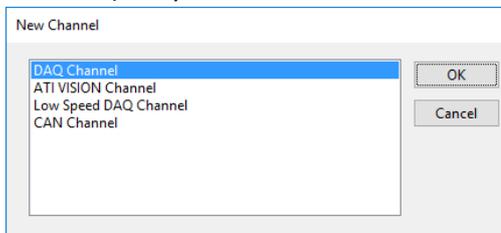
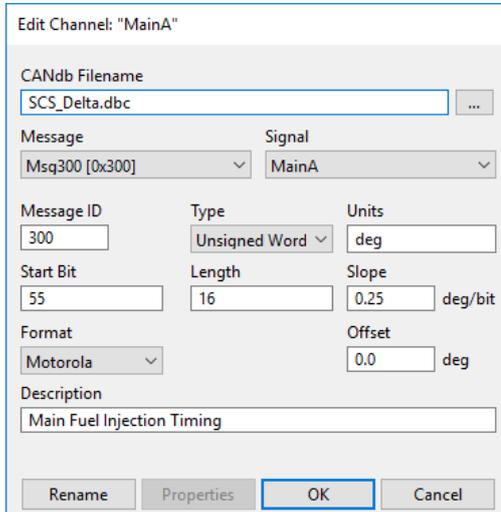


## catoolRT 16.9 Release Notes

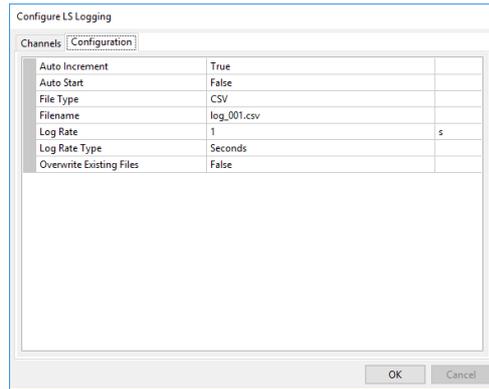
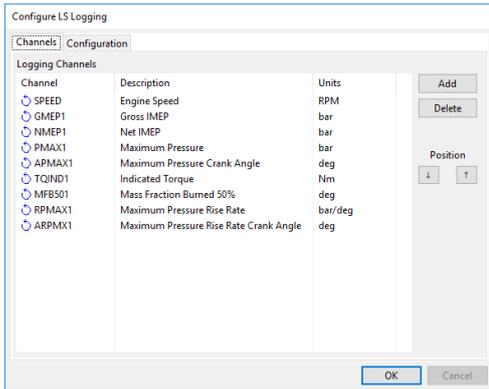
- In the Windows start menu, catoolRT is no longer in its own folder.
- Added support for NI cDAQ-9179
- Fix some memory leaks
- Moved to wxWidgets 3.1.0
- Allow any channel to be used as the simulated engine speed
- Allow any channel to be used as the start of combustion.
- Add adaptive crankshaft or camshaft analogue input algorithm. This will track a non-zero reference voltage and adapt the thresholds based on the previous tooth's minimum and maximum voltages. "Acquisition" -> "Advanced Config" -> "Adaptive Crankshaft Thresholds" and "Adaptive Camshaft Thresholds".
- New graphics update algorithm to maximise screen update rates.
- Improvements to CAN signal I/O
- Ability to log CAN signals and Low Speed DAQ (voltage, thermocouple, frequency and digital channels) at cycle rate.



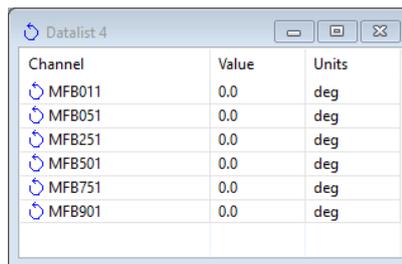
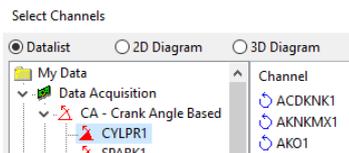
- CAN signal input can be defined using a CANdb database file.



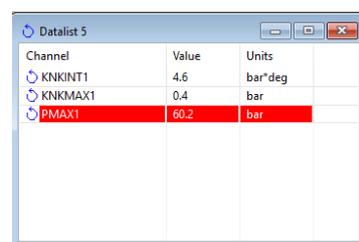
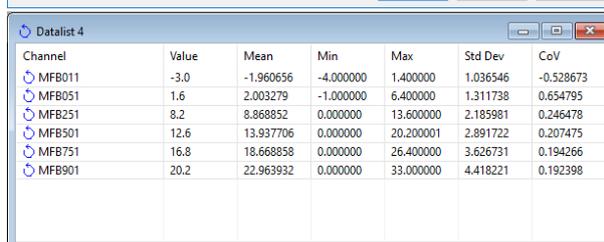
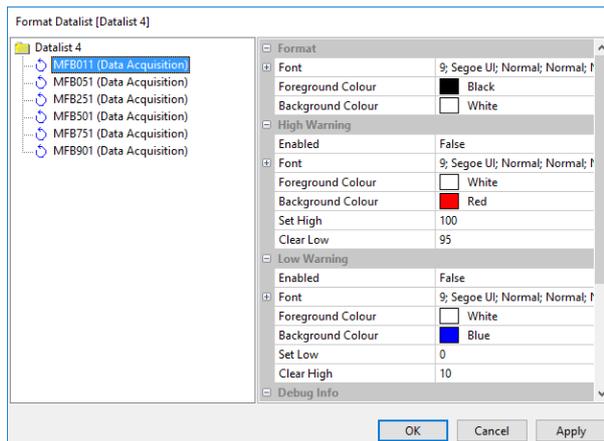
- Ability to log channel values to a CSV file at low speed. Logging frequency can be specified at a fixed rate of seconds, minutes, hours or cycles. "Acquisition" -> "Low Speed Logging" -> "Configure".



- Default interpolation resolution increased from 0.2 to 0.1 degrees
- Added "Indicated Calculations" to calculate indicated horsepower and indicated lb.ft torque. "Acquisition" -> "Configure Real-Time Analysis". Select "Indicated Calculations".
- "Format Plot" now hides some options that are not relevant to the selected channel
- Improvements in the time to load the application
- Improvements in the time to detect new USB hardware that is inserted/removed
- Add support for Datalists
  - o "Diagram" -> "New Diagram". Select "Datalist" radio button at top of "Select Channels" dialog

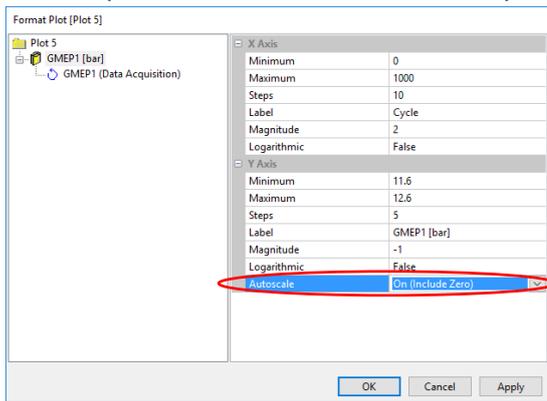


- o Right click on item and select "Format Datalist...". Columns can be re-ordered and statistical values can be added. Item can change colour at a configured high or low value.

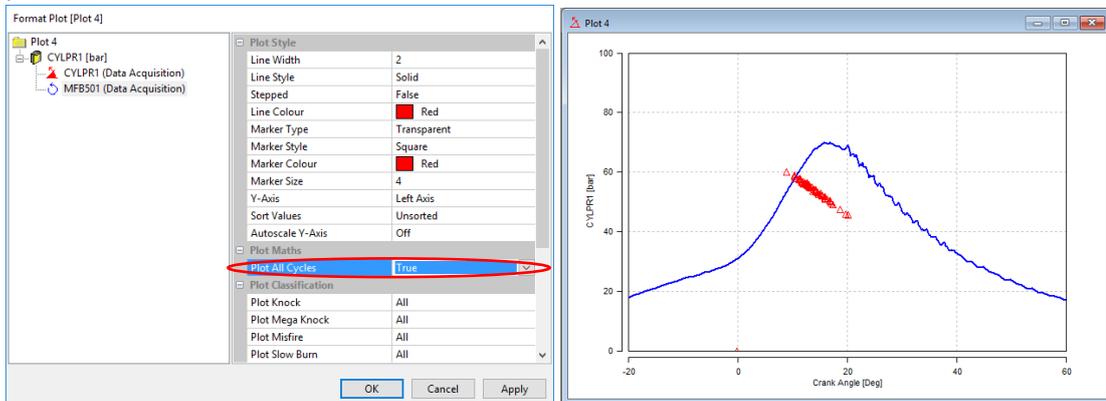


- o Move items up/down by selecting them and holding "Alt" key + cursor key

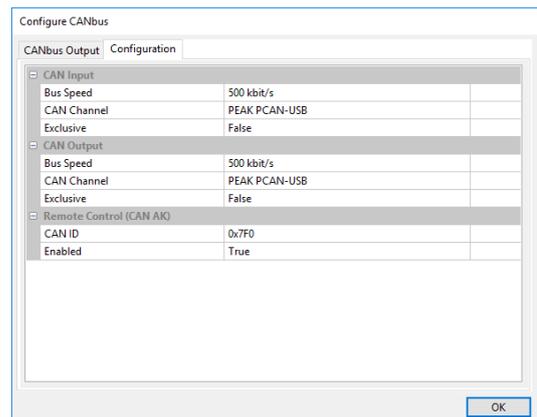
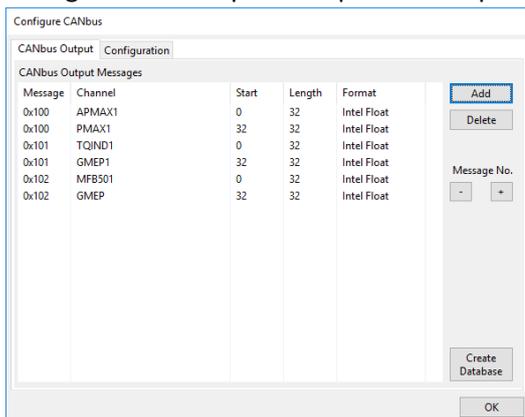
- Corrected some channel icons in various GUI elements
- Added option to autoscale the Y-axis on cycle based plots



- Fixed tooth engine speed calculation to allow for missing teeth
- Crank angle plots with a mixed abscissa (i.e. that include cycle based results) now use the cycle based marker colour.
- Format Plot: Selecting "Plot All" for a mixed abscissa allows the scatter plot of all cycles to be plotted:



- "Configure CANbus Output" changed to "Configure CANbus". GUI reorganised and allows configuration of separate input and output CAN hardware.



- Simulated DAQ can now run down to very low engine speeds
- Calculate cycle statistics correctly for a single cylinder engine
- Close VISION screen if it was not possible to add channels to the recorder object