

Arduino MFM glitch problem

I am using an Arduino MFM (SILICON CHIP, April & May 2016) to measure the output of a null meter. The signal that I am measuring ranges from +100mV to zero to -100mV.

When the null meter approaches zero and/or goes negative, the MFM readings randomly go up from a few millivolts to ~2.5V. Is there a way to prevent the sudden change in what the MFM is seeing and recording around zero input signal levels? (L. A., via email).

- We have found the solution to that random 2.5V reading problem with the MFM's Arduino sketch. The reason for the occasional full-scale readings was that when the input voltage is very close to zero, noise and/or hum can send it briefly negative and the LTC2400 ADC chip's output swings negative accordingly: to FFFFFFFF (hex), then FFFFFFFE and so on.

We didn't take this possibility into account previously and as a result the MFM sketch regarded FFFFFFFF as corresponding to 2.500V and so on. We also discovered that Linear Tech had

provided status bits in the 'header' sent before the actual digital data output, which can be used to learn whether the input voltage was positive or negative. Our sketch originally masked off these header bits because we didn't think we'd need them.

The firmware sketch has now been modified to extract the status bits and analyse them, so that negative inputs produce the appropriate output. You can download the modified software from our website.