# LEGO® Education SPIKE™ Prime Technical Specifications

## LEGO® Technic™ Force Sensor

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| **Hardware name** | LEGO® Technic™ Force Sensor |
| **Description** | The sensor can detect simple touch and measure force. |
| **Key features** | • Touch sensing<br>• Tap sensing<br>• Force sensing<br>• The sensor has a Technic build geometry that allows for versatile building and easy integration into models |
| **Connector type** | LEGO Power Functions 2.0 (LPF2) for connection to LEGO Smarthubs |
| **Wire length** | 250 mm (fixed to sensor) |
| **Sensor sample rate** | 100 Hz |

**Sensor input**

Touch sensing:

- Activation zone: 0–2 mm
- Threshold point is defined in firmware 1 mm +/− 0.5 mm
- Activation force: 0.5–1.0 newton +/− 10%
- Sensor output is binary (1=activated or 0=not activated)

Tap sensing:

- Activation zone: 0–2 mm
- Threshold point is defined in firmware 1 mm +/− 0.5 mm
- Activation force: 0.5–1.0 newton +/− 10%
- Sensor data output: 0–3
- Applicable to the following:
  - Single tap
  - Quick tap
  - Press and hold

Force sensing:

- Activation zone: 2–8 mm
- Activation force: 2.5–10 newtons
- Sensor output resolution: 0.1 newton steps
- Sensor output is limited to a fixed max output value: 10 newtons
- Sensor output accuracy: +/− 0.65 newton

Force-filter sensing (high speed "peak" sensing):

- Like the force sensing mode
- Internal sensor sample rate: 1kHz
- Keeps the maximum value until reset by the Hub firmware or powered down

The LEGO® Education SPIKE™ App might not support all hardware features and functionalities.

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