



MS5803-01BA

Miniature Variometer Module

The MS5803-01BA is a new generation of high resolution altimeter sensors from TE Connectivity with SPI and I²C bus interface. The MS5803-01BA HE is the high endurance pad technology version of the MS5803-01BA pressure sensor module. It is optimized for altimeters and variometers with an altitude resolution of 10 cm. The sensor module includes a high linearity pressure sensor and an ultra-low power 24 bit $\Delta\Sigma$ ADC with internal factory calibrated coefficients. It provides a precise digital 24 Bit pressure and temperature value and different operation modes that allow the user to optimize for conversion speed and current consumption. A high resolution temperature output allows the implementation of an altimeter/thermometer function without any additional sensor. The MS5803-01BA can be interfaced to virtually any microcontroller. The communication protocol is simple, without the need of programming internal registers in the device. The gel protection and antimagnetic stainless steel cap allows the use in 100m water resistant altimeter/compass watches. This new sensor module generation is based on leading MEMS technology and latest benefits from TE proven experience and know-how in high volume manufacturing of altimeter modules, which have been widely used for over a decade. The sensing principle employed leads to very low hysteresis and high stability of both pressure and temperature signal.

FEATURES

- ♦ High resolution module, 10cm
- ♦ Fast conversion down to 1 ms
- ♦ Low power, 1 μ A (standby < 0.15 μ A)
- ♦ Integrated digital pressure sensor (24 bit $\Delta\Sigma$ ADC)
- ♦ Supply voltage 1.8 to 3.6 V
- ♦ Operating range: 10 to 1300 mbar, -40 to +85 °C
- ♦ I²C and SPI interface (Mode 0, 3)
- ♦ No external components (Internal oscillator)
- ♦ Excellent long term stability
- ♦ Hermetically sealable for outdoor devices
- ♦ High Endurance (HE version)

APPLICATIONS

- ♦ Mobile altimeter / barometer systems
- ♦ Bike computers
- ♦ Adventure or multi-mode watches
- ♦ Variometers
- ♦ Dataloggers
- ♦ High endurance pad technology (HE version)

Sensor Performances ($V_{DD} = 3\text{ V}$)				
Pressure	Min	Typ	Max	Unit
Range	10		1300	mbar
ADC	24			bit
Resolution (1)	0.065 / 0.042 / 0.027 / 0.018 / 0.012			mbar
Accuracy 25°C, 750 to 1100 mbar	-1.5		+1.5	mbar
Accuracy -20°C to +85°C, 300 to 1100 mbar (2)	-2.5		+2.5	mbar
Response time	0.5 / 1.1 / 2.1 / 4.1 / 8.22			ms
Long term stability		-1		mbar/yr
Temperature	Min	Typ	Max	Unit
Range	-40		+85	°C
Resolution		<0.01		°C
Accuracy	-0.8		+0.8	°C
Notes: (1) Oversampling Ratio: 256 / 512 / 1024 / 2048 / 4096				
(2) With autozero at one pressure point				

FUNCTIONAL BLOCK DIAGRAM

