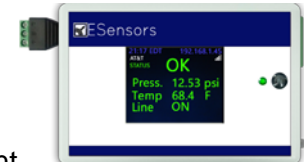


Connecting Analog Industrial Sensors to the Internet of Things

Darold Wobschall, Esensors Inc.

Ideal for legacy sensors

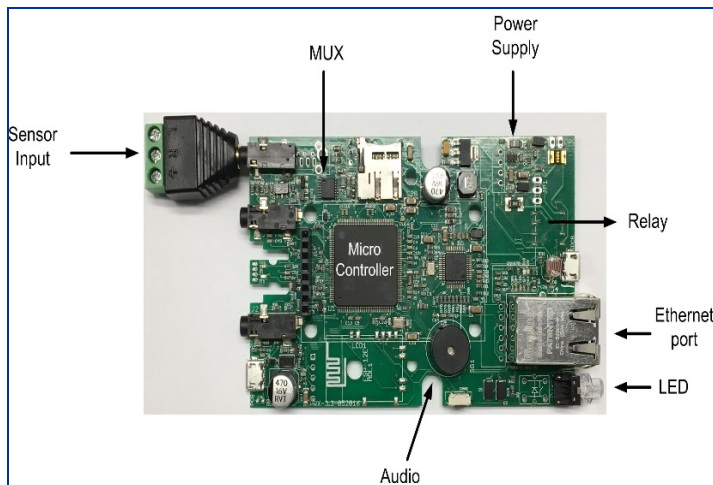
All sensors are inherently analog and most industrial sensors are provided with analog output signal conditioners. Yet it is becoming desirable to be able to connect sensors to the Internet and transmit with the specific digital protocols employed with the Internet of Things. To meet this need we have developed a small, easily installed gateway which connects the sensor analog signal directly to the Internet via WiFi or Ethernet. This drop-in modular gateway is especially valuable to extend the life of legacy sensors which are performing well and have a long life expectancy. Additionally the module is useful for new sensor designs. It replaces patch-up solutions, such as connecting the sensor through a PLC and then to the Internet, resulting in a clumsy, bulky and unnecessarily costly deployment.



The gateway accommodates any of these common sensor signals: 4-20 mA current, 0-5 volts, pulse (0 to 2kHz) or switch (pull-up/down or dry contact). A hardware multiplex circuit (MUX) section, normally factory-configured, adapts the module to the proper analog signal. The sensor type (e.g. pressure), units (e.g. PSI) and full scale (e.g. 15) are set by a configuration page. Actuators (relay, LED, LCD display) are also accommodated.

Several digital formats popular with IoT available, including HTTP, JASON, SNMP and XMPP. Data can be provided in the IEEE 21451 smart transducer format using XMPP. Featured are TEDS, encryption and an universal ID suitable for big data IoT applications.

The simple three-wire connector (+signal, ground, +supply) connects the sensor signal and also provides power (+3, +5, +12 v) to the sensor. The unit is powered by a 5 or 12 v external supply or, if Ethernet, by POE.



SELECT SENSOR TYPE
Pressure (SI Unit:Pascal)
UNITS
Pounds/ sq. inch (PSI)
MINIMUM READING (Usually Zero)
0
FULLSCALE (CALIBRATION UNITS)
15
SELECT SENSOR SIGNAL TYPE
4-20mA
UNITS CONVERSION FACTOR (SISlope)
6894.7

A more detailed description of the gateway is given in a paper (presented at SAS):

- Slides: <http://eesensors.com/media/wysiwyg/docs-pdfs/ESP29-IIOT-P.pdf>
- Paper: <http://eesensors.com/media/wysiwyg/docs-pdfs/ESP29-IIOT.pdf>
- Ordering information: <http://eesensors.com/products/industrial-iiot-interfaces.html>

