MetLogix

M³

# Wire Insulation Measurement Module

User's Guide Appendix

Wire Insulation Module

The wire Insulation Module provides a method to measure and check the thickness of wire insulation samples.
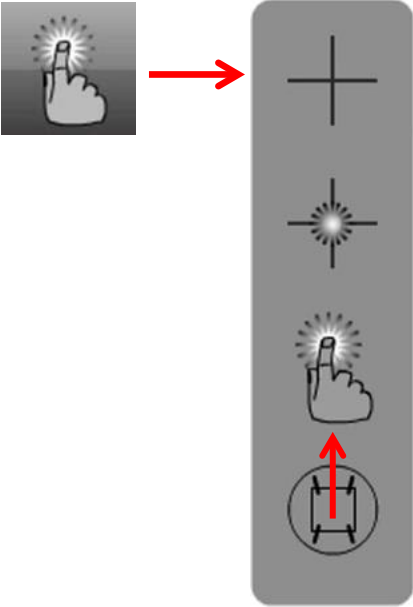
Enabling the Insulation Module

If the insulation module button is not shown in the menu, the wire insulation module must be enabled in Factory Options. Note: A Metlogix License is required for this module. To enable insulation module:

1   Press the Factory Options Settings screen button and enable Insulation.
                M3 system menu > Settings > Factory options > Insulation > Yes
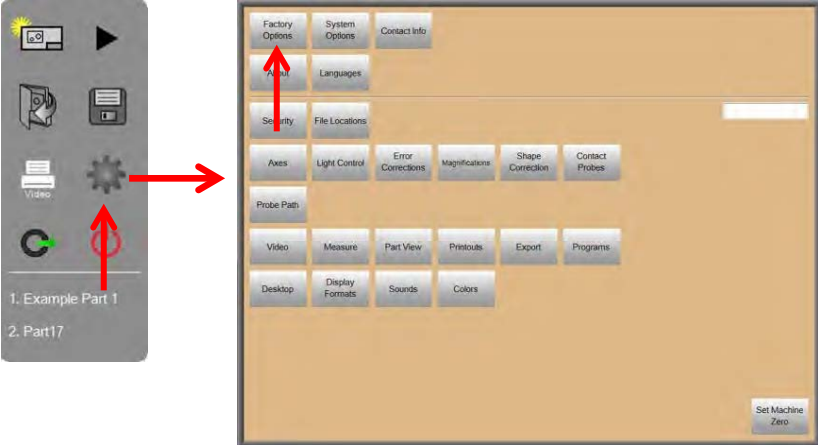
2   To use the insulation module, the MeasureLogic Probe has to be selected.
                System toolbar > Probes > MeasureLogic

3   Click the insulation module button in the System toolbar. The button will be displayed at the bottom of the screen. The default method of automatic shape recognition will be enabled.
                System toolbar > Insulation button

Insulation Measurement

The Insulation Module provides the ability for measurement with automatic strand count determination as well as the possibility to manually select the appropriate number of strands.


The Wire Insulation Measurement function first seeks out the absolute minimum distance between the outer "blob" of the insulation profile, and the inner "blob" of the insulation profile. Once this minimum distance is determined the system then breaks the diameter of the insulation into (6) 60 degree segments, based on the minimum distance at 0 degrees. Then the minimum distance between the inner and outer "blobs" is determined from within each of these 60 degree segments. This mechanism is utilized when there is a single strand on the inside lobe(such as in a simple gasket), or if there are 6 or more lobes or wire strands.

If there are 2, 3, 4, or 5 wire strands on the inner blob, then the system will return one minimum distance for each of these strand regions.

The results of the Insulation Feature include D0, D1, Davg, and %C. D0 is the min distance, D1 is the Max distance, Davg is the average of the resulting distances, and %C is the percent concentricity, which is 100*MaxDistance/MinDistance.

Important: The Max distance returned is not the Maximum wall thickness of the entire insulation sample, but rather the Maximum Distance of the Minimum Distances returned.
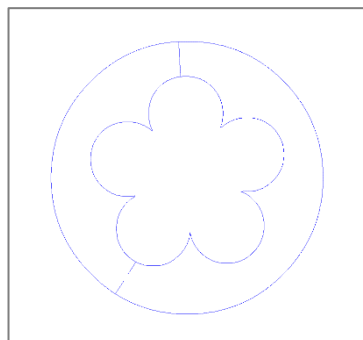

- **d0**
  d0 represents the minimum distance. It is always drawn as a continuous line in the part view.

- **d1**
  d1 represents the maximum distance. It is drawn as a segmented line, in this example at the lower left strand.

- **đ**
  the character đ in the detail information screen represents the average distance.

- The other values reported for the insulation feature are;
  - the percentage concentricity (%C)
  - the position (X, Y)
  - the quality of the measurement (f)
  - the number of points in the data cloud and
  - the reference frame the feature is located in

Measuring Insulations

An insulation sample can be measured by click on the edge:

1   Position the entire insulation within the field of view.
2   Press or click the measure Insulation button.
                Measure toolbar > Measure Insulation button
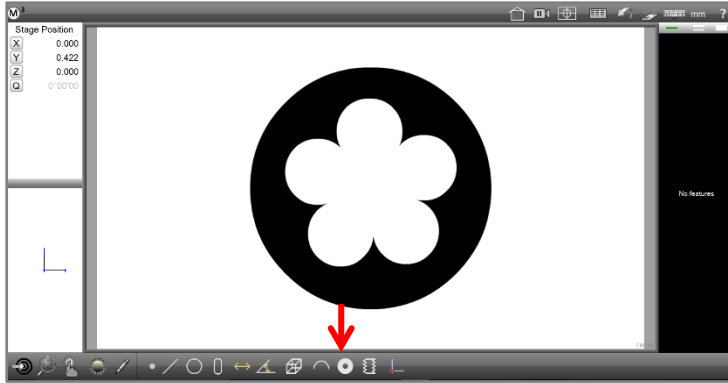
3   Press or click the insulation edge. The Insulation tool will probe points on the insulation and calculate
         the shortest and longest distance.
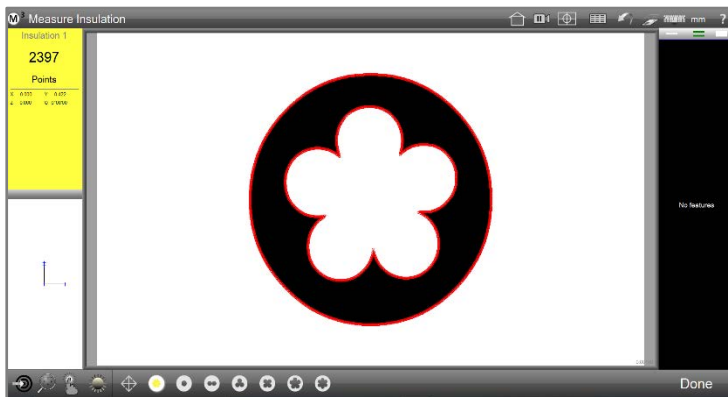
4   Press the Done button to complete the measurement. The insulation will be shown in the Part View
         and entered into the Feature List.
                Measure Toolbar > Done button

Automatic Strand Count Determination

By selecting the "Auto Strand" recognition button and clicking on an edge of the insulation sample, the System determines the number of strands automatically based on the data cloud of points collected. The measurement is completed by pressing the Done button.

Fixed-Strands Measurement

If the automatic strands count calculation is not able to detect the right number of strands or the right shape of the wire, the number of strands can be manually specified. Choose one of six different strand count selections. As with the Auto mode select the insulation tool and click on an edge of the insulation sample. The measurement is completed by pressing the Done button.

Distance Feature Results Mode

If the Distances Mode button(shown at right) within the Insulation menu is enabled, the Software automatically displays and creates every distance between strands and edges during the regular insulation measurement. The feature can be measured with any of the Insulation measurement tools described above. The measured distances of the insulation will be shown in the Part View and in the Feature List. It also determines the minimum distance, the maximum distance, and the average distance between strands and edges within the insulation profile. The number of distances depends on the number of strands.