ICP-10111 Barometric Pressure Sensor Product Brief

Compact and efficient sensor designed for high-accuracy atmospheric pressure measurements

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Introduction

The **ICP-10111 Barometric Pressure Sensor Module** is a compact and efficient sensor designed for high-accuracy atmospheric pressure measurements with low power consumption. Based on MEMS capacitive technology, this module offers ultra-low noise performance, exceptional relative accuracy, and stable sensor throughput. Ideal for weather monitoring, altitude measurement, and environmental sensing, it delivers industry-leading precision in demanding applications.

Functional Description

- **High Accuracy**
- Differential: ±1 Pa (10 hPa span at 25 °C)
- Absolute: ±1 hPa (950 hPa–1050 hPa over –40 °C to +85 °C)
- **Ultra-Low Power Modes**
- Ultra-Low Noise: 10 Hz sample, 10.4 µA
- Low Noise: 10 Hz sample, 5.2 µA
- Low Power: 10 Hz sample, 1.3 µA
- **Wide Pressure Range**
- 30 kPa to 110 kPa (300 mbar–1100 mbar)
- **Built-In Temperature Sensor**
- ±0.4 °C accuracy, used for real-time compensation
- **I²C Interface**
- Supports up to 400 kHz clock
- Standard 7-bit address: 0x63 (GNDBIAS pin floating)
- **Qwiic / STEMMA QT Connector**
- Plug-and-play I²C connectivity, no soldering required
- **Operating Voltage**
- Module: 3.3 V–5.5 V
- On-chip sensor core: 1.8 V
- **Operating Temperature**
- –40 °C to +85 °C
- **Compact Footprint**
- 20.32 × 17.78 mm PCB with four mounting holes

Electrical Characteristics

— Parameter — Value — ——————————————————— — Pressure Range — 30 kPa – 110 kPa — — Differential Accuracy — ±1 Pa (10 hPa span @ 25 °C) — — Absolute Accuracy — ±1 hPa (950–1050 hPa, –40 °C to +85 °C) — — Temperature Accuracy — ±0.4 °C — — Pressure Noise (RMS) — 0.4 Pa (ULN mode), 0.8 Pa (LN), 3.2 Pa (LP) — — Supply Current — 1.3 µA – 10.4 µA (depends on mode) — — I²C Speed — Up to 400 kHz — — I²C Address — 0x63 (default) — — Supply Voltage — 3.3 V – 5.5 V — — Sensor Core Voltage — 1.8 V internal — — Operating Temperature Range — –40 °C to +85 °C —

Features

— Parameter — Value — ——————————————————— — Board Dimensions — 20.32 mm × 17.78 mm — — Mounting Holes — 4 × Ø 2.2 mm —

Applications

- Weather Stations Barographs
- Track atmospheric pressure trends.

- Altimeters UAVs
- Estimate real-time altitude changes.

- Indoor/Outdoor Navigation
- Enhance GPS accuracy with pressure-based elevation.

- Wearables IoT
- Monitor environmental conditions in low-power devices.

- Climatology Research
- High-resolution pressure mapping for science projects.
- Weather Forecasting

Settings

Interface Overview

Interface	Signals / Pins	Typical Use
UART		
I2C		
SPI		
USB		

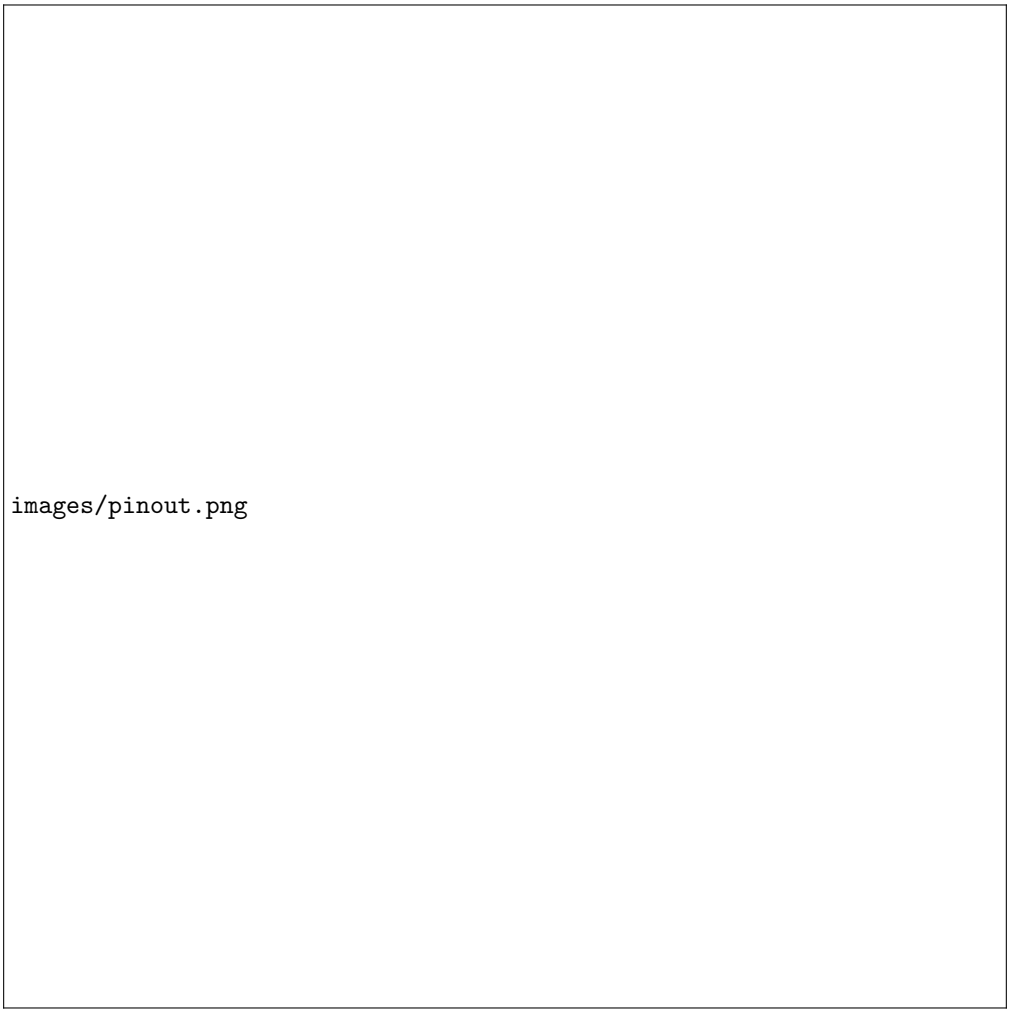
Supported Pins

Symbol	I/O	Description
VCC	Input	
GND	GND	
IO	Bidirectional	

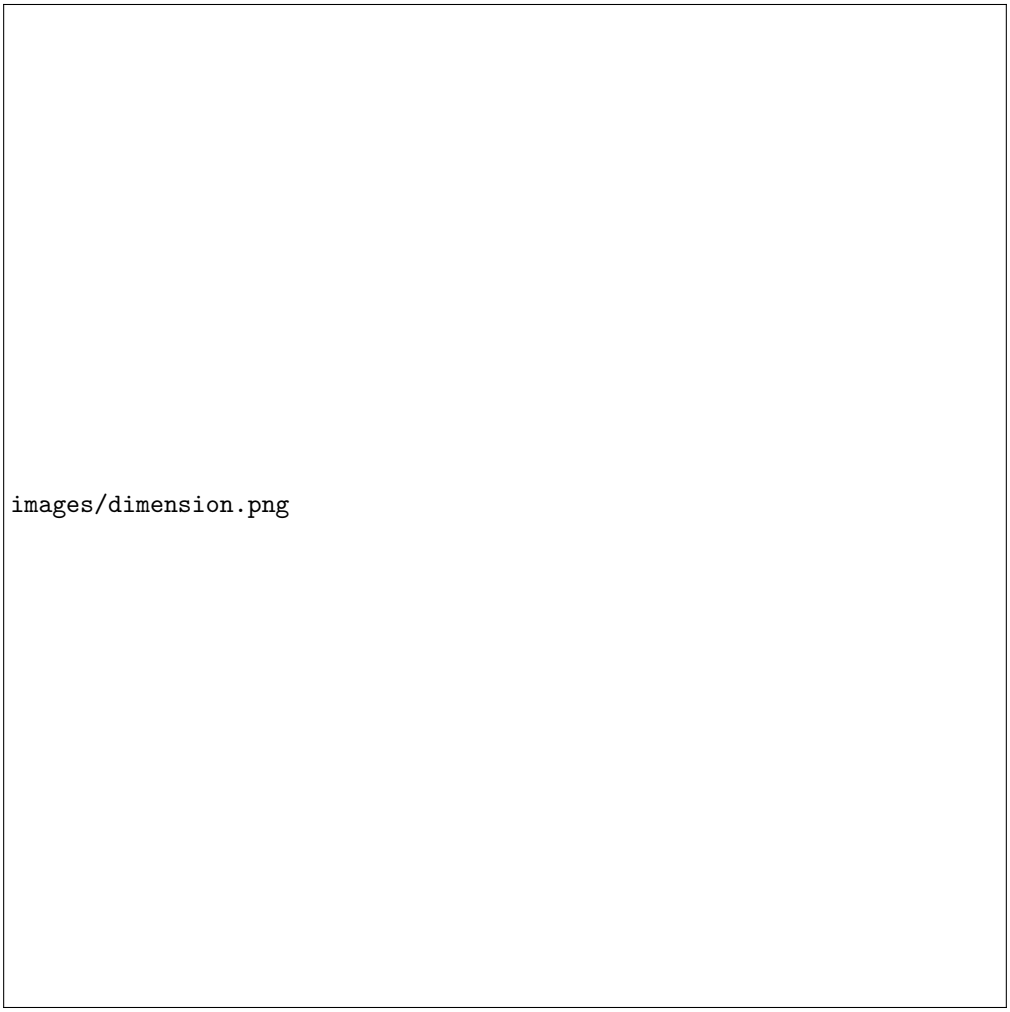
Pin & Connector Layout

Pin	Type	Voltage Level	Function
VCC	Power	3.3 V – 5.5 V	Provides power to the on-board regulator and sensor core.
GND	Ground	0 V	Common reference for power and signals.
SDA	I²C Data	1.8 V to VCC	Serial data line for I²C communications.
SCL	I²C Clock	1.8 V to VCC	Serial clock line for I²C communications.

Block Diagram



Dimensions



Usage

- (e.g., Arduino IDE, ESP-IDF, PlatformIO, etc.)

Downloads

- Schematic PDF
- Board Dimensions DXF
- Pinout Diagram PNG

Purchase

- Buy from vendor
- Product page