I see the Tank Level Monitor products have a specification called "deadband"; what is this and how does it affect tank measurements?

en discussing the TLM100, TLM150, and TLM200 ultrasonic tank level sensors, the term "deadband" is a term used when describing an operating range where a signal start and signal end cannot be measured.

For an ultrasonic sensor application, deadband is the minimum distance that the sensor can measure, as measured from the face of the sensor. Basically, the sensor of the TLM100, TLM150,and TLM200 products measure the flight time of the ultrasonic signal trasmitted by the sender, bounced off the fluid surface, and the received again by the sender. This flight time is mathematically converted into a distance measurement. During operation, the sensor activates a sending pulse output then the sensor’s receiver listens for that very same pulse returning. If the pulse reaches the sensor before the receiver has stopped "ringing" from transmitting the signal, then the sensor is unable to detect it, and therefore the TLM100, TLM150, or TLM100 will cause the tank level measurement to be displayed as a "-" (data not available) on your display product.

In Figure A below, we show a tank with fluid (green) and a deadband (grey). If the fluid level enters into the grey area, accurate measurements cannot be guaranteed.

Figure A

In order to help avoid issues with fluid deadband proximity, Maretron recommends the use of a Tank Focus Tube, part number starts with "TFT"

Maretron’ s focus tubes come in three mounting types. Click on the following link to learn more: https://www.maretron.com/products/tlm100.php

The attachments section below offers a printable paper ruler to use when considering your tank full mark and the TLM100, TLM150, or TLM200’s deadband specification.

TLM100 and TLM150 both have a deadband of 2"/50.8mm

TLM200 has a deadband of 6"/15.24cm

TLM200 level sensor will provide inaccurate tank level readings if the fluid is in contact with the sensor. "Figure B" illustrates the adverse affect that fluid contact will have on the sensor’s signal performance.