

## Introduction:

Software is always being modified and updated. We are pleased to announce the release of a new version of the wga.exe, the operating software for the Cropscan 2000 and NIT-38 Analysers.

The motivation for this software came about from our annual sales meeting that was held in Rome in March 2004. It was suggested that we could improve the performance of the Cropscan 2000 Series by incorporating the following functions;

- 1) 1-20 Scans per analysis
- 2) Outlier Rejection
- 3) Variable Integration Times

## Description:

- 1) 1-20 scans to average results: calibrations can be set to scan and average between 1 & 20 portions of a sample. This function provides greater accuracy averaging out the differences in the sample presentation.
- 2) Outlier rejection: two options are provided for detecting scans that are irregular and then eliminating them from the average of the scans.
  - Z Scores is a statistical method of identifying sub samples, ie, spectral scans, that are significantly different from the other sub samples. If the Z Score for any sample is greater than 1.5, then the sub sample is eliminated from the average, although the spectral data and predicted results are still saved in the .csv file. Z Score is calculated by the following expression;

$$\text{Z Score} = (\text{Scan Result} - \text{Average}) / \text{Standard Deviation of all results.}$$

- Min Max is simply eliminating the lowest and highest sub samples from the average.
  - These outlier detection routines only work where 10 or more scans are collected.
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- 3) More flexible integration times: the previous versions of wga.exe scanned a sample using a fixed integration time of 40 milli seconds per pixel and using AdaptScan =1 , allowed a variable integration of 10 and 20 milli seconds. Note the longer the integration time the larger is the effective gain and signal averaging. WGA503.exe uses a greater range of integration times to match the intensity of the light reaching the detector. The integration times are now; 5, 10, 20, 40 and 80 milli seconds. This function allows a wider range of samples to be scanned without changing the wga.ini file. Note that the LiqSamp=1 parameter is still available for scanning liquids or very high transmission samples. Liquid samples use an integration time of 78 microseconds.

It should be noted that these three new functions are related. To make use of the outlier detection routines, especially Z Scores, you need to scan more portions of the sample. However more scans take longer for an analysis, and so the variable integration time tries to optimise the scan times.

### Other Features:

Wga503.exe addresses these issues and provides several other upgrades, including;

- 1) Autosampler: We have included software to drive a Ai Scientific AIM3000 Autosampler for processing up to 40 liquid samples in either the NIT-38 Dairy Analyser or the NIT-38 Alcohol Analyser.
- 2) On Header Sampling Devices: WGA503.exe allows the selection of either the Plunger or the Flow Thru Sampling heads for the Cropsan 2000H.
- 3) 2 Decimal Places: For alcohol and some other measurements, readings to one decimal place are not sufficient. By setting DecPlc=1 in the parameter setup, the display will show two decimal places.
- 4) Multiscan: This is a new parameter which applies to the 2000H and FOP-38 On Line systems. It allows a sample to be held in the chamber and scanned multiple times. This means that errors due to vibration may be reduced by averaging. The number of scans for which the sample is held, is set in NTAS in the Parameter setup menu.
- 5) NIT-38 Dairy Analyser: In the 6) Hardware menu, you can select the NIT-38 Dairy Analyser with STM(Sample Transport Module) or the NIT-38 Dairy Analyser. The second configuration uses a manual sample for measuring liquids or powders.

NTAS Update: Attached is a file called NTAS.exe. Copy this into the Program Files\NIR Technology Australia\ directory and replace the existing NTAS.exe file. This is required in order to change the number of scans between 10-20.

A copy of WGA503.exe is supplied on the enclosed CD-ROM.