Analog to digital (serial) converters for light sensors
Originated by Paul (R/V Falkor) on June 13, 2013

From: "MT (Falkor)" on Thu, 13 Jun 2013

Hello,

Can anyone recommend an analogue to digital converter for converting a voltage between 0 and 5V to a serial (RS-232) stream? We need this in order to get data from our PAR sensors to our SCS data logger. Ideally we will put the feed from the converter into a Moxa serial to Ethernet device and transmit the data to the logger using UDP.

Any thoughts on alternative ways of doing this are most welcome.

Best Regards,

Paul.

Reply From: Robbie Laird (WHOI) on Thu, 13 Jun 2013

Hi

We use these quite a bit: http://www.dghcorp.com/sitemap.asp
Either the D1000 series or the D2000 series. They seem to be fairly bulletproof. They show up under at least four different names, Omega and some others.

Also possible are http://www.circuitspecialists.com/nudam-modular-serial-cards. I've used these myself, but not in a production envoirment. But they seem to be well made, and somewhat more versatile than the DGH units.

Also these
http://www.l-com.com/serial-converters-controller-cards-icp-das-remote-ethernet-i-o-modules Note, these are analog to ethernet, but I think there are some other analog to serial models from icp as well.

Also these:
http://www.mccdaq.com/serial-data-acquisition/CB-Series.aspx
Again, I've used them personally, but not shipboard.   But they seem decent.

Robbie Laird
WHOI/SSSG

Reply From: Webb Pinner on Thu, 13 Jun 2013

Have you thought about doing it with an Arduino?

I use one to log voltages out of a thermistor and save to a file.

If you get the Arudino Ethernet version (~$65) you could go straight from voltage to UDP.

Cheers,
- Webb

Webb Pinner

Reply from Thomas Wilson (Stonybrook) on Thu, 13 Jun 2013

The Arduino's built-in A/D only has 10 bit resolution, for many sensor applications higher resolution is needed.Â As usual, Limor Freid (aka Lady Ada) has come to the rescue with a $14.95 16-bit A/D breakout board and includes example code for Arduino and Raspberry Pi:
http://www.adafruit.com/products/1085

Tom
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Thomas C. Wilson, Jr. | Instrument Lab | School of Marine and Atmospheric Sciences
Stony Brook University | Stony Brook NY 11794 USA

Reply From: Marshall Swartz (WHOI) on Thu, 13 Jun 2013

I use the Moxa iLogik E1242 analog i/o to Ethernet on our latest SDSL Data-Link systems. Great support from Moxa and many features work well for me.

Marshall Swartz, WHOI.

Reply From: David OGorman (OSU) on Fri, 14 Jun 2013

The good ol' OSU DAS board costs slightly more but will go straight from analog->UDP and is set up to time stamp and add meta information (sensor serial #, calibration date etc.) to the data (or it can just end the data).

It has a (hey, that's what the advertising says!) 24 bit ADC chip on it, although something more closely resembling 16 comes out in practice.

Dave

David O'Gorman

Marine Technician Superintendent OSU CEOAS

Reply from Thomas Wilson (Stonybrook) on Fri, 14 Jun 2013

Hi Dave!

OK, here come the three ugly questions 🙂

1) How much?

2) How fast can someone get 1-5 pieces?

3) How much configuration is done at order time versus how much can be done (or changed) by end user?

I believe that 24-bit A/D converters exist, I just don't believe there are many situations in the real world where the analog noise levels are low enough for that much resolution to mean anything. Â It takes a lot of sweat, shielding, and care with grounding to get down to 4 counts of noise on a 16-bit converter. Â On a 24 bit converter I would bet that for most applications you could use the least significant 8 bits as your random number generator.

Tom

Reply from John Calderwood (UCSD) on Fri, 14 Jun 2013

The big advantage to a20 or 24 bit ADC over a 16 is the 16 or so "meaningful" bits are not the least significant nibble. You don't need to concern yourself with "no missing codes" or uneven step sizes as you are ignoring the low end where all those chip spec issues reside.