Raspberry Pi Debug Probe

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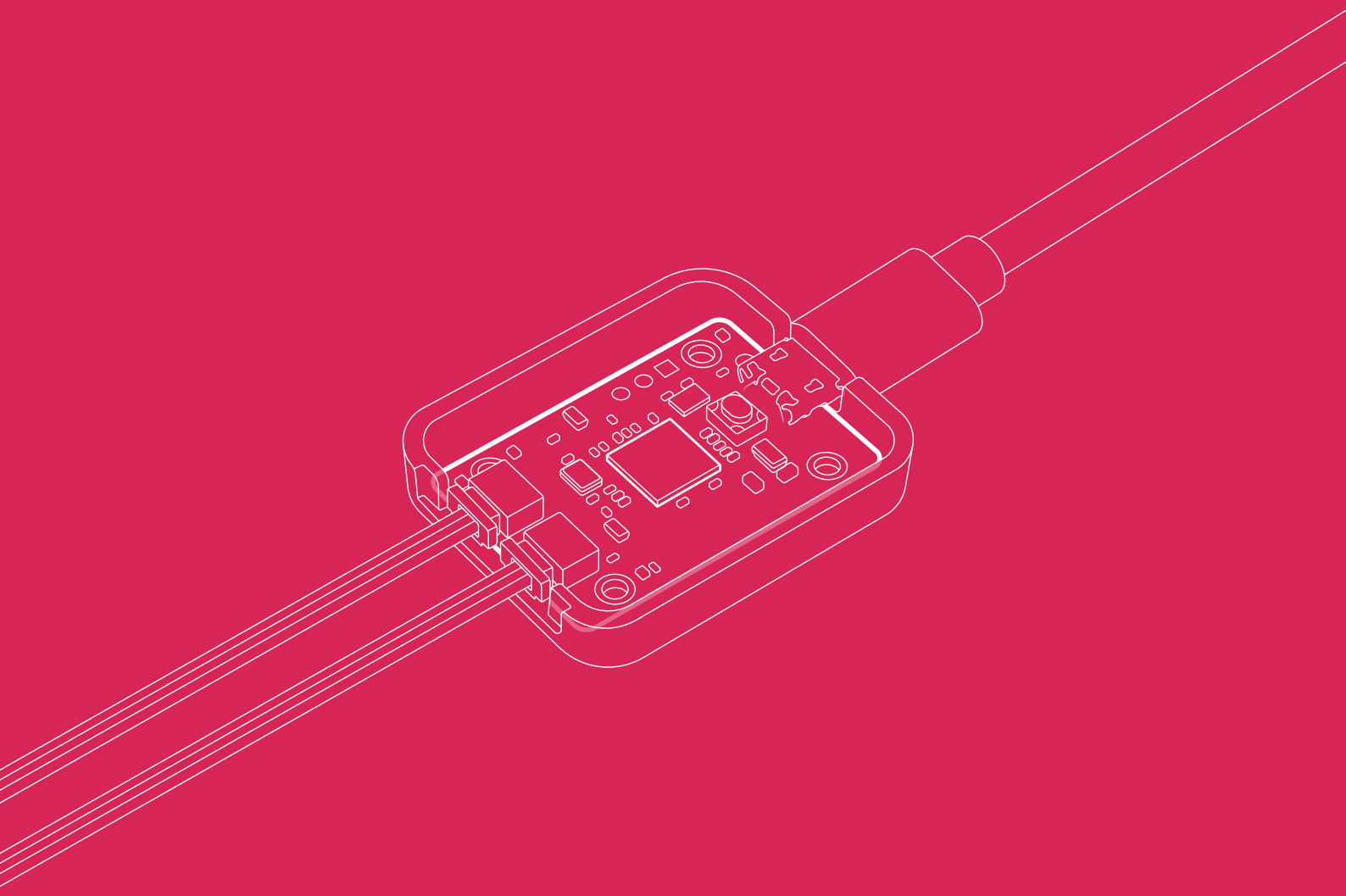

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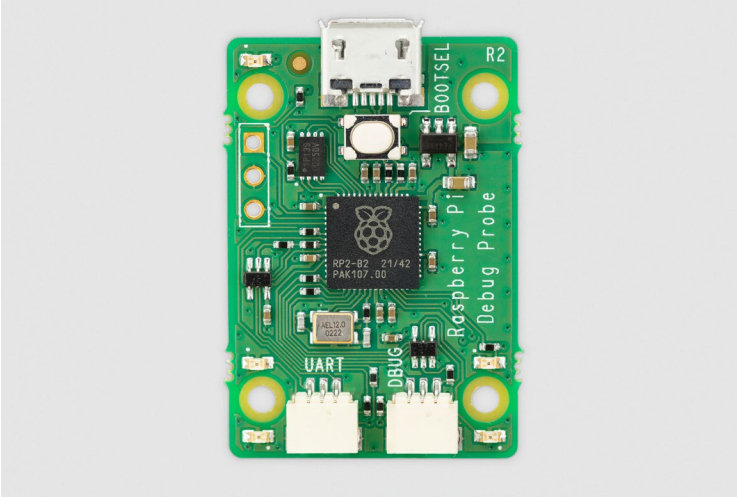
Overview



The Raspberry Pi Debug Probe is an all-in-one USB-to-debug kit that provides all the necessary hardware and cables for easy, solderless, plug-and-play debugging.

It features both a processor serial debug interface (by default the Arm Serial Wire Debug interface, but other interfaces can be supported) and an industry-standard UART interface. Both interfaces use the Raspberry Pi 3-pin debug connector, as detailed in the Raspberry Pi 3-pin Debug Connector Specification (see rptl.io/debug-spec).

The Raspberry Pi Debug Probe is presented as a kit, packaged in a reusable box, comprising the Debug Probe hardware in its own plastic case together with a USB cable and three types of debug cable, covering the vast majority of debug use cases. It is designed to make it easy to debug and program Raspberry Pi Pico and RP2040 with a range of host platforms including Windows, Mac, and typical Linux computers.

While designed for use with Raspberry Pi products, the Debug Probe provides standard UART and CMSIS-DAP interfaces over USB, so it can also be used with other processors, or even just as a USB-to-UART cable. It works with OpenOCD and other tools that support CMSIS-DAP.

The Debug Probe is based on Raspberry Pi Pico hardware and runs the open source Raspberry Pi Picoprobe software (https://github.com/raspberrypi/picoprobe). The firmware is updated in the same way as Raspberry Pi Pico firmware, so it is easy to keep the unit up to date with the latest firmware, or to use custom firmware.

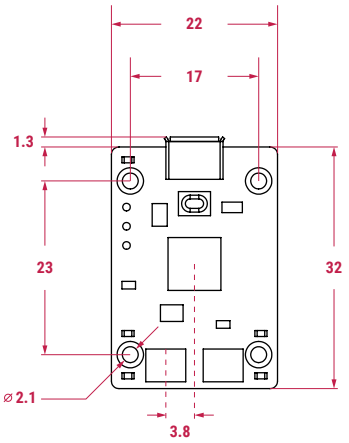
Specification

Form factor:	22mm × 32mm
Features:	• USB to two-wire serial debug bridge (Arm Serial Wire Debug supported by default) • USB to UART bridge • Compatible with the CMSIS-DAP standard • Works with OpenOCD and other tools supporting CMSIS-DAP • Follows the Raspberry Pi 3-pin Debug Connector Specification

Included:	• High-quality plastic case
	• USB cable
	• Three debug cables:
	  • 3-pin JST connector to 3-pin JST connector cable
	  • 3-pin JST connector to 0.1-inch header (female)
	  • 3-pin JST connector to 0.1-inch header (male)

Nominal I/O voltage:	3.3V
Operating temperature:	-20°C to +70°C
Production lifetime:	The Raspberry Pi Debug Probe will remain in production until at least January 2028
Compliance:	For a full list of local and regional product approvals, please visit pip.raspberrypi.com

Physical specification



Note: all dimensions in mm

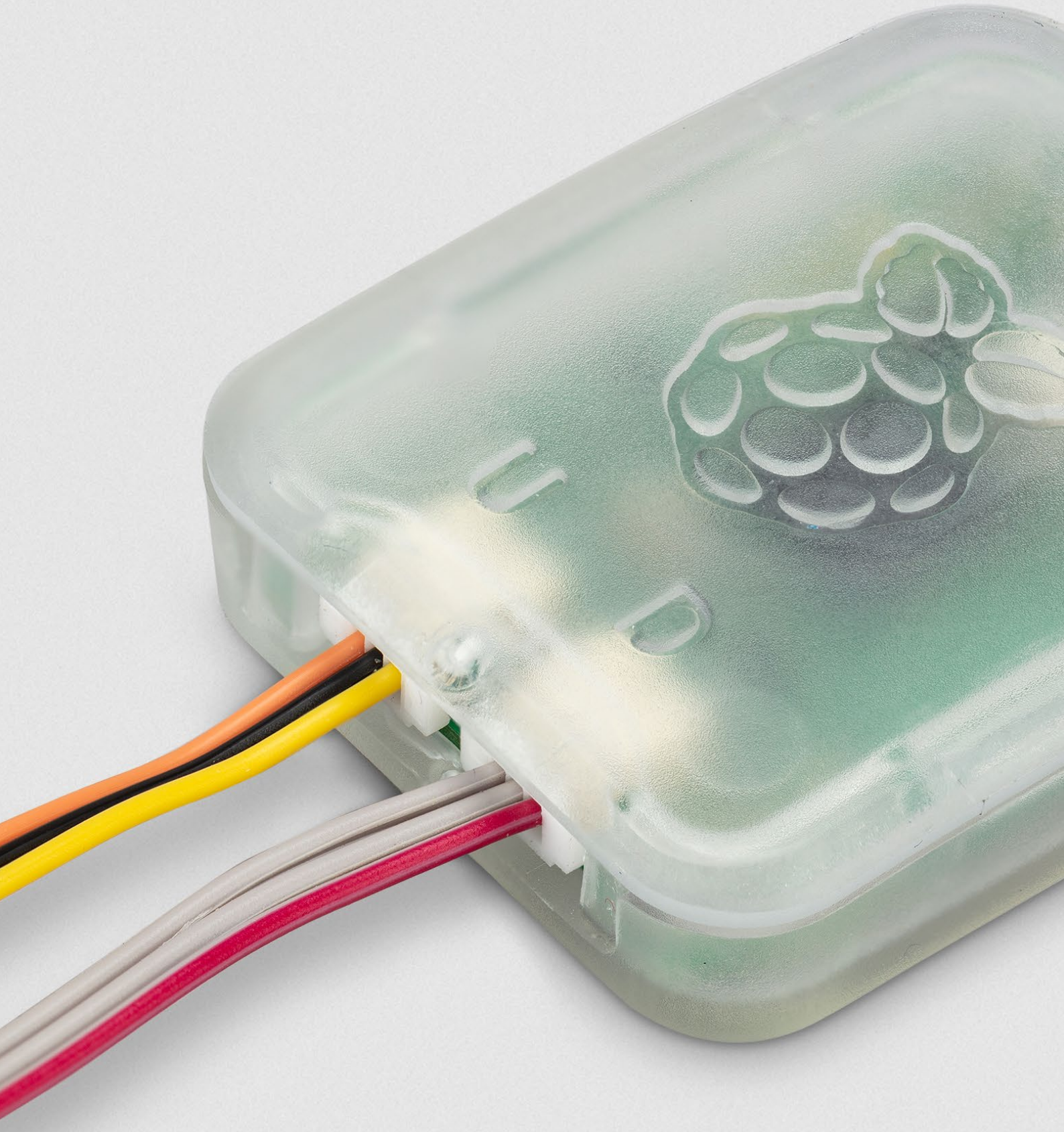
WARNINGS

- This product should be operated in a well ventilated environment, and if used inside a case, the case should not be covered.
- Whilst in use, this product should be firmly secured or should be placed on a stable, flat, non-conductive surface, and should not be contacted by conductive items.
- The connection of incompatible devices to the Raspberry Debug Probe may affect compliance, result in damage to the unit, and invalidate the warranty.
- All peripherals used with this product should comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met.

SAFETY INSTRUCTIONS

To avoid malfunction or damage to this product, please observe the following:

- Do not expose to water or moisture, or place on a conductive surface whilst in operation.
- Do not expose to heat from any source; the Raspberry Pi Debug Probe is designed for reliable operation at normal ambient temperatures.
- Store in a cool, dry location.
- Take care whilst handling to avoid mechanical or electrical damage to the printed circuit board and connectors.
- Whilst it is powered, avoid handling the printed circuit board, or handle it only by the edges, to minimise the risk of electrostatic discharge damage.





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