Object Stalled Sensor Operation
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Functional Description:

The sensor is designed using the SM900A 2- Meter Proximity sensor as base hardware. The sensor has an black-wire PNP N.O. Output, an white-wire PNP N.C. Output, an Output Status LED, and a Sensing Zone multicolor LED. The Output Status LED indicates the Output state and is on when the black-wire output is on (sourcing/high). The Sensing Zone multicolor LED indicates distance to object and is Off when no object in sensing range, Red when an object is between the deadband and near limit, Green when an object is between near and far limit, and Amber when an object is between the far limit and maximum range.

This sensor is designed to detect an object stalled within a teachable sensing window. The sensor handles objects both moving toward or away from the sensor. The Stall Speed is teachable in steps of 10 Feet/Minute intervals using the TEACH button. This procedure is explained in the "Setting the Stall Speed" section of this manual.

The object is assumed to enter the sensor range laterally closer than the near limit or farther than the far limit. An arm next moves the object away from or toward the sensor. If the object moves slower than xxx feet/minute while between the near and far limit , the sensor turns off its Output and Output Status LED. The Output and Output Status LED are on unless the object stalls between the near and far limit.

When a stall condition occurs, the stall condition is latched, which means moving the object faster than the stall speed does not clear the stall condition. To clear the stall condition, requires either 250 millisecond of no object in sensing range, an object closer than the near limit, or an object farther than the far limit.

The near limit and far limits are teachable within the 7.0 to 79 inch range of the sensor using the sensor teach button and is explained in the "Teaching the Near and Far Limits" section of this manual..

The sensor responds in less than 255 milliseconds to a stop condition. There is a 16 entry table which is updated every 15 milliseconds with the latest distance. If the absolute distance between the last distance and the distance from 16 samples earlier is less than the Stall Speed, the sensor turns off the Output and Output status LED.