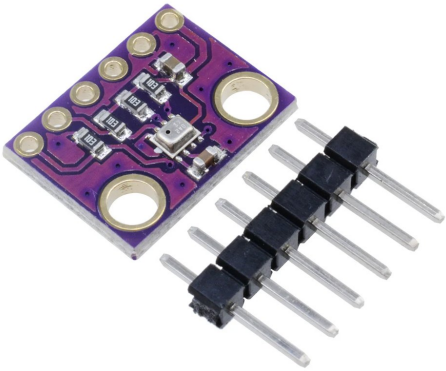
BMP280

External barometer module
User manual



Power the module with 3.3 V only. Read the entire manual before installation.

www.rotorama.com

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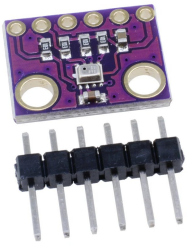
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1. Product description

1.1 What it is for

The BMP280 external barometer is a small module with a **Bosch Sensortec BMP280** digital pressure sensor. The sensor measures atmospheric pressure and temperature; the flight controller (FC) calculates altitude from the pressure. A barometer is often built into the flight controller, but not always – in that case you can add it with this external module.

Barometric altitude measurement is useful mainly in combination with a GPS module and the automatic return-to-home function (GPS Rescue / Return to Home), and for displaying altitude in the OSD. The module connects via the **I2C** bus (SCL and SDA pins). Outside drones it can also be used with other microcontrollers, for example to measure pressure and temperature. The module does not measure humidity.



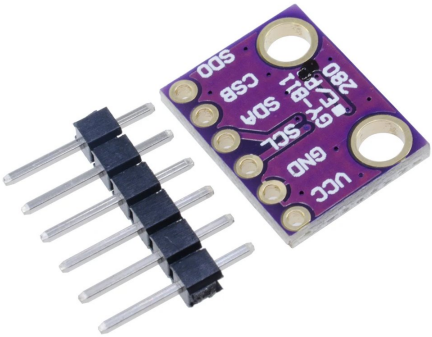
BMP280 module with pin header

1.2 Technical data and package contents

Product designation	BMP280 – external barometer
Sensor	Bosch Sensortec BMP280
Supply voltage	3.3 V
Interface	I2C (SCL/SDA)
Pressure range	300–1100 hPa
Relative accuracy	±0.12 hPa (equivalent to ±1 m altitude)
Absolute accuracy	±1 hPa
Board dimensions	11.5 × 15 mm
Pin pitch	2.54 mm
Sensor operating temperature	−40 °C to +85 °C (chip manufacturer data)
Package contents	1× BMP280 external barometer (flight controller, wires and foam not included)

1.3 Pin description

The module has six pins at 2.54 mm pitch. The labels are printed on the bottom side of the board (the board also carries the marking GY-BME/P280).



Pin labels on the bottom side of the module

Pin	Function
VCC	Power supply +3.3 V
GND	Ground
SCL	I2C bus clock signal
SDA	I2C bus data signal
CSB	Chip interface selection – connected to supply (logic 1): I2C active; connected to ground: SPI
SDO	I2C address selection – to GND: address 0x76 (118); to supply: 0x77 (119)

Function of the CSB and SDO pins according to the Bosch BMP280 data sheet.

2. Use

2.1 Before installation

- Power the module **with 3.3 V only**. The BMP280 chip is designed for a supply of at most 3.6 V – connecting it to 5 V or directly to battery voltage will damage the module.
- Always connect and solder **with the power off**: disconnect both the battery and the USB cable of the flight controller.
- When working on a drone with a battery connected, always have the **propellers removed**.
- The module is sensitive to static electricity – do not touch the chip with your fingers and work on an antistatic mat.
- Solder quickly and with a reasonable tip temperature; do not heat the barometer chip unnecessarily.
- **Do not apply conformal coating to the chip.** It blocks the pressure port and the readings will drift with temperature.
- If you use the module in a drone, follow the regulations of the country in which you operate the drone – the law of the country of operation is decisive.

2.2 Connecting to the flight controller (FC)

Connect the module to the I2C bus solder pads on the flight controller. Another sensor may be connected to the I2C bus at the same time, for example the magnetometer (compass) of a GPS module – the SCL and SDA wires are then connected in parallel.

Module pin	Flight controller pad
VCC	3V3 (3.3 V) – **never 5 V**
GND	GND
SCL	SCL (I2C)
SDA	SDA (I2C)
CSB, SDO	usually not connected – see chapter 3

※ Check in the diagram of your flight controller which I2C bus (1 or 2) the SCL/SDA pads belong to. You will need the bus number during setup.

2.3 Setup in Betaflight

The flight controller firmware must contain the barometer driver. In newer Betaflight versions the firmware build only includes the drivers specified by the flight controller manufacturer. If the BMP280 driver is missing, add **BARO BARO_BMP280** to the *Custom Defines* field when flashing the firmware (*Firmware Flasher* tab).

On the *Configuration* tab, enable *Barometer* and save. If the flight controller does not have the barometer bus preconfigured, enter the following on the *CLI* tab:

CLI command	Meaning
set baro_bustype = I2C	barometer on the I2C bus
set baro_i2c_device = 1	I2C bus number (1 or 2 depending on wiring)
set baro_hardware = BMP280	barometer type (AUTO also possible)
set baro_i2c_address = 0	0 = driver default address
save	save and reboot

The default BMP280 address in Betaflight is **118** (0x76), the alternative is **119** (0x77). The value 0 makes the firmware search at the default address; a specific value limits the search to that address only. In other firmware (INAV, ArduPilot), follow their documentation.

2.4 Function check

① After connecting the flight controller to the configurator, the *Barometer* icon in the top bar should light up. This means the firmware supports the barometer and has found the module.

② On the *Sensors* tab, select *Barometer* at the top.

③ Lift the drone by about 1 m and put it down again. The displayed altitude should change by approximately 1 m; some noise and lag are normal.

2.5 Placement and sensor protection

- It is advisable to place a piece of **soft foam** over the sensor. It shields the sensor from propeller airflow and ambient wind, which would otherwise distort the altitude reading.
- Place the module inside the frame, away from direct airflow and heat sources (ESCs, video transmitter).
- Secure the module so that it cannot move freely and the wires are not stressed by vibration.

3. Troubleshooting

Problem	Cause and solution
Barometer icon does not light up	The barometer is not enabled on the *Configuration* tab, the driver is missing from the firmware (see 2.3), or the wrong bus is set in *baro_i2c_device*.
Barometer does not work on USB power	Some flight controllers power the 3V3 pad only from the battery. Test with a battery connected – **without propellers**.
Module not found even after checking the settings	Try *set baro_i2c_address = 119*, or connect the SDO pin to GND (address 118). If the module does not communicate via I2C, connect the CSB pin to VCC.
Several devices at one address	Two devices with the same address must not be on the I2C bus. Change the barometer address using the SDO pin.
Altitude fluctuates or drifts	The sensor is not covered with foam, it is in the propeller airflow, or there is conformal coating on the chip.
Module does not respond at all	Check the wiring (SCL↔SCL, SDA↔SDA) and solder joints. If the module was connected to 5 V, it is probably damaged.

4. Information for the EU and Czech Market

4.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorama.cz
Phone	+420 252 252 098
Website	www.rotorama.com

4.2 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu.

5. Warranty and rights arising from defective performance

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 4.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.