

USB PRECISION BAROMETER

BAR20



DESCRIPTION

This USB barometer provides high-resolution measurement of atmospheric pressure (1 kPa to 120 kPa) and altitude. Thanks to the use of a 24-bit precision ADC, very small variations in air pressure can be detected and transmitted to a computer via USB. When used to calculate altitude from atmospheric pressure, variations as low as 10 cm can be perceived^[4].

This unit is designed as a compact USB-key form factor stick allowing instant integration even in most constraint spaces.

APPLICATIONS

- Meteorological measurements
- Research & development
- Environmental chamber
- Altitude measurement
- Building automation
- Aeronautic
- Manufacturing
- Engineering
- Navigation

INSTALLATION TIME

Less than 10 minutes

UNIQUE SERIAL NUMBER

Each unit is assigned a unique serial number allowing for traceability and certification

FREE DAQ SOFTWARE

Real-time data visualization and logging

DATA INTEGRATION

Command-line tools for direct data access and integration

OPTIONS

- Virtual COM Port (VCP) communication protocol
- 3-point user calibration mechanism

ALSO AVAILABLE

Traceability certificates

| SPECIFICATIONS | | | | |
|---|-----------------------------|-----------------------|--------|--|
| Parameter | Condition | Value | Units | |
| Atmospheric pressure | | | | |
| Operating temperature range | – | -40 to 70 | °C | |
| Operating pressure range | For full accuracy | 45 to 110 | kPa | |
| Extended pressure range | Linear range of ADC | 1 to 120 | kPa | |
| Overpressure | Pmax | 600 | kPa | |
| Accuracy | 70 to 110 kPa 25°C | Typ. ±0.15 | kPa | |
| Accuracy | 70 to 110 kPa 10 to 40°C | Typ. ±0.18 | kPa | |
| Accuracy | 45 to 110 kPa 0 to 50°C | Typ. ±0.2 | kPa | |
| Accuracy | 45 to 110 kPa -20 to 70°C | Typ. ±0.35 | kPa | |
| Accuracy | 45 to 110 kPa -40 to 70°C | Typ. ±0.6 | kPa | |
| ADC resolution | – | 24 | bits | |
| Response time | – | 0.5 | s | |
| Factory calibrated | Individually ^[2] | Yes | – | |
| Temperature compensation | See graphics below | 2 nd order | – | |
| Signal noise | – | ±0.0065 | kPa | |
| Altitude resolution ^[4] | – | ≈10 | cm | |
| Long term drift | – | ±0.1 | kPa/yr | |
| Internal temperature^[5] | | | | |
| Range | – | -40 to 70 | °C | |
| Resolution | Typ. | 0.01 | °C | |
| Accuracy | Typ. | < 0.8 | °C | |

| SPECIFICATIONS (continued) | | | | |
|---|----------------------------|--------------------------|-------|--|
| Parameter | Condition | Value | Units | |
| Power supply | | | | |
| Voltage | Powered through a USB port | 5 | V | |
| Current consumption | At 5V | ≤ 22 | mA | |
| Mechanical | | | | |
| Dimensions | See drawing below | – | – | |
| Colour | – | Black | – | |
| Weight | – | 6 | g | |
| Housing | | | | |
| Temperature operating range | – | -40 ^[1] to 70 | °C | |
| Humidity operating range ^[3] | Non-condensing | 10 to 90 | %RH | |
| Material | – | ABS | – | |
| IP rating | – | 50 ^[3] | – | |
| Form factor | – | USB-key | – | |
| Miscellaneous | | | | |
| ADC resolution | – | 24 | bits | |
| Long-term stability | Yes | Yes | – | |
| Temperature compensated | By the manufacturer | Yes | – | |
| Lifetime | – | 5 | years | |
| Certification(s) | | | | |
| RoHS | RoHS3 | Yes | – | |

^[1] Only if the sensor housing is not moved while the temperature is below 0°C.

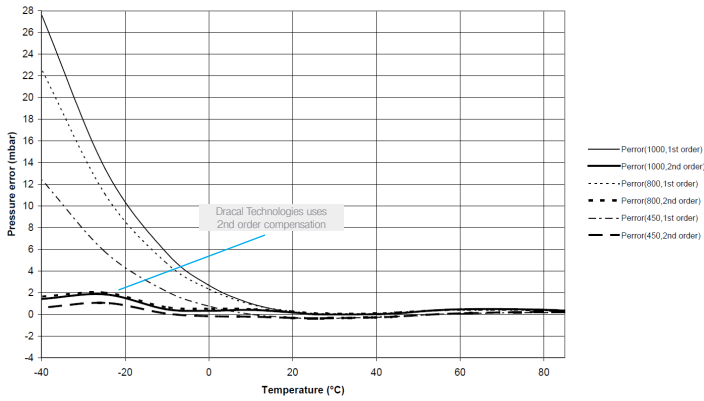
^[2] Each sensor is individually conditioned by the manufacturer of the semi-conductor sensor chips, in the best stable conditions and their correction coefficients are recorded in each of them.

^[3] If water condensation or splashing is possible, it is recommended to install the probe pointing down to reduce the risk of water build-up in the sensor. If water splashing is possible, protect the sensor and the cable converter using extra precautions. Extra housing may be required depending on the application.

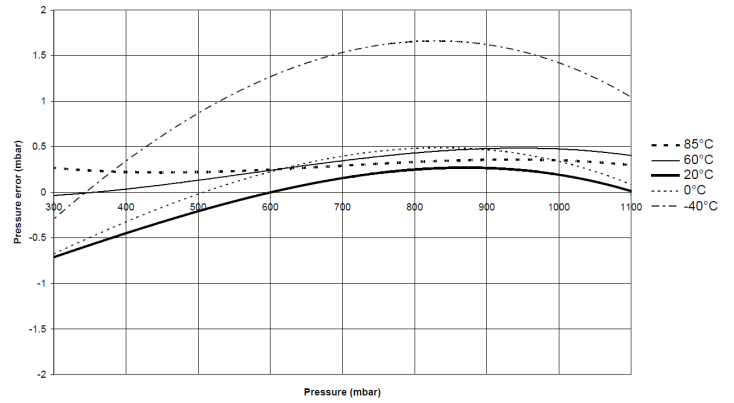
^[4] In a fully controlled environment.

^[5] Available for calibration purpose only.

PRESSURE ERROR ACCURACY VS TEMPERATURE (TYPICAL) 2ND ORDER COMPENSATION



ABSOLUTE PRESSURE ACCURACY AFTER CALIBRATION 2ND ORDER COMPENSATION

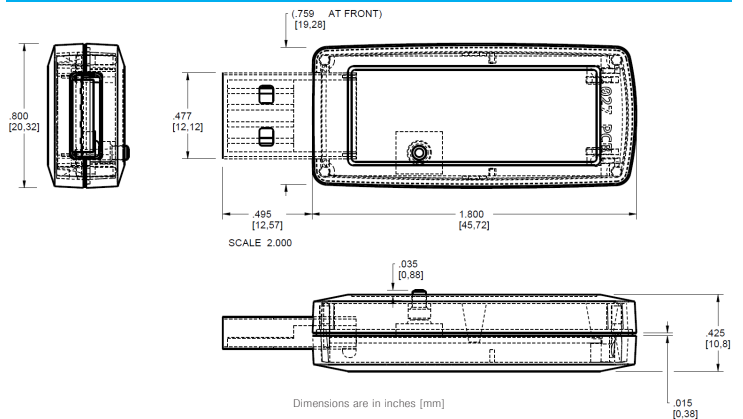


AVAILABLE CHANNEL(S) As displayed in our logging software

| CHANNEL ID* | DESCRIPTION | TYPE | NATURE |
|-------------|--------------------|----------------------|---------|
| 00 | MS5611 Pressure | Atmospheric Pressure | REAL |
| 01 | MS5611 Temperature | Temperature | REAL |
| 02 | Altitude | Altitude | VIRTUAL |

* Channel Id as it appears in DracalView. Virtual channel Id differ in DracalView and dracal-usb-get.

PRODUCT DIMENSIONS



CAUTION: Please keep in mind that electromagnetic interference (EMI) may decrease the accuracy of the sensor. Avoid using this device near EMI sources such as motors, high voltage transformers and fluorescent tubes.

NOTE: Note that this product is not waterproof and requires protection if contact with water is possible.

TIP: The barometer is very sensitive to air pressure. The use of a USB extension cable may increase the barometer precision if you intend to read small variations of pressure. If you directly plug the barometer to a PC, remember that through the USB connector, a small pressure or vacuum from the PC fan(s) may slightly deviate your readings.

TIP: Avoid installing the sensor in a location where strong vibration is likely to occur. Strong vibrations may cause slight inaccuracies in the reading.

TIP: Keep in mind that airflow around the unit may cause a variation of pressure. Avoid placing the unit in a windy environment. One solution may be to place the barometer in a ventilated housing to reduce the air flow.

TIP: As for any precision measurement equipment, it is advised to power on the unit at least 15 minutes before using it.

Warning: This product should not be used in applications where its failure may cause personal injury.

Note: While every effort has been made to ensure accuracy in this publication, no responsibility can be accepted for errors or omissions.

Note: Data may change without notification, and you are strongly advised to obtain copies of the most recently issued datasheet.

ORDERING

PRODUCT(S)

| PART NUMBER | OPTION | DESCRIPTION |
|-------------|---------------|--|
| 601009 | USB-BAR20 | USB Precision barometer |
| 608009 | USB-BAR20-CAL | USB Precision barometer - calibratable |
| 603009 | VCP-BAR20 | USB Precision barometer - with VCP mode |
| 605009 | VCP-BAR20-CAL | USB Precision barometer - calibratable with VCP mode |

TRACEABILITY CERTIFICATE(S)

| | |
|-------|---|
| NT1WP | 1-point pressure certificate for one (1) unit |
| NT2WP | 2-point pressure certificate for one (1) unit |
| NT3WP | 3-point pressure certificate for one (1) unit |
| NT4WP | 4-point pressure certificate for one (1) unit |
| NT5WP | 5-point pressure certificate for one (1) unit |