

## Manual: 7.1.4. Confidence Intervals

The model will result in a specific value at any one time. This is the value that we expect the measurement to have under the assumption that the equipment is healthy. If the equipment is indeed healthy, then this expected value and the measured value should be close. Otherwise, they should be far apart.

The concepts of close and far apart must be made precise however to allow for the release of alarms. For this we use the concept of a confidence interval, which generally is a range of values selected such that a known proportion of points lies within it. In our case, the confidence interval is drawn around the model value such that a certain proportion of the training values lie within the interval. That certain proportion is called the confidence level and is usually equal to 0.9. This means that the default confidence interval includes 90% of the training data and excludes the other 10%.

The confidence level can be adjusted before training depending on how stringent you want to be with your definition of health. A critical asset must get a lower confidence level so that alarms are released at lower deviations from the definition of health. Assets that are not so important can receive a higher confidence level so that they do not get alarmed so often. The confidence level is indirectly proportional to the number of alarms that will be released, i.e. the higher the confidence, the fewer alarms will be released.

The confidence level is just a convenient number that allows the modeling algorithm to compute the confidence interval based on the data. It is that computed confidence interval that is used to release alarms. If you wish, you can manually edit the confidence interval after training in order to increase or decrease the alarm incidence rate.