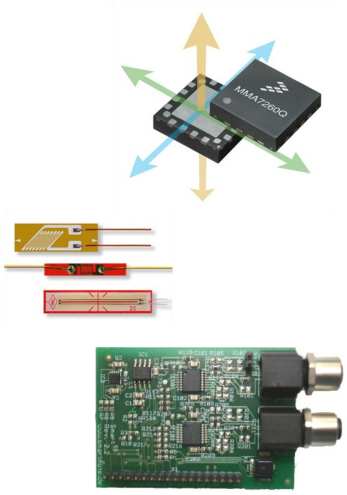
Wireless Sensor Networks

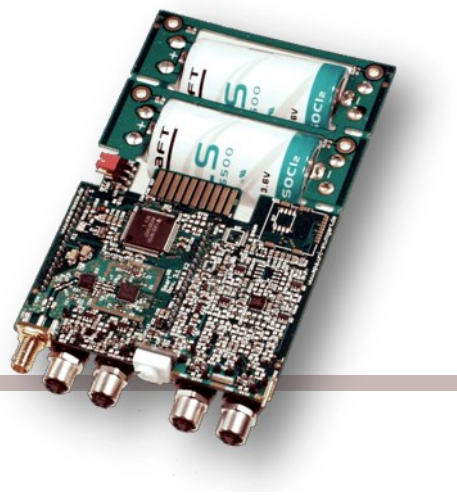
Smart Monitoring & Testing Solutions



Smartmote^{WS}
sensor Solutions

Sensors for widespread Applications

- Displacement
- Strain
- Air Velocity
- Light
- Etc.



Smartmote^{WS}

Multiple Sensing

Environmental influences and damage processes worth to be monitored

Historic materials and historical structures have been under environmental influence for centuries or even millenniums. These influences induce damage processes in the building materials that lead to a degraded state of the structures eventually. The degradation effects can add up and destroy the valuable object that monument authorities try to preserve for future generations.

Environmental influences are manifold and have their origin in physical and chemical effects. This comprises decomposition by light, rain, salts, gases and others. To prevent the degradation or the destruction of historic objects, restorers and conservators try to chemically and physically conserve and protect the object and in some cases have to reconstruct parts. For the restorers and conservators, it is of great importance to know and understand the main factors responsible for the damage.

Multiple Sensing with the Smartmote^{WS}

Although Smartmote^{WS} has integrated digital sensors, there is often the demand to use additional analog sensors that require certain signal conditioning. For that purpose the Smartmote^{WS} is equipped with an analog signal conditioning circuit. Additionally the Smartmote^{WS} could be upgraded with analog signal condition boards that provides several input channels, high resolution, flexible gain, temperature compensation and self calibration capability as well as low power consumption and high speed sampling rates. Thus al large variety of sensors could be used, e.g to monitor

- strain, deformation, and crack opening,
- Gas (CO_2, VOC, TVOC, NO_X)
- ambient light and UV light,
- Inclination,
- vibration,
- air flow,
- temperature and humidity,
- moisture,
- acoustic emissions,
- etc.

Key Features

Multi-sensor Board Specifications

- Up to 3 differential or 6 single-ended inputs (multiplexed)
- Programmable gain: 0.1—1000
- Programmable offset compensation
- Resolution: up to 16 bit
- Max. Samplingrate: up to 50 kHz (with reduced resolution)
- Digital output
- Onboard references for self calibration capability (reduces No. of input channels)

Hardware selectable Signal Conditioning

- Temperature sensors (e.g. PT 100, PT1000)
- Resistive sensors that require Wheatstone bridges (e.g. Strain gauges, resistive transducers etc.)
- External temperature sensor for temperature measurement and compensation

Application specific Sensors

- Smartmote offers a large variety of standard sensors that are evaluated to operate perfectly with the Smartmote^{WS}. For user specific sensors ask the Smartmote support.

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