Calibration

The IND560 enhances the serviceability of the weighing solution by providing three different methods of calibration in support of different weighing applications.

Overview

In general, calibration means the determination of the relationship between the displayed quantity and the true value of the measured variable under specific measurement conditions. For example, when no weight is on the scale, the weight will be equivalent to zero, and when a known weight is added to the scale, the exact weight value will be displayed.

Technical Specifications

Traditional Calibration

Traditional calibration using certified test weights is the most accurate method of calibrating the IND560 analog or digital scales and is required to assure metrological-agency approval. Independent adjustments for Zero and Span values are supported, eliminating adverse interaction of these two calibration points. The zero adjustment value allows the technician to re-establish the zero-point without impacting span after the support structure has been added to the platform and calibration completed.

The IND560 supports five-point linearization of the span adjustment process to compensate for non-linear responses of a weighing sensor as loads are increased or decreased. The technician can determine the zero and full scale span point as well as utilize three mid-points to accommodate non-linear characteristics of the weighing sensor. Linearization is not a substitute for a good structural design; it improves weighing performance.

CalFREE™

The METTLER TOLEDO CalFREE calibration method offers an alternative to traditional calibration methods for installations that do not need to have a metrological-agency approval. This methodology is particularly useful for large tanks or silos where it is not practical to use test weights to calibrate the scale.

A pioneer technology in the weighing industry assures that the analog section of each IND560 performs identically. Therefore, if the main board of the IND560 needs to be replaced, the replacement board will have an identical gain. The configuration and calibration constants can then be loaded, and the terminal can be restored to the same weighing performance as existed before the board failure. This capability quickly restores the system with only minimal down time, improving the overall productivity of the line

A factory calibrated analog to digital converter is used to effectively utilize CalFREE technology. It provides a known basis to calculate the sum of a specific load cell or group of cells. Mechanical interaction between the weighing vessel and any attached pipes, hoses or feeding mechanisms and any non-linear response to changes in loading are NOT accommodated using CalFREE. The zero-point of the weighing system is established using traditional methods. Instead of using test weights to determine the span value of a scale, the specific output parameters of the load cells used in a scale installation are used to calculate a theoretical span value.

IND560 Technical Brief: Calibration - Technical Specifications Continued

Step Calibration

In some installations of large tanks or vessels, it is not practical (or physically possible) to have enough certified test weight to accurately calibrate the scale. In this case, a substitution method of calibration using a combination of certified weights and a substitute mass (e.g. water) is used to "build up" to a reasonable total test mass. Historically, technicians have written down the individual points of test weight and substitute mass, and perform the manual calculations to determine the span points.

The IND560 Step Calibration process automates this process, and leads the technician through the process, eliminating the possibility of transcription and math errors associated with manual recording and calculation of span values. This greatly reduces the likelihood of errors during the step calibration process.

Terminal	Traditional w/ Independent Zero and Span	Linearization	CalFREE	Step Calibration
IND110	✓	2		
IND130	✓	2	✓	
Panther	✓	2		
IND4x5	✓	3		
IND4x9	✓	3		
IND310	✓	2		
Lynx / LynxBatch	✓	3		
IND560	✓	5	✓	✓
ID7	✓	3		
IND690	✓	3		
JAGXTREME	✓	3		

Contact your local METTLER TOLEDO® sales office or authorized distributor for additional information.

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