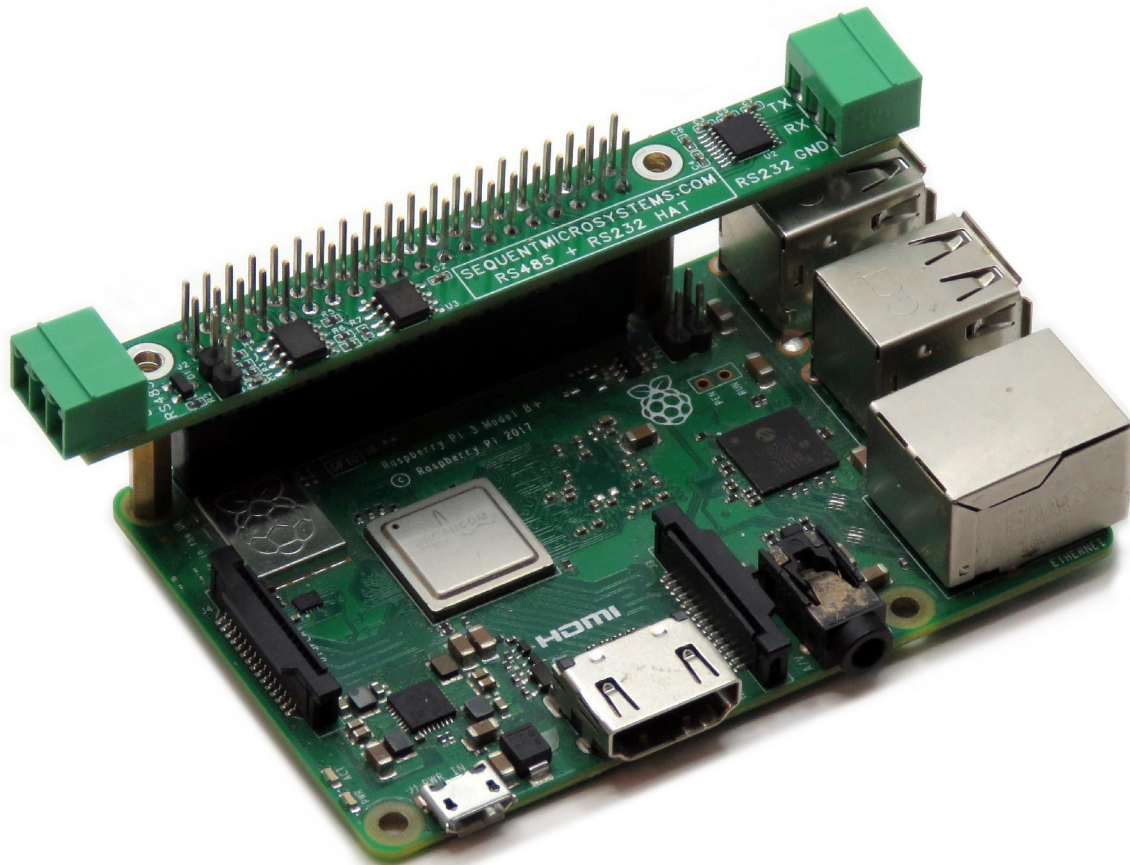


**Two Serial Ports RS485 and
RS232 Stackable HAT for
Raspberry Pi
USER'S GUIDE VERSION 2.0
SequentMicrosystems.com**

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GENERAL DESCRIPTION



The latest versions of the Raspberry Pi have up to four UART ports on the GPIO connector, but you cannot use them without a physical layer transceiver. The 2-Serial Ports HAT is the perfect solution for connecting your Raspberry Pi to serial devices like sensors and industrial equipment. It supports RS485 and RS422 communication protocols, making it versatile for a wide range of applications.

The card is compatible with all Raspberry Pi versions from 2 to 5. UART1 (pins 8, 10) is available on all Raspberry Pi cards, so the RS485 port will always work. UART1 might not be available on older versions, or on other cards which emulate the Raspberry Pi GPIO connector.

FEATURES

- RS485 transceiver connected to Raspberry Pi UART1 (GPIO pins 8, 10)
- RS232 transceiver connected to Raspberry Pi UART3 (GPIO pins 32, 33)
- Compatible with Raspberry Pi versions 3, 4, and 5
- Stackable with any other HAT (only one card per Raspberry Pi)
- Compact size (93mm x 13mm)
- Pluggable Connectors 26-16 AWG wires
- Status LEDs on both serial ports
- No additional software required (drivers included in the Linux kernel)
- All mounting hardware included: stand-offs, screws and nuts
- ECCN Code EAR99

SPECIFICATIONS

DATA RATES:

RS485 Port: Max 921,600 bps

RS232 Port: Max 230,400 bps

PORT ALLOCATION:

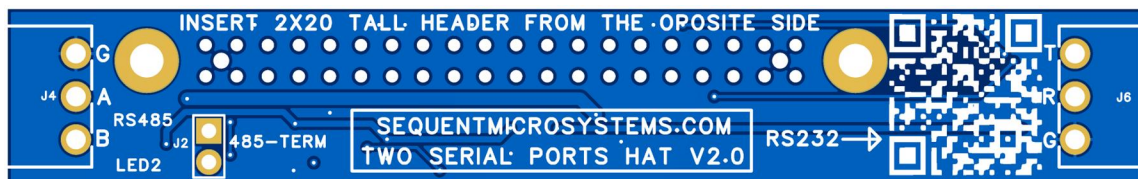
RS485 -> /dev.ttyAMA0

RS232 -> /dev/ttyAMA4

STACKING MULTIPLE CARDS

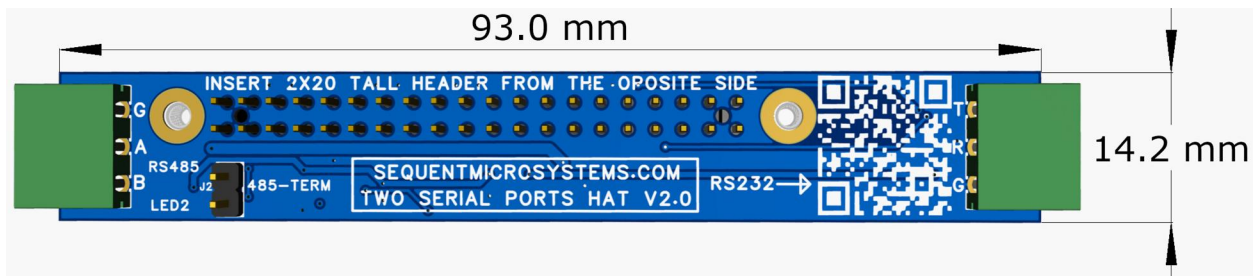
Since the 2-Serial Ports Card uses the Raspberry Pi UART ports, only one card can be installed on each Raspberry Pi. However, the card is equipped with an extra tall 2x20 male-female connector, and can be installed on top of any stackable HAT. Also, any Raspberry Pi HAT can be installed on top of the 2-Serial Ports Card.

CARD LAYOUT



MECHANICAL SPECIFICATIONS

The 2-Serial Port Card is probably the smallest HAT in the world, measuring only 93mm x 14.2mm.

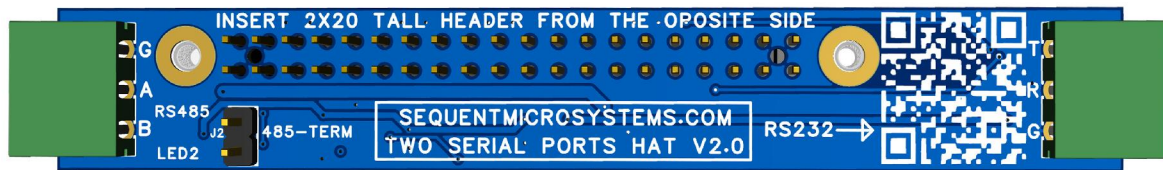


POWER REQUIREMENTS

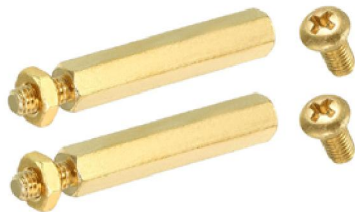
The 2-Serial card does not require a separate power supply. It gets its power from the Raspberry Pi and uses less than 50mA to operate.

WHAT IS IN YOUR KIT

1. 2-Serial Card for Raspberry Pi

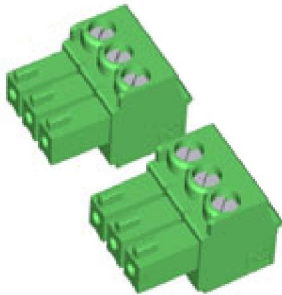


2. Mounting hardware



- a. Two M2.5x19mm male-female brass standoffs
- b. Two M2.5x5mm brass screws
- c. Two M2.5 brass nuts

3. Mating connector plugs for RS232 and RS485.



QUICK START-UP GUIDE

1. Plug your 2-SERIAL card on top of your Raspberry Pi and power up the system.
2. Edit the /boot/config.txt file so the serial ports section looks like this:

```
[all]
enable_uart=1
dtoverlay=pi3-miniuart-bt
dtoverlay=uart5
dtoverlay=uart4
dtoverlay=uart3
dtoverlay=uart2
```

3. Reboot the Pi
4. Test the serial ports by opening the terminal and running the following command:

```
for i in {0..100} ; do sudo sh -c 'echo -n "This is the text output from the serial port"
>/dev/ttyAMA0'; done
```

This will send the message and blink the TX LED for the corresponding port for a few minutes. The serial port name association is as follows:

```
RS485 -> /dev/ttyAMA0
RS232 -> /dev/ttyAMA4
```