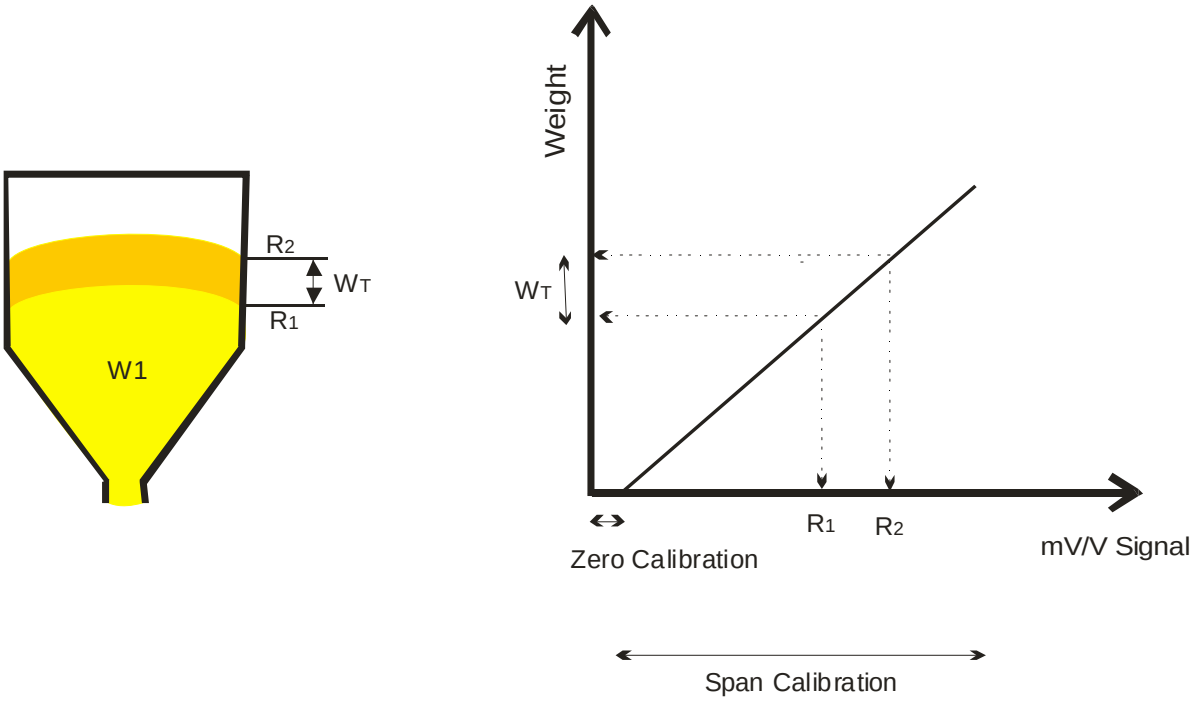
Application Note: 1203 Direct mV/V Calibration

Application:



A vessel that already contains material is to be recalibrated without emptying the contents. The application uses a 1203 Weight Transmitter and is calibrated in mV/V mode using a known weight (W_T) added to the current weight. The change in the mV/V reading when this weight is added will allow for a span calibration using direct mV/V entry to be performed. The last section of this application note demonstrates the formulas used for these calculations.

Components:

1203
Weight Transmitter

1203-D
Weight Transmitter
with display

1203-B
PCB only Weight
Transmitter

1203-SM
Service Module

*Note the 1203 is available in three formats as shown, each have the same weighing functionality and differ only in the display or housing.
** The 1203-SM service module provides a display and buttons to assist in the setup of the 1203 and 1203-B. Alternately a laptop using the free Viewer software can be used to configure all devices.

Determine mV/V readings:

The first step is to place the 1203 in mV/V mode so as the mV/V readings can be determined for two different weights.

Place 1203 display in mV/V mode to show absolute mV/V readings.	Press the <CHANGE> key repeatedly until mV/V units are lit.
Record absolute mV/V reading	R1 = _____ mV/V
Estimate weight of material currently in vessel: W1 is an estimate of the weight of material in the vessel. This lets us calculate an estimated zero point in the calibration. The absolute accuracy of the estimation is not a problem as the zero point of the vessel can be corrected manually in the future without effecting the span calibration.	W1 = _____ units
Add known Test Weight: Note that WT is any known weight. It may be a formal test weight or simply the addition or subtraction of a known amount of material from the vessel. In the case that material is removed it is not necessary to enter negative mV/V or weight values into the instrument – simply enter the positive numbers.	WT = _____ units
Record absolute mV/V reading:	R2 = _____ mV/V

1203 Calibration:

Span Calibration (Dir.SPN)

Span Calibration (Dir.SPN) = (R2 – R1)

R2		R1		Dir.SPN mV/V
	-		=	

WT

Zero Calibration (Dir.ZER)

Zero Calibration (Dir.ZER) = R_1 – (Dir.SPN x W_1 / W_T)

	Dir.SPN mV/V		W1		W1	
(		x		/		)

R1 = Dir.SPN mV/V

	-	

=

Dir.ZER mV/V

Enter values into 1203

Enter the (Dir.SPN) value when prompted for mV/V — (R2 – R1)

Enter the W_T value when prompted for weight — W_T

Enter the Dir.ZER value directly into the 1203. — Dir.ZER

For more information refer to the Reference Manual for this product