

AMS Data Acquisition (DAQ) Software

6 th AMS Users Meeting
Juelich, Germany
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Update on Software Status

Current Software Version: V 4.5.9

Software versions that are most widely distributed right now: AMS Versions V 4.4.4. and 4.3.mode

Updated Operating Modes include:

- 1) Fixed Scan Saving in MS and TOF modes
- 2) Light Scattering
- 3) Jump-MS*

* Will be discussed by Jose Jimenez during this users meeting

I recommend that you all update to V 4.5.9!

Downloading AMS DAQ Software

1) Aerodyne ftp site:

AMSIncoming\AMSUsers\ALLUsers\AMSSoftware

2) Jose's Web Page(<http://cires.colorado.edu>)

Section 3.4. Resources for Aerodyne AMS Users

- provides direct link to ARI ftp site

You will be prompted for the Username/Password combination that you use to access your folder on the ftp site. (Please ask Tim or Manjula if you don't have this information)

If the downloaded AMSV4.5.9.exe crashes:

Run the Win2K Application Setup on your computer as described at the end of this presentation.

Fixed Scan Saving

- Enables Saving of MS or TOF data after program has completed a user specified number of scans in the operating mode.
 - Time for 1 MS Scan= 0.3 s
 - Time for 1 TOF Scan = 0.3 s* (# of selected m/z)

So, this mode allows for a max time resolution of 0.3 seconds in either MS or TOF mode.

IMPORTANT CURRENT CONSTRAINTS OF THIS FEATURE:

- 1) In MS Mode, this feature does not work in Toggle Mode.
 - MS Mode should be operated w/ Chopper in Open Position, and with Signal Averaging On (Press F4 in MS Screen)
- 2) Currently this saving does not work in TOF/MS Alternate mode

Fixed Scan Saving Menu Parameters

Get into Default
Parameter Menu

AMS Default Parameters -- Version 4.5.9 (May 16, 2005)

Save Changes and Exit Exit without Saving

AMS Operating Mode **Data Acquisition/Saving** Hardware Software

Data Acquisition Boards See Nat. Inst. "Measurement and Automation Explorer"

Fast Board (NI PCI-6110E) Device Number 1

Slow Board(NI PCI-6024E) Device Number 2

Slow Board Installed: Yes No

Board Used to Control Chopper Servo: Fast Slow

Analog Output Board (PCI-6703) Device Number 0

A/D Gain for Mass Spec Signal (ch. 0) 1

A/D Gain for Chopper Signal (ch. 1) 1

Saving Saving can be externally controlled via the digital input lines on the Slow Board. If External Save Control is turned on, AutoSaving will take place on every change of state in chosen input line.

ExternalSaveControl On: Yes No Digital Input Line For Save Control 3

Digital Switch Dead Time(min) 0.10 Reaveraging of data after each save will be delayed by dead time

FixedScanSaveControl On: Yes No

#MS cycles Averaged For Save 3

#TOF cycles Averaged For Save 5

NOTE: For Diff Mode the length of each MS cycle is determined by Chopper Dwell Time in "Averaging Saving" Tab of Main Menu

Fixed Scan Saving Menu Parameters

Autosaving Feature in Main Menu Must be Manually Turned OFF when FixedScanSaveControl is Turned ON

Save & Quit Quit w/o Saving

Graphs Single Particles Serial Ports Analog In and Out Calib. String Parameters
Flow, Size & Mass Calib. Mass Spectrometer Multiplier & Chopper Data Acquisition Boards **Averaging & Saving**

Averaging of TOF and MS Data

Time Steps (10us) per Avg.Sig Point For reducing computing time & the size of the data files. MUST be an odd number (1, 3, or 5 commonly used)

Dead Time in MS Mode After Chopper Move (s) Not Less than 0.5 sec

Dwell Time in MS Mode for Each Chopper Position (s)

TOF-MS Alternate Mode General Alternation Mode

Dwell Times (s)

TOF	<input type="text" value="20.0"/>
MS	<input type="text" value="20.0"/>

Dwell Times (s)

TOF	<input type="text" value="30"/>	<0 if not used
MS	<input type="text" value="30"/>	
JMS	<input type="text" value="30"/>	

Saving of TOF and MS Data

Run Number for Last Data Files Saved (0 to 9999) Make sure that the different averaging and saving modes are not active simultaneously

Format of Saved Data: ITX HDF BOTH

Save TOF Size Dist. vs dLog10dA: Yes No

Efficient Data Saving Mode: Yes No NOT IMPLEMENTED YET: Saves repetitive information only on the first file of a series of files saved

Fixed Time for Next Save in min. (e.g. 10 min. for 6:00 PM, 6:10 PM, 6:20 PM...) (<0: OFF) Needs to be >= 0.1 min.

Markers for TOF Mode

Position of DC Level Markers (us)

FRONT: from to

BACK: from to

Number of Time-of-Flight Region Markers: 0 1 2 3

Position of TOF Marker 1 (us): 1: 2: 3:

Marker for End of Air Beam (us) Needs to be set right for correct Air Beam calculation

Marker for End of TOF data (us) TOF data in matrix logfiles are saved only to that point

Note: Make sure that all markers are set properly. Otherwise the program may not work as expected.

Saving of Log Files

_MainLog.dat

Save Main Log File: Yes No

Save TOF Size Dist Log: Yes No

Save MS Difference Stick Log: Yes No

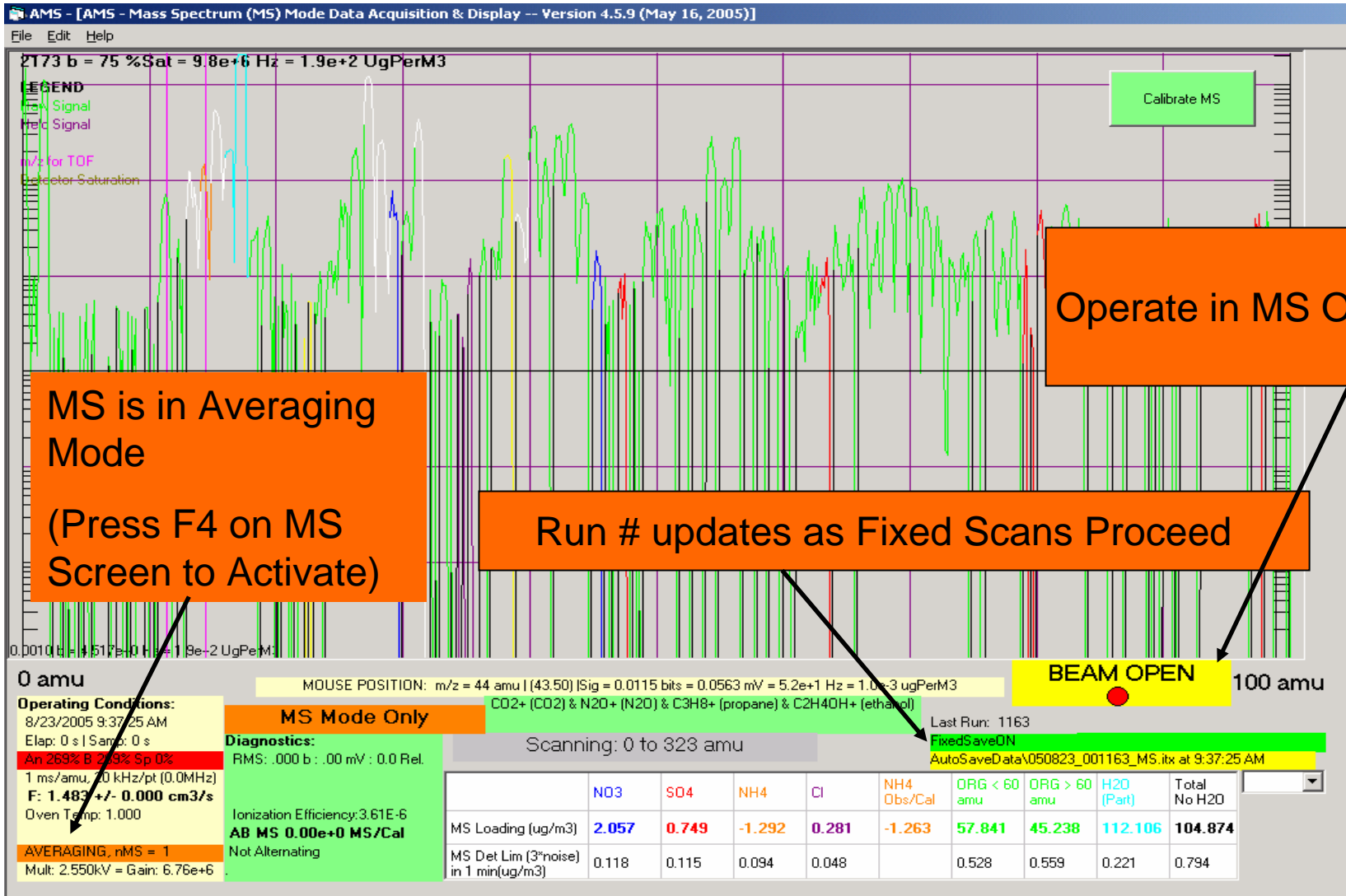
AutoSave Interval (s) of Slow Board Inputs (<0 Off) File "Slowlog.dat"

**** All log files above are saved in C:\AMSVAMSD\data\AMSLogFiles****

Save Transient Files: Yes No Transient File Saving:

Enter Transient Save Directory:

MS Screen w/ FixedScanSave ON



Useful Background Information
For
AMS Data Acquisition Program

Downloading Application Setup Program

- You MUST update the Application Setup Program to the Win2K Version in order to run new version of AMS program.

The Win2K Application Setup can be downloaded from the ARI FTP site in the following folder:

AMSIincoming\AMSUsers\ALLUsers\AMSSoftware\Installs\Win2KInstalls

Installing Application Setup Program

- 1) Uninstall previous Application Program
 - go to Start\Settings\ControlPanel\AddRemoveSoftware
 - Remove Program called AMS

 - 2) Install the Win2000 Application Program
 - Shut down all other programs
 - Go to copy of Win2KInstalls folder and start the Setup.exe
- NOTE:** Ignore the message that reports a conflict with the shdocvw.dll

Software Requirements During Field Campaigns

CD's containing the following files should be available:

- 1) NIDAQ Software
- 2) AMS Application Setup Folder from ftp site
- 3) AMSMenu.prm and AMSID.prm files.

AMS Program Requirements

- 1) Pre-installation of the appropriate AMS Application Setup Program
- 2) Pre- installation of the NIDAQ Software for slow/fast Data Acquisition Boards

NOTE: The NIDAQ EXAMPLES FILE MUST ALSO BE INCLUDED IN INSTALLATION

- NIDAQ intallation process places files accessed by AMS program(i.e. NIDAQ32.dll and NIDEX32.dll) in C:\winnt\System32 folder.

- 3) The computer C drive must contain a C:\AMS\AMSCode folder with the following files:
 - a) AMSMenu.prm
 - b) AMSID.prm files.

AMS Software problems

- 1) Check Menu (especially if problem is sudden)
 - Gets corrupted if program crashes or is exited in non-standard way
 - At least 50% of problems are due to this
 - C:\AMS\AMSCode\AMSMenu.prm
 - A copy is saved on AMSLogFiles directory (C:\AMS\AMSData\AMSLogFiles) every day you use the program (i.e. 041011_Menu.prm for today's menu)
 - Also saved in every ITX file (“par” and “ParStr”)
 - Compare you current menu with a known good one side-by-side in Excel
 - Make backups of known good menus

AMS Software problems

2) Runtime Error # 6

- Typically occurs in TOF mode only not in MS mode. It is often because of a drop out of the chopper signal.
 - chopper signal can drop out if bad I signal coming from diode or chopper wheel is not spinning when chopper servo moves through the block/chop/open cycles
 - Software crash due to this error will be prevented in future software versions
- ## 3) Check TOF velocity calibration. This can cause “division by zero” issues

Most Current Software problems due to either menu corruption or Chopper signal issues!

Troubleshooting Software Problems

Information Needed:

- 1) Software version
- 2) Exact error message
- 3) Operating mode (Alternating, TOF Mode only, LS On...)
- 4) What mode the error occurs in (TOF/MS /JMS)
- 5) Any keystrokes that may have caused error
- 6) AMSMenu.prm