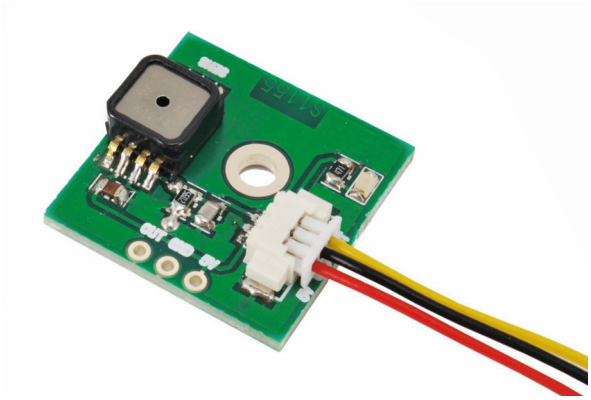
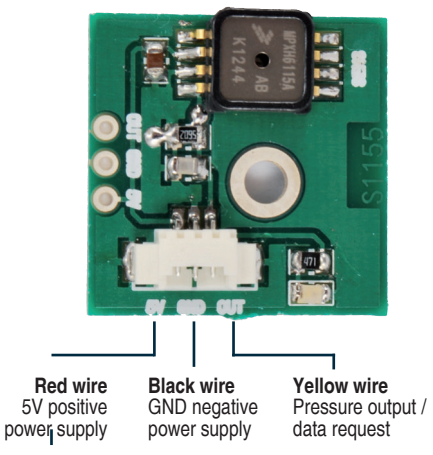
USER MANUAL AUGUST 2016

ANALOG PRESSURE SENSOR BOARD

MM103



This is a 5V powered breakout board equipped with a pressure transducer, a component produced by Freescale and signed as MPXH6115A6U. This sensor provides an analog output signal, the reason why it may be used in order to directly pilot some small tools having pointers, and so to obtain immediate indications concerning the pressure that is being measured: for example, in a pipe in which air is flowing, or in a sealed container.



MPX6115A6U is an integrated sensor that includes - in a single chip - the pressure transducer, an operational amplifier using bipolar technology and a network of thin-film resistors, that enables the supply of a signal having a significant level and the compensation for the error introduced by the temperature variations.In practice, it is the pressure transducer component, supplied with the circuitry needed for the signal conditioning. The transducer inside the component is of the piezoresistive kind. The whole allows for a precision on the order of 1.5% in an operative temperature field ranging between 0 and 85° C, the temperature compensation between -40 and +125° C and an analog output signal that is quite a linear one, in a pressure measurement field going from 15 up to 115 kPa: if expressing this in bars, it means that it is possible to measure values between 0.15 and 1.15 bars (that is, between 0.1529 and 1.1726 kg/cm²).

The output voltage supplied varies in a quite linear manner, with an increase ratio of 45 mV/kPa. The output has an operating range (having a 5 V power supply and an operating temperature range between 0 and 85° C) of 4.5 V, with an offset equal to 0.2 V at the minimum measurable pressure, and a maximum of 4.7 V at 115 kPa.
The maximum pressure that can be tolerated by the transducer (once it is exceeded, the device may be compromised) is 400 kPa (4 bars). The response time to the temperature variations is on the order of a millisecond, while the the transient time (i.e. the elapsed time between the initial power up and the stabilizing of the output signal) is, typically, 20 ms.
The MPX6115A6U applications range from barometric detectors to altimeters for model aircrafts and veritable aircrafts, to pressure measurement devices for pneumatic circuits of various kind.
The maximum current that can be supplied by the output contact is 0.5 mA (with a 4,7 V output and a 5V power supply) and the output load impedance must not be lower than 10 kohms, at least if you wish to keep an appropriate proportion between the detected pressure and the voltage supplied.