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

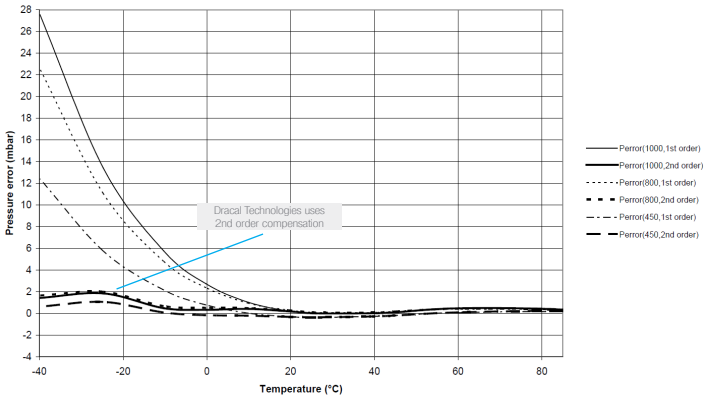
Parameter	Condition		Value		Units
Atmospheric pressure					
Operating temperature range	–		-40 to 70		°C
Operating pressure range	For full accuracy		45 to 110		kPa
Extended pressure range	Linear range of ADC		1 to 120		kPa
Overpressure	Pmax		600		kPa
Accuracy	70 to 110 kPa	25°C	Typ.	±0.15	kPa
Accuracy	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		2nd 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)

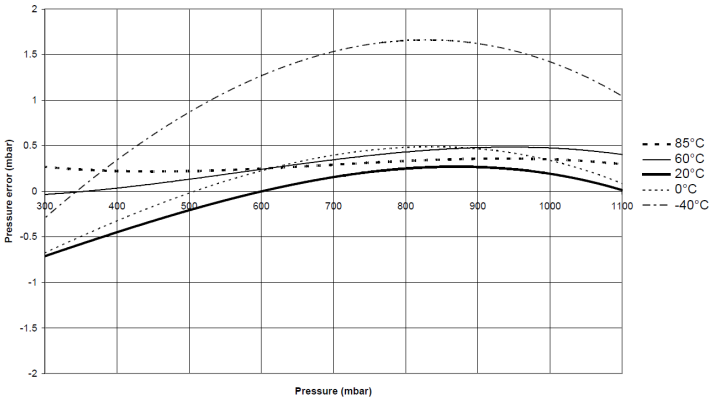
Parameter	Condition	Value	Units
Power supply			
Voltage	Powered through a USB port	5	V
Current consumption	At 5V	≤ 22	mA
Mechanical			
Dimensions	See drawing below	–	–
Colour	–	Black	–
Weight	–	6	g
Housing			
Temperature operating range	–	-40[1] to 70	°C
Humidity operating range[3]	Non-condensing	10 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

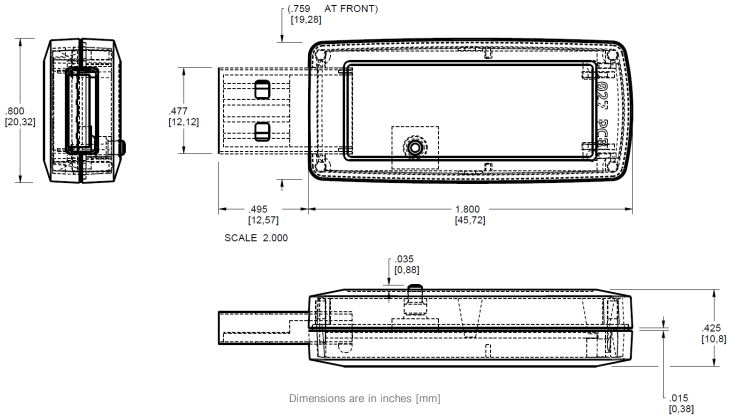


AVAILABLE CHANNEL(S)
As displayed in our logging software

CHANNEL ID*	DECRIPTION	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.

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

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.