Overview

This is a 2-channel isolated RS232 expansion HAT designed for Raspberry Pi, adopts the SC16IS752+SP3232 solution, with embedded protection circuits such as power supply isolation, ADI magnetical isolation, and TVS diode, etc.

It is easy to control the 2-channel RS232 via SPI interface. Due to its fast communication, stability, reliability, and safety, it is an ideal choice for fields like industrial automation.

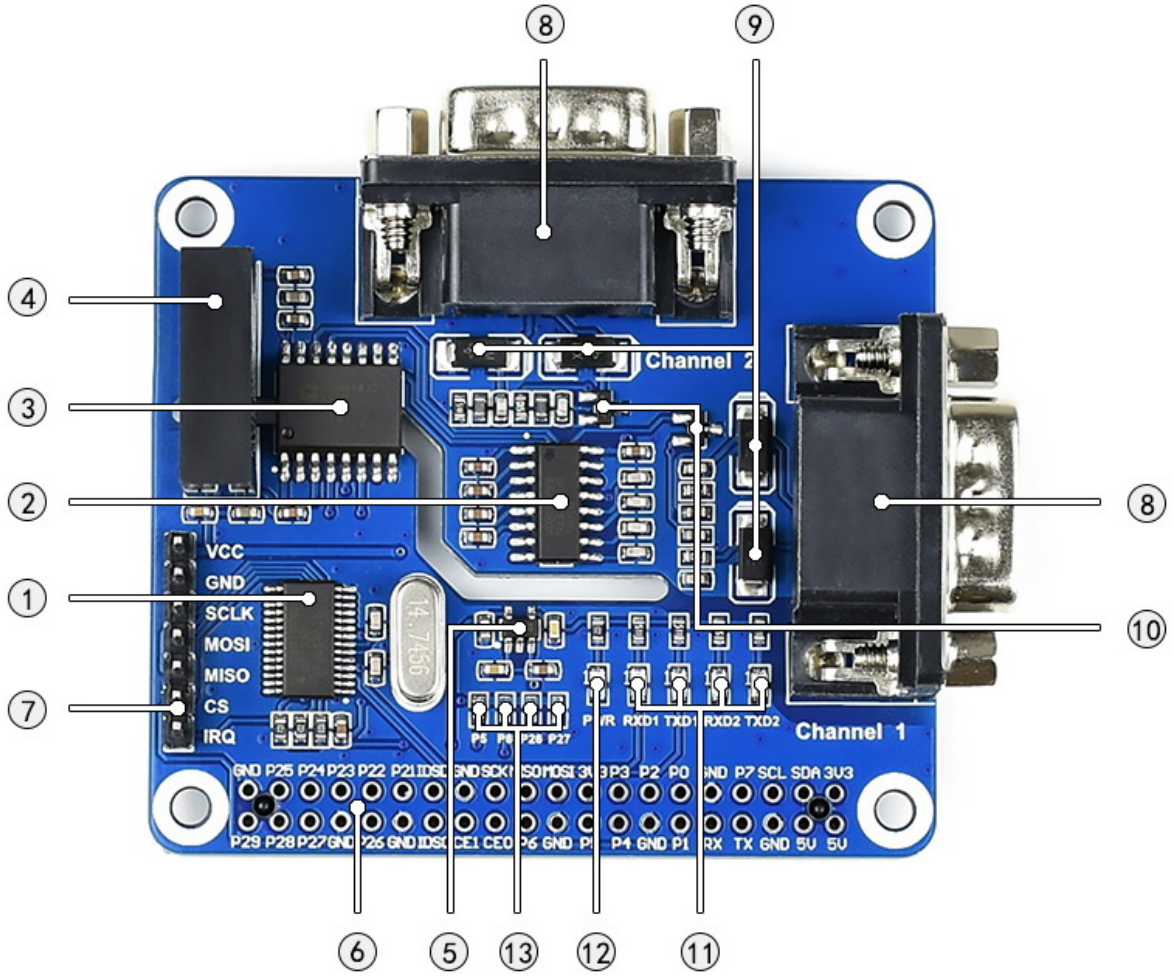
Features

- Standard Raspberry Pi 40PIN GPIO extension header, supports Raspberry Pi series boards
- Adopts SC16IS752+SP3232 dual chip combination, converts SPI to RS232, data rate up to 921600bps
- Onboard TVS (Transient Voltage Suppressor), effectively suppress surge voltage and transient spike voltage in the circuit, lightning-proof & anti-electrostatic
- Onboard LEDs for indicating the power and transceiver status
- Breakout SPI control pins, for connecting with host control boards like Arduino
- Comes with development resources and manual (examples in C and Python)

Specifications

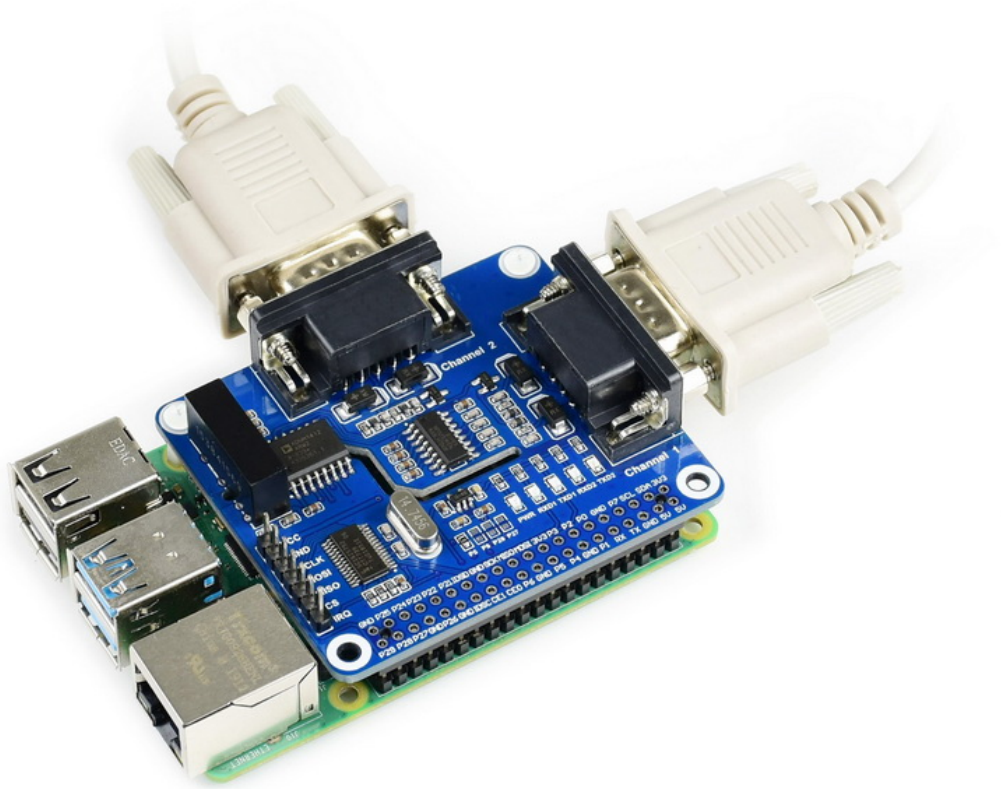
- UART expansion chip: SC16IS752
- RS232 transceiver: SP3232
- Communication interface: SPI
- Data rate: 300 ~ 921600 bps
- Operating voltage: 3.3V / 5V
- Dimensions: 65mm × 56.5mm
- Mounting hole size: 3.0mm

What's on Board



1. **SC16IS752 UART expansion chip**
2. **SP3232 RS232 transceiver**
3. **ADUM1412 digital isolator**
4. **B0505LS power supply isolation module**
5. **RT9193-33 power chip**
6. **Raspberry Pi GPIO connector:** for connecting Raspberry Pi
7. **MCU control header:** for connecting host control boards like Arduino
8. **RS232 connector:** 2 channels RS232 interface (RS232 9PIN male)
9. **Transient suppress diode array**
10. **ESD protection two-way diode**
11. **Serial port status indicator**
    RXD1/TXD1: channel 1 transceiving indicator
    RXD2/TXD2: channel 2 transceiving indicator
12. **Power indicator**
13. **Interrupt pin switch**
    The interrupt pin IRQ is connected to P5 (BCM P24) by default
    Changeable via 0R resistor

Example



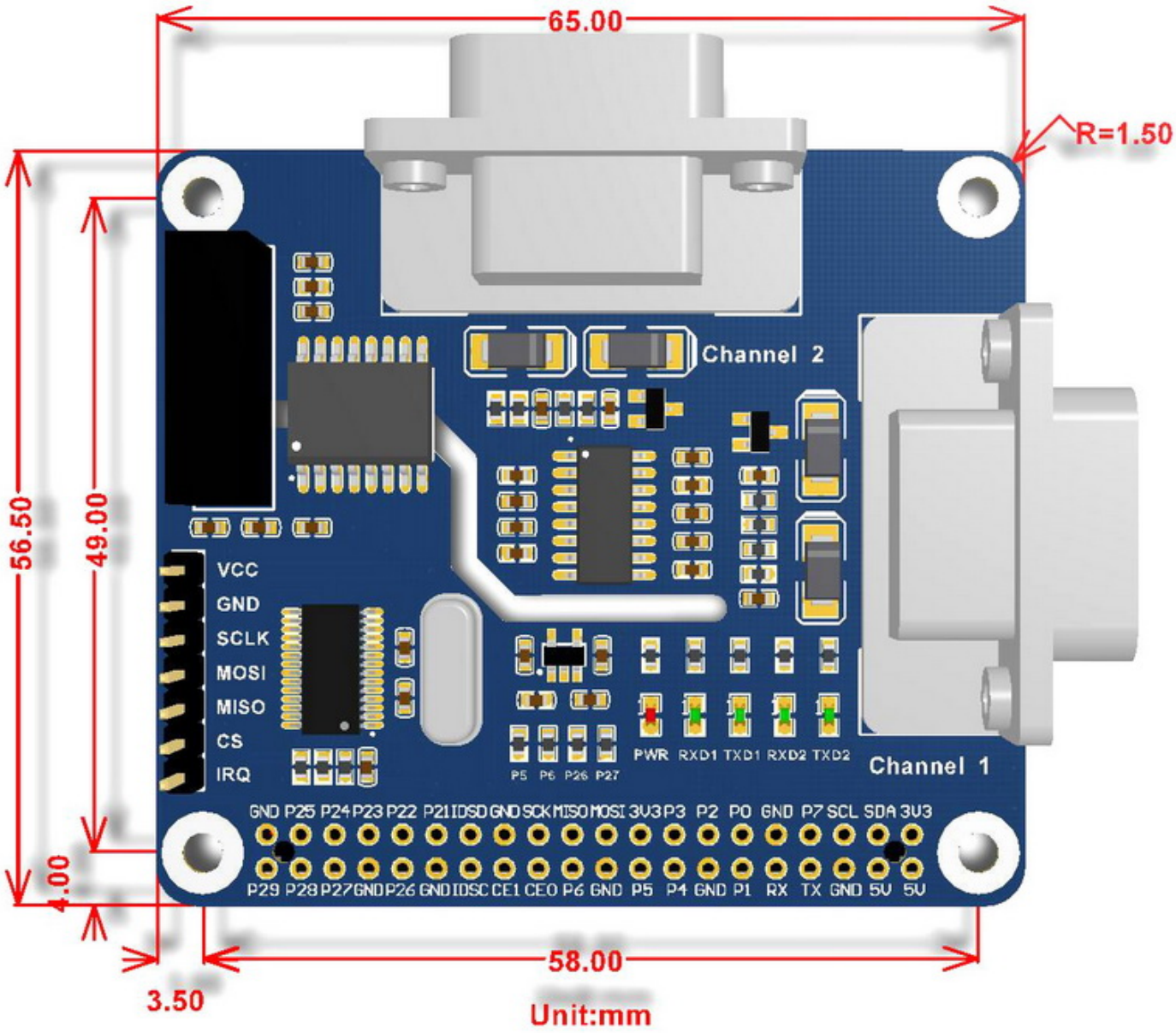
Note: the Raspberry Pi and serial cables are NOT included.

Pinouts

PIN	RASPBERRY PI (BCM)	DESCRIPTION
VCC	5V	3.3V/5V power supply
GND	GND	Ground
SCK	P21 (SPI1 SCLK)	SPI clock input
MOSI	P20 (SPI1 MOSI)	SPI data input
MISO	P19 (SPI1 MISO)	SPI data output
CS	P18 (SPI1 CS)	SPI chip select

IRQ	P24	Interrupt output

Dimension



Development Resources

Wiki : www.waveshare.com/wiki/2-CH_RS232_HAT