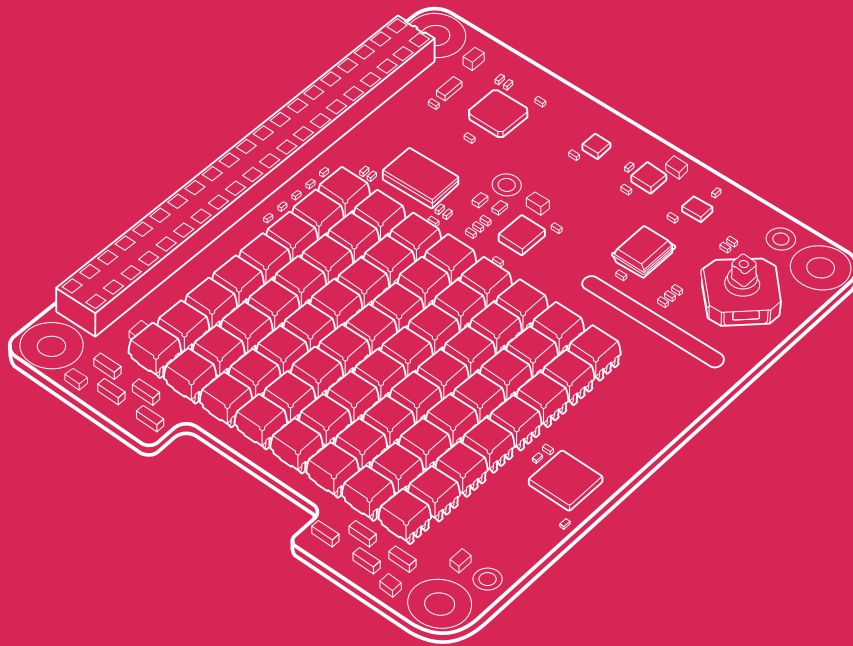


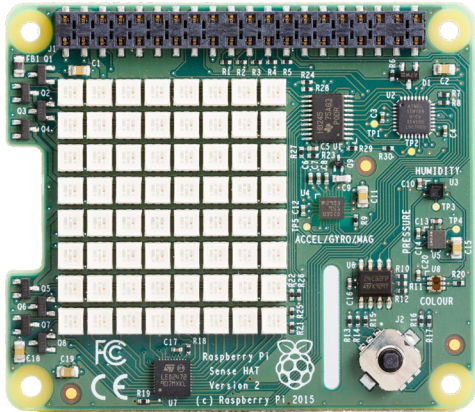


# Raspberry Pi Sense HAT

Published January 2023



## Overview



The Raspberry Pi Sense HAT gives your Raspberry Pi an array of sensing capabilities. The on-board sensors allow you to monitor pressure, humidity, temperature, colour, orientation, and movement. The bright 8x8 RGB LED matrix allows you to visualise data from the sensors, and the five-button joystick lets users interact with your projects.

The Sense HAT was originally developed for use on the International Space Station, as part of the educational Astro Pi programme run by the Raspberry Pi Foundation in partnership with the European Space Agency. It is well suited to many projects that require position, motion, orientation, or environmental sensing. The Sense HAT is powered by the Raspberry Pi computer to which it is connected.

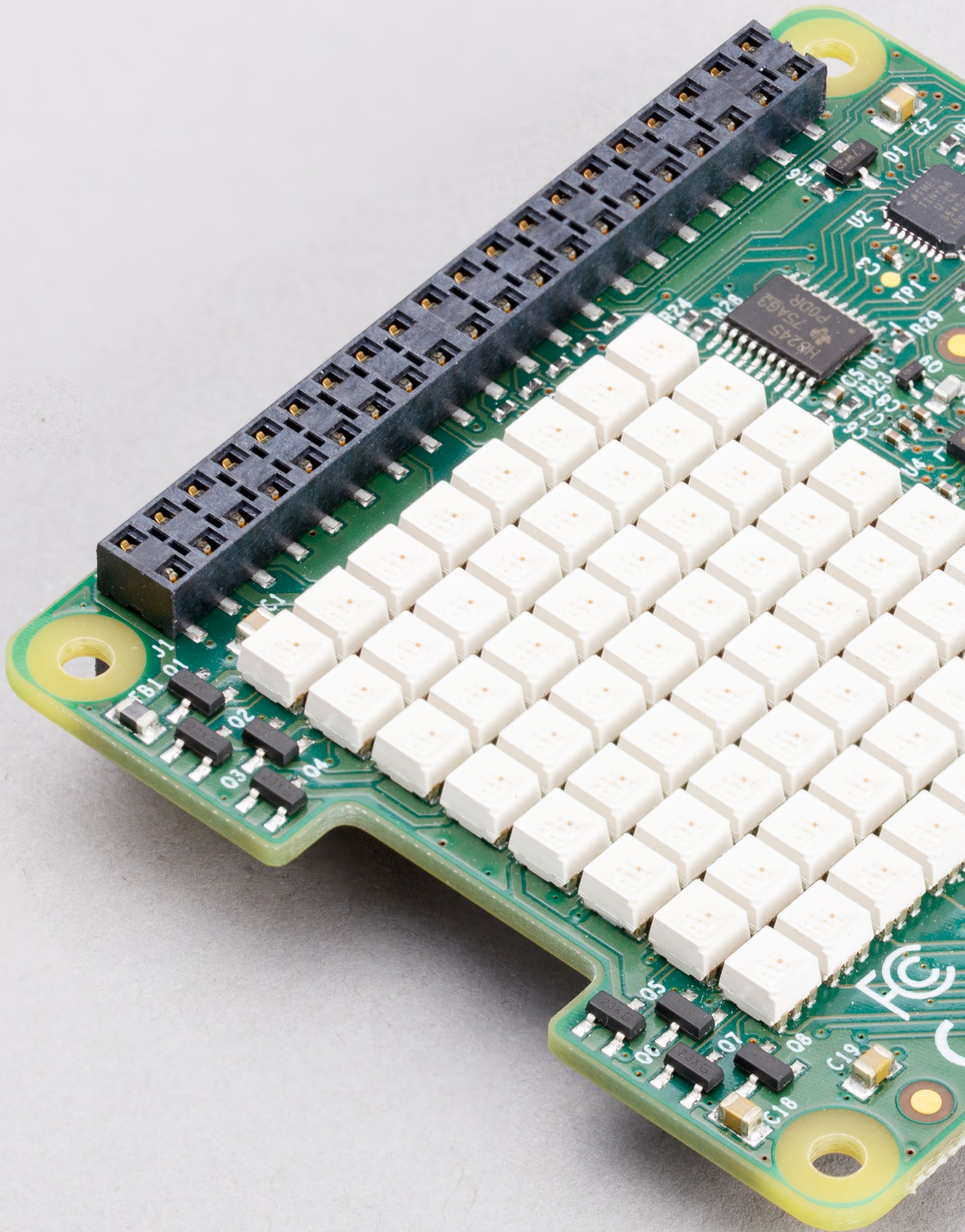
An officially supported Python library provides access to all of the on-board sensors, the LED matrix, and the joystick. The Sense HAT is compatible with any Raspberry Pi computer with a 40-pin GPIO header.

## Specification

<b>Pressure/temperature sensor:</b>	STMicro LPS25HB <ul style="list-style-type: none"><li>• 260 to 1260 hPa absolute pressure range</li><li>• 24-bit pressure data output</li><li>• 0 to +65°C accurate temperature measurement range (<math>\pm 2^{\circ}\text{C}</math>)</li><li>• 16-bit temperature data output</li></ul>
<b>Humidity temperature sensor:</b>	STMicro HTS221 <ul style="list-style-type: none"><li>• 0 to 100% relative humidity range</li><li>• 15 to 40°C accurate temperature measurement range (<math>\pm 0.5^{\circ}\text{C}</math>)</li><li>• 16-bit data output</li></ul>
<b>IMU:</b>	STMicro LSM9DS1 Accelerometer/gyroscope/magnetometer <ul style="list-style-type: none"><li>• <math>\pm 16\text{g}</math> acceleration measurement range</li><li>• <math>\pm 16</math> gauss magnetometer measurement range</li><li>• <math>\pm 2000\text{dps}</math> gyroscope measurement range</li><li>• 16-bit resolution for each measurement channel</li></ul>
<b>Colour sensor:</b>	TCS3400 RGB colour and brightness sensor
<b>LED matrix:</b>	8x8 RGB LED display
<b>Joystick:</b>	5-button miniature joystick with up, down, left, right, and middle-click
<b>Compliance:</b>	For a full list of local and regional product approvals, please visit <a href="http://pip.raspberrypi.com">pip.raspberrypi.com</a>
<b>Production lifetime:</b>	The Raspberry Pi Sense HAT will remain in production until at least January 2028









Raspberry Pi is a trademark of Raspberry Pi Ltd

---