

ELMB INPUT VOLTAGE RANGE

INPUT VOLTAGE LIMITATIONS on all input ranges:

The input range of the ELMB is limited to -2V to +5V due to absolute maximum ratings of the ADC CS5523 datasheet[1] . The Table 1 in the datasheet is misleading!

The range is limited to -2V to +5V



Extract from the CS5521 data sheet May'00 DS317F2

Input Range ⁽¹⁾	Max. Differential Output 20X Amplifier	VREF	Gain Factor	Δ - Σ Nominal ⁽¹⁾ Differential Input	Δ - Σ ⁽¹⁾ Max. Input
± 25 mV	2.8 V ⁽²⁾	2.5V	5	± 0.5 V	± 0.75 V
± 55 mV	2.8 V ⁽²⁾	2.5V	2.272727...	± 1.1 V	± 1.65 V
± 100 mV	2.8 V ⁽²⁾	2.5V	1.25	± 2.0 V	± 3.0 V
± 1.0 V	-	2.5V	2.5	± 1.0 V	± 1.5 V
± 2.5 V	-	2.5V	1.0	± 2.5 V	± 5.0 V
± 5.0 V	-	2.5V	0.5	± 5.0 V	0V, VA+

Table 1. Relationship between Full Scale Input, Gain Factors, and Internal Analog Signal Limitations

- Note: 1. The converter's actual input range, the delta-sigma's nominal full scale input, and the delta-sigma's maximum full scale input all scale directly with the value of the voltage reference. The values in the table assume a 2.5 V VREF voltage.
 2. The 2.8 V limit at the output of the 20X amplifier is the differential output voltage.

INPUT RANGE on +5V range:

If the ELMB ADC is calibrated using the procedures described in [2] the input voltages on the +5V range can be extended to an input voltage of +5V and is not limited to the 4.2 4.5 V range as mentioned in the ELMB specifications. An example is shown by the measurement of the ELMB input range in Figure 1.

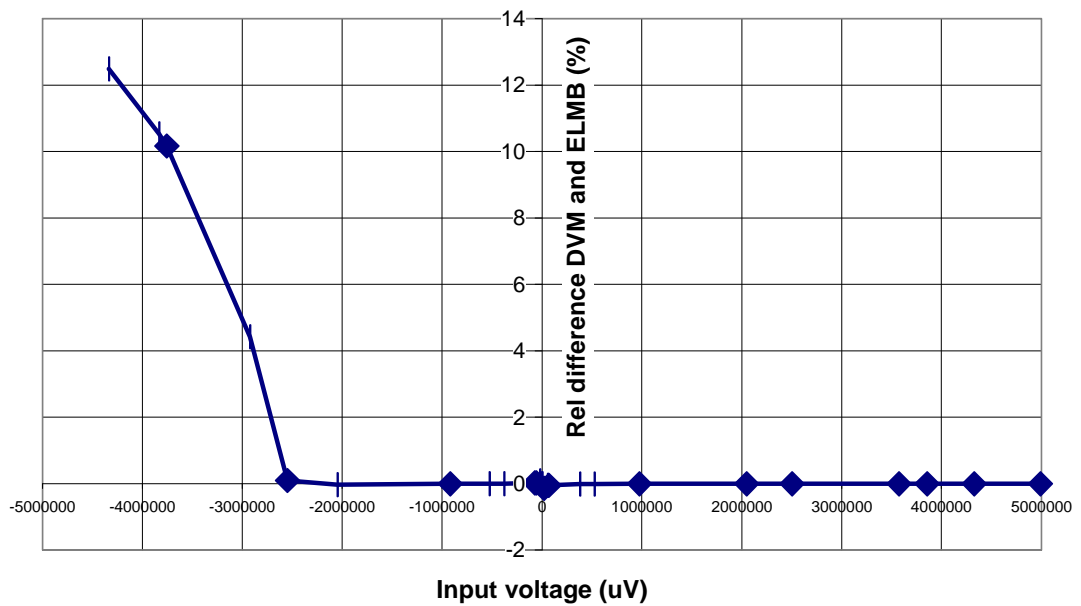


Figure 1 The response of the ELMB bipolar +5V range compared to 6 1/2 Digital Voltmeter.

[1] Datasheet of the ELMBADC: <http://www.crystal.com/pubs/cs5521-2.pdf?DocumentID=340>

[2] Calibration of the ELMB:
<http://atlas.web.cern.ch/Atlas/GROUPS/DAQTRIG/DCS/ELMB/DOC/calibration.pdf>