev/ttyA	ACMO)				•	
Install or update firmware									
						OK	Can	cel	
vour Th	onny does	n't sur	port Pico voi	ı can undate	it with th	e follo	wing		

If your Thonny doesn't support Pico, you can update it with the following command:

ant ungnada thannu
) apt upgrade thonny

Choose File->Open...->python/ and select the corresponding .py file to run the codes

Resource

Documentation

- Schematic 🖉
- SP3232EEN Datasheet ₽

Demo Codes

- Demo code 🗗

Development Software

- Thonny Python IDE (Windows V3.3.3) &
- Zimo221.7z 🗗
- Image2Lcd.7z 🗗

Pico Quick Start

Download Firmware

MicroPython Firmware Download						
C_Blink Firmware Download	[Expand]					
Video Tutorial	[Expand]					
Pico Tutorial I - Basic Introduction						
• Pico Tutorial II - GPIO	[Expand]					
Pico Tutorial III - PWM	[Expand]					
Pico Tutorial IV - ADC	[Expand]					
• Pico Tutorial V - UART	[Expand]					
• Pico Tutorial VI - To be continued	[Expand]					

MicroPython Series

- [MicroPython] machine.Pin Function
- [MicroPython] machine.PWM Function
- [MicroPython] machine.ADC Function
- [MicroPython] machine.UART Function
- [MicroPython] machine.I2C Function
- [MicroPython] machine.SPI Function
- [MicroPython] rp2.StateMachine

C/C++ Series

- 【C/C++】 Windows Tutorial 1 Environment Setting
- 【C/C++】 Windows Tutorial 1 Create New Project

Arduino IDE Series

Install Arduino IDE

1. Download the Arduino IDE installation package from Arduino website &.

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Downloads



The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger.

For more details, please refer to the Arduino IDE 2.0 documentation.

Nightly builds with the latest bugfixes are available through the section below.

SOURCE CODE The Arduino IDE 2.0 is open source and its source code is hosted on GitHub.

DOWNLOAD OPTIONS

Windows Win 10 and newer, 64 bits Windows MSI installer Windows ZIP file

Linux AppImage 64 bits (X86-64) Linux ZIP file 64 bits (X86-64)

macOS 10.14: "Mojave" or newer, 64 bits

2. Just click on "JUST DOWNLOAD".

Support the Arduino IDE

Since the release 1.x release in March 2015, the Arduino IDE has

been downloaded 69,954,557 times - impressive! Help its

development with a donation.





Learn more about donating to Arduino.

3. C	Click to ins	tall after downloading. etup: License Agreement	<u></u>		×			
	Please accept	review the license agreement before ins all terms of the agreement, click I Agree	talling Arduin	o. If <mark>y</mark> ou				
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	Version 3, 29 June 2007							
	Copyright (C) 2007 Free Software Foundation, Inc. < <u>http://fsf.org/</u> >							
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4. Note: You will be prompted to install the driver during the installation process, we can click Install.

Install Arduino-Pico Core on Arduino IDE

1. Open Arduino IDE, click the File on the left corner and choose "Preferences".

File	Edit	Sketch	Tools	Help
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c	Quit		Ctr	l+Q

2. Add the following link in the additional development board manager URL, then click OK.

https://github.com/earlephilhower/arduino-pico/releases/download/globa l/package_rp2040_index.json

Preferences

Settings Network

Sketchbook location:

c:\Users\xutong\Documents\4	Arduino		BROWSE
Show files inside Sketches			
Editor font size:	14		
Interface scale:	Automatic 100	96	
Theme:	Light (Arduino)	~	
Language:	English 🗸	(Reload required)	
Show verbose output during	C compile C upload		
Compiler warnings	None 🗸		
 Verify code after upload Auto save Editor Quick Suggestions 			
Additional boards manager UF	RLs: https://dl.espressit	f.com/dl/package_esp32_index.json 🦰	
Additional overde meneger of	tea. Independence of the second		
		CAN	ICEL OK

Note: If you already have the ESP8266 board URL, you can separate the URLs with commas like this:

https://dl.espressif.com/dl/package_esp32_index.json,https://github.co m/earlephilhower/arduino-pico/releases/download/global/package_rp2040_i ndex.json

3. Click on Tools -> Dev Board -> Dev Board Manager -> Search for pico, it shows installed since my computer has already installed it.

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Aut	to Format	Ctrl+T			
Arc	hive Sketch				
Ma	nage Libraries	Ctrl+Shift+I			
Ser	ial Monitor	Ctrl+Shift+M			
Ser	ial Plotter				
Wil	Fi101 / WiFiNINA Firmware Updater				
Up	load SSL Root Certificates				
Boa	ard: "ESP32 Dev Module"		+	Boards Manager Ctrl+	Shift+B
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Get	t Board Info			esp32	•
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Cor	re Debug Level: "None"				
Flas	sh Frequency: "80MHz"				
Flas	sh Mode: "QIO"				
Flas	sh Size: "4MB (32Mb)"				
Par	tition Scheme: "Default 4MB with spiffs (1.2MB APP/1.5MB SPIFFS)"				
PSF	RAM: "Disabled"				
Up	load Speed: "921600"				
Bur	m Bootloader				
	BOARDS MANAGER				
	pico				
	pico				
_	Tupo: All				



Upload Demo At the First Time

1. Press and hold the BOOTSET button on the Pico board, connect the Pico to the USB port of the computer via the Micro USB cable, and release the button when the computer recognizes a removable hard drive (RPI-RP2).



2. Download the demo, open arduino\PWM\D1-LED path under the D1-LED.ino.

3. Click Tools -> Port, remember the existing COM, do not need to click this

COM (different computers show different COM, remember the existing COM on your computer).

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		Archive Sketch		
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ę_	44	Serial Plotter		
	46	Board: "ESP32 Dev M	odule"	F
n fi	47	Port		 Serial ports
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	55	Core Debug Level		F.
	56	Flash Frequency		F.
	57	Flash Mode		F
	59	Flash Size		F
	60	PSRAM		F.
	61	Partition Scheme		•
	62	Upload Speed		•
	64	Burn Bootloader		
	65	// SET_SPD_RATE	: {"T":901,"L":1.0,"R"	:1.0}

4. Connect the driver board to the computer with a USB cable, then click Tools > Ports, select uf2 Board for the first connection, and after the upload is complete, connecting again will result in an additional COM port.

🔤 UGV	01_BASE Ar	duino IDE 2.0.2				
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62	Unload Speed		
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64	Burn Bootloader		240
65	// SET_SPD_RATE : {	"I":901, L":1.0, R":1.	0}

5. Click Tool -> Dev Board -> Raspberry Pi Pico/RP2040 -> Raspberry Pi Pico.

Too	ls Help					
	Auto Format	Ctrl+T				
	Archive Sketch					
	Manage Libraries	Ctrl+Shift+I				
	Serial Monitor	Ctrl+Shift+M				
	Serial Plotter					
	WiFi101 / WiFiNINA Firmware Updater					
	Upload SSL Root Certificates					
	Board: "ESP32 Dev Module"		•	Boards Manager	Ctrl+Shift+B	
	Port		•	Arduino AV/P Poards		
	Get Board Info			esp32		
	CPU Frequency: "240MHz (WiFi/BT)"		Þ	Raspberry Pi Pico/RP2040)	
	Core Debug Level: "None"		١Ľ			_
	Flash Frequency: "80MHz"					
	Flash Mode: "QIO"					
	Flash Size: "4MB (32Mb)"					
	Partition Scheme: "Default 4MB with spiffs (1.2MB APP/1.5MB SPIFFS)"					
	PSRAM: "Disabled"					
	Upload Speed: "921600"					
	Burn Bootloader					

6. After setting, click the right arrow to upload.

🥯 sketch_aug16a | Arduino IDE 2.1.0

File Edit Sketch Tools Help



 If you encounter problems during the period, you need to reinstall or replace the Arduino IDE version, uninstall the Arduino IDE needs to be uninstalled cleanly, after uninstalling the software you need to manually delete all the contents of the folder C:\Users\ [name]\AppData\Local\Arduino15 (you need to show the hidden files in order to see it) and then reinstall.

Pico-W Series Tutorial (To be continued...)

Open Source Demo

- MicroPython Demo (GitHub) 🖗
- MicroPython Firmware/Blink Demo (C) ₽
- Official Raspberry Pi C/C++ Demo ₽

- Official Raspberry Pi MicroPython Demo
- Arduino Official C/C++ Demo 🛛

Support

Technical Support

If you need technical support or have any feedback/review, please click the **Submit Now** button to submit a ticket, Our support team will check and reply to you within 1 to 2 working days. Please be patient as we make every effort to help you to resolve the issue.

Working Time: 9 AM - 6 AM GMT+8 (Monday to Friday)

Submit Now