

## LMI 595 Calibration Requirements

Dear Valued LMI customer,

Because of recent inquiries, LMI Corporation would like to clear up a matter regarding the calibration of the 595 Data Transmitter versus other gauge equipment and why periodic calibration of the data collector and/or transceiver is unnecessary.

The analog 595 is a “ratio-metric” device rather than an “absolute voltage measurement device”. This is the basis for the three-point mastering system used with the LMI 595. To illustrate this functionality, we will walk through mastering one of our LMI 200 transducers with a three-step block and then assume an impossibly huge “drift error” of 50% in the electronics and observe the result for a measurement that is midway between the zero step and the low step. Assume, for the sake of simplicity, that the zero step is halfway between the high step and the low step and that the high and low steps are 10mm apart and that the transducer generates 0-3 volts. The following table shows actual and observed voltages, along with the resulting measurement values.

	Actual Volts	Observed Volts	Measurement
<b>High Step</b>	3.0	1.5	+5.00mm
<b>Low Step</b>	2.0	1.0	-5.00mm
<b>Zero Step</b>	1.0	0.5	0.00mm
<b>Measurement</b>	1.5	0.75	-2.50mm

Note that even with an imaginary 50% error, there is no error in the measurement results because *the ratios of the observed voltages are identical to that of the actual voltages*. In effect, the 595 is “recalibrated” every time it is re-mastered. This means that 595 users are spared the inconvenience and expense of periodic recalibration, however, re-certifying the dimensions on the calibration block is recommended.