USER MANUAL

COMPUTRAC® MAX® 1000 | MAX® 2000XL
COMMUNICATIONS SOFTWARE
INSTALLATION, SET-UP AND OPERATION MANUAL

April 2007

ARIZONA INSTRUMENT LLC
3375 N Delaware Street | Chandler, AZ 85225 USA
800.528.7411 | 602.470.1414 | f 602.281.1745

www.azic.com

Email:
General – azi@azic.com
International – intl@azic.com
Customer Service – support@azic.com

Computrac
MAX1000/MAX2000XL
Communication Software

Installation, Start-Up and
Operation Manual

PROPRIETARY RIGHTS NOTICE

This manual contains valuable information and material developed by Arizona Instrument Corporation for use with the Computrac MAX-1000, MAX 2000XL and the MAX1000/MAX2000XL Communication Software. No part of this manual or the accompanying software can be reproduced or transmitted in any form or by any means, electronic, mechanical, or otherwise. This includes photocopying and recording or in connection with any information storage or retrieval system without the express written permission of Arizona Instrument LLC.

ALL RIGHTS RESERVED

Computrac and MAX are trademarks of Arizona Instrument LLC
Copyright 2007 Arizona Instrument LLC

TABLE of CONTENTS

1.	INTRODUCTION	4
2.	REQUIREMENTS	4
3.	HARDWARE INSTALLATION	5
	RS-232 Port Location	5
3.1.	INSTRUMENT TO PC INSTALLATION	6
3.2.	CODE OPERATED SWITCH INSTALLATION	7
	Requirements:	7
3.3.	COS HARDWARE CONFIGURATION	8
4.	SOFTWARE INSTALLATION	10
5.	TEST CAPTURE – USED TO CAPTURE DATA FROM MAX-1000	11
6.	COMMUNICATIONS SOFTWARE MENUS	12
6.1.	FILE MENU	12
	PC CONFIGURATION	12
	Printer Setup	13
6.2.	INSTRUMENT MENU	14
	VIEW TEST DATA	15
	TEST PARAMETER SETS	16
6.3.	STORED DATA MENU	17
	TESTS	17
	PLOT	17
6.4.	WINDOW MENU	18
6.5.	HELP MENU	18

1. INTRODUCTION

The MAX 1000/2000XL Communication software is a Windows ™ based program designed to collect data from a single MAX-1000 or interface one or more MAX 2000XL instruments to a personal computer through the RS-232 interface. The software can download data from any of a number of MAX 2000XL units to a personal computer for data analysis using Microsoft® Excel or long-term storage. The MAX 2000XL Communication Software can upload test parameters from the central PC to MAX 2000XL's located throughout a plant to ease and simplify multi-unit programming.

For multi-unit communication, the Code Operated Switch (COS) acts as a network switching device to communicate with any one of a number of MAX 2000XL units. The COS network uses one central PC and code operated switch to communicate with up to four (4) or eight (8) MAX 2000XL systems.

Help is available on many functions within the communications program. Press the F1 key to activate the help files.

2. REQUIREMENTS

- MAX1000/MAX2000XL Communication Software Version 3.04 or higher, P/N 710-0010
  - PC with Windows 2000 – Version 3.04
  - PC with Windows XP – Version 3.05 or higher
  - One unused RS-232-C serial port.
- For the MAX 2000XL with V 4.XX or later firmware
  - For direct PC to MAX connections:
    - AZI Null Modem Cable, p/n 6000-1044

For Network Connections:

- Four Channel Code Operated Switch (COS), p/n 6100-0061, or Eight Channel Code Operated Switch, 6100-0062;
- RS-232-C "straight through" cables for COS network connections

NOTE: Microsoft Excel is also required to view and analyze stored data.

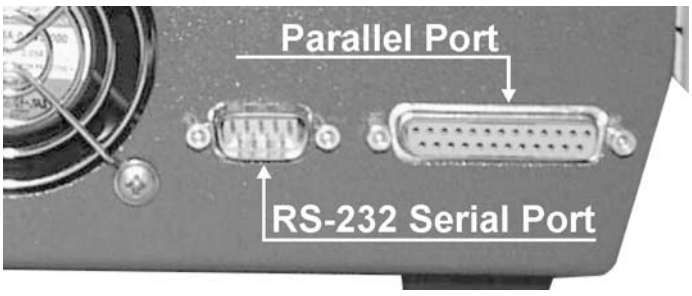
3. HARDWARE INSTALLATION

Instrument to PC connections can be configured in either of two ways depending upon the number of units to be connected.

Configuration	One MAX	COS Network
PC Cable Link	Null Modem Cable, p/n 6000-1044 DB9F-DB9F	RS-232-C cable DB9F to DB25M
Maximum Distance from PC	50 feet	N/A
Maximum Distance from MAX 2000XL	N/A	50 feet
Maximum Number of MAX Units/PC	One	4 - p/n 6100-0061 8 - p/n 6100-0062
MAX 2000XL Connection	N/A	RS-232-C Cable DB9F to DB25M

RS-232 Port Location

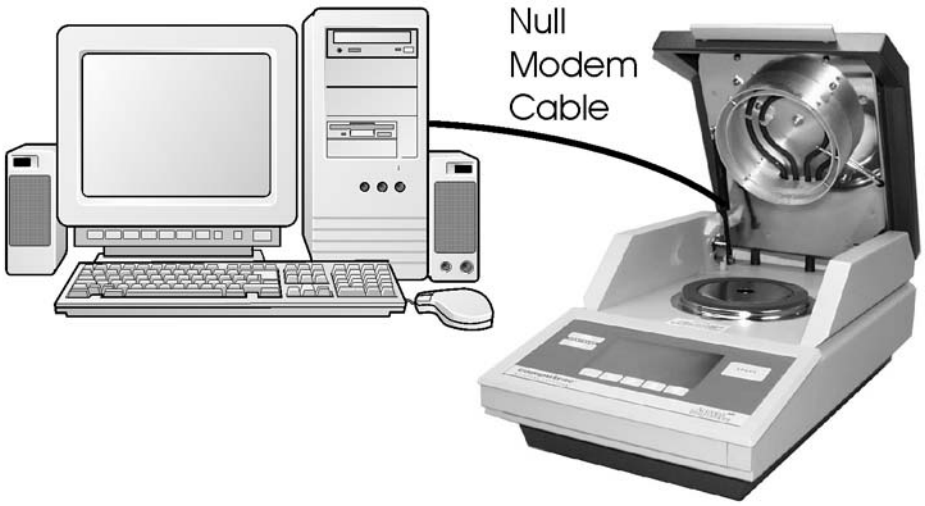
All computer connections to the MAX units use the nine (9) pin RS-232-C communications connector at the rear of the unit.



3.1. INSTRUMENT TO PC INSTALLATION

Requirements

- AZI Null Modem Cable, P/N 6000-1044
- Maximum Number of MAX 2000XL Units: One (1)
- Maximum Distance Between PC and MAX 2000XL: 50 feet



The installation pictured is the most commonly used in research applications or small commercial installations where access to multiple units is not required. In this installation, a null modem PC cable links the personal computer to the instrument. The null modem cable, AZI P/N 6000-1044, supplied by AZI is recommended.

The cable is attached to the 9-pin connector at the rear of the instrument and the unused serial connector at the rear of the PC. Communications between the PC and the instrument are directed using the Communications Program with the Network Capability disabled.

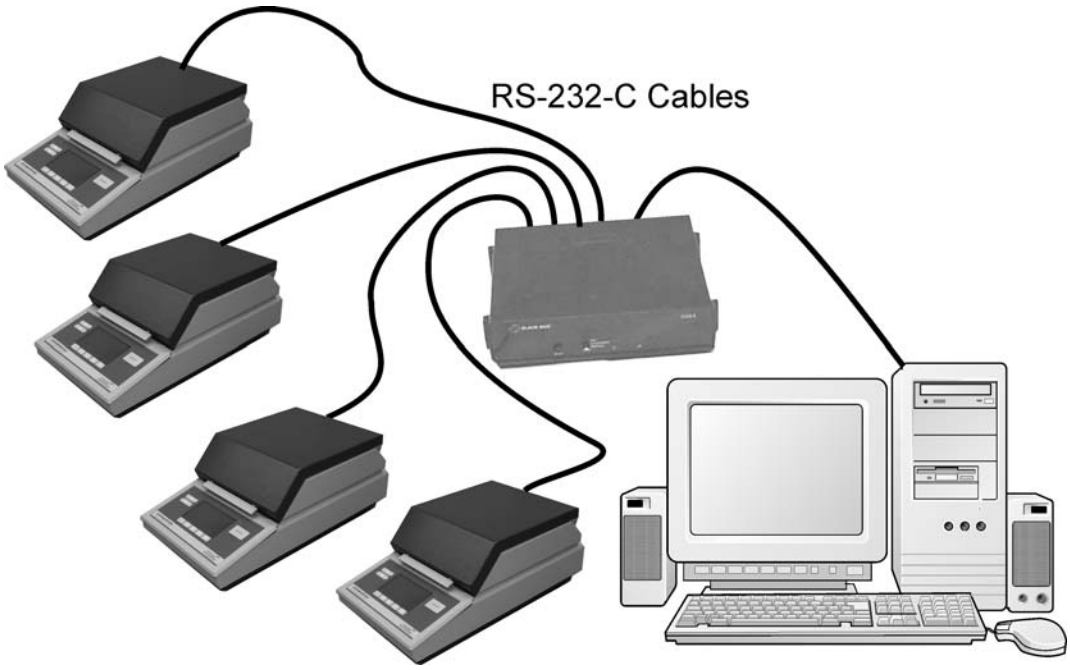
3.2. CODE OPERATED SWITCH INSTALLATION

Requirements:

- MAX1000/MAX2000XL Communication Software Version 3.04 or later, P/N 710-0010
- IBM compatible computer
- Windows 2000 for version 3.04, or Windows XP for version 3.05 or higher
- One unused RS-232-C serial port on the PC
- MAX 2000XL with Version 4.XX (or later) firmware
- Code Operated Switch (COS), p/n 6100-0061 or p/n 6100-0062
- RS-232-C "straight through" cables for COS network connections

Limitations:

Maximum Number of MAX 2000XL Units: p/n 6100-0061	4 units
Maximum Number of MAX 2000XL Units: p/n 6100-0062	8 units
Maximum Distance Between PC and COS:	50 feet
Maximum Distance Between COS and MAX 2000XL:	50 feet
Maximum Distance Between PC and MAX 2000XL:	100 feet



The COS Network is designed for operations with eight or fewer MAX 2000XL units in relatively close proximity to the PC. The total distance between the PC and the MAX 2000XL can be no longer than 100 feet (50 feet between the PC and the COS device; 50 feet between the COS and the units). Standard RS-232-C computer cable links the PC to the COS and the COS to the MAX 2000XL units.

3.3. COS HARDWARE CONFIGURATION

The COS is an RS-232-C switch where, under code control, the master port can select slave ports. The master port (PC) selects any of the slave ports (MAX 2000XL instruments) by transmitting the proper arming and switching code.

In this specific application, the arming code is a “!”. The switching code is either a "@," "A," "B," or "C" for ports 0, 1, 2, or 3 respectively. For example, to select port 0 the network command is "!@" and for port 1 the command is "!A". The network setup command and responses are not used and should be deleted.

The PC connects to the COS with a standard (DB25F to DB25M) or (DB9F to DB25M) extension cable depending on your PC serial connector. The MAX 2000XL instruments connect to the COS with a standard (DB9F to DB25M) extension cable. Because of RS-232-C specifications, the cables must be less than 50 feet.

The COS front panel switch is set to Graphics.

There are many dipswitches inside the COS. The dipswitches are configured as follows: (O = Open/Off, X = Closed/On)

SW1 through SW5 Master and slave ports are configured for DCE with DTR/DSR handshaking and RTS/CTS loop back.

SWA

1	2	3	4	5	6	7	8
O	O	O	O	O	X	X	O

SWB

1	2	3	4	5	6	7	8
X	O	O	X	O	X	X	O

SW6 Disable the slave's ability to put unit into switch-time. Disable the slave's ability to switch from switch-time to channel. Use no data flow, and time-out is infinite.

1	2	3	4	5	6	7	8
O	X	X	O	O	O	O	X

SW7 Use 8 data bits, 1 stop bit, no parity. Arming character pause is measured from the time that the last character was sent from the master to the slave port.

1	2	3	4	5	6	7	8
O	O	O	X	O	O	X	O

SW8 Use “!” as the arming character.

1	2	3	4	5	6	7	8
O	X	X	X	X	O	X	X

SW9 Use 100 word gap in transmission for arming character pause.

1	2	3	4
O	O	O	X

SW10 Use 9600 bps.

1	2	3	4	5	6	7	8
O	O	O	O	O	O	X	O
For 2002 or later switches:				X		O	

WI Disable COS from passing breaks.
O

W4 Select switch-time mode after power up.

A	B	C	
X	O	O	
	X		For 2002 or later switches

4. SOFTWARE INSTALLATION

- If a previous version of a MAX Communication Program is installed, it must be uninstalled before installing the new software.
  - Uninstall previous versions using the Add/Remove feature of Windows Control Panel or other utility program such as Norton Utilities. Utility programs should only be used if they monitored the installation of the older version.
  - Use Windows Explorer to delete the previous directory in C:\Program Files if one exists.
- Insert the MAX1000/MAX2000XL Communication Software disk into the computer's CD or CD/DVD ROM Drive.
- Select “START” and “RUN” from the task bar.
- Type in the drive letter followed by Setup and click OK.
  - Example - D:\Setup for drive D and E:\Setup for drive E.
- If you prefer, Browse to the drive and double click on Setup.exe
- Press the Enter Key or point and click on the OK.
  - The software loads the Communication program onto the hard drive in its own directory. When installation is complete, the software creates its own folder and icon at Start - Programs – MAX2000XL Communication
  - Double click on the MAX2000XL icon to open the program.
  - When asked, enter the serial number found on the installation disk.
  - To enable the MAX-2000XL features, enter the authentication code found on the installation disk.
    - If you purchased the MAX1000 communications version, you will not have this code, and the MAX2000 features will be disabled. If using the software with a MAX1000, click “Cancel” when prompted for the authentication code by the software.

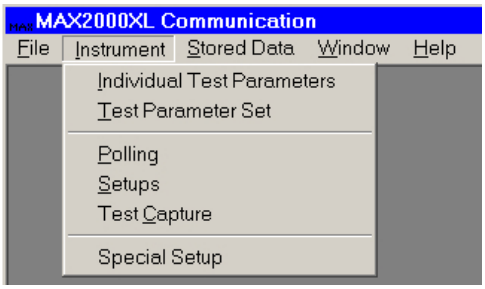
5. TEST CAPTURE – USED TO CAPTURE DATA FROM MAX-1000

Test Capture, for those with MAX-1000 instruments, can also be used on the MAX2000 and MAX2000XL. The MAX must be configured to output data to the RS232 port. This software captures the data from the MAX while it's testing and saves the data to disc as an ASCII (.txt) file. MS Excel must be on the PC for the "View Test Graph" and "View Test Results" to work.

First, configure the MAX to output data to the RS232 port.

- Select the "SETUP MENU/PRINTER SETUP" menu and set "OUTPUT PORT" to RS232.
- Select in order the "SETUP MENU/REPORT SETUP/REPORT CONTROL OPTIONS" menu.
- Select and set "REPORT ENABLED" to YES; "REPORT START" and "REPORT INTERVAL" to the desired start point and interval; and "INCLUDE GRAPH" to NO.

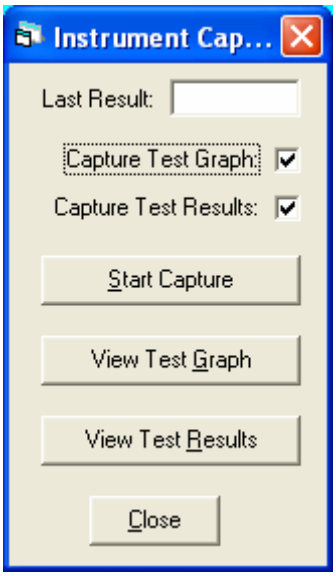
On the communication software, select the "Instrument/Test Capture" menu item to bring up the "Instrument Capture" form.



Click "Start Capture" to begin capturing data from the MAX. This software will continuously capture data from the MAX until the "Stop Capture" is clicked.

Data files are stored to disc and are viewed with the "View Test Graph" and "View Test Results" buttons. MS Excel is launched automatically and the data is transferred to a new Excel Workbook. The Workbook can be saved under any name.

Multiple test results are saved in the same file until the "Polling/Capture File Start" interval is reached. If "Daily" is set, a new test result file is started every day.



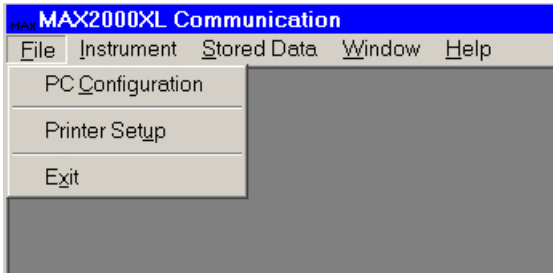
6. COMMUNICATIONS SOFTWARE MENUS

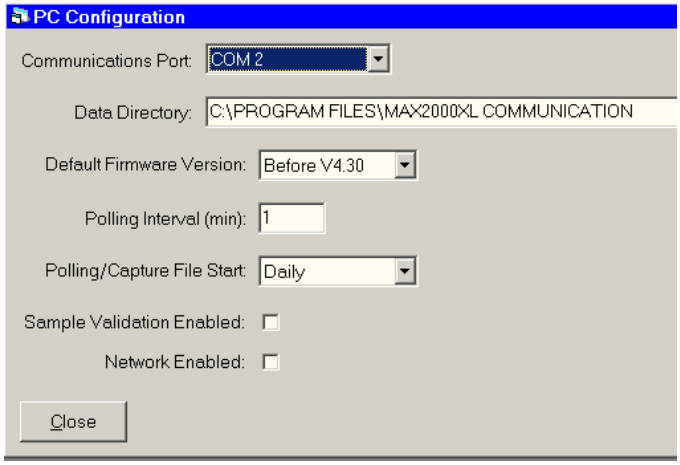
The software uses the familiar Windows format with the title bar naming the software across the top of the screen and the main menu line immediately below. The individual menus are accessed using the mouse to highlight the menu item and click to view the menu options.

The software menus are accessed using the standard Windows method mouse point and click or the ALT and arrow keys. Place the mouse cursor on the menu and click the left mouse button to display the available options. Point and click on the menu option to display the selection screen.

The ALT+ (underlined letter) key can be used instead of the mouse to access one of the menus and display the option list. Press the letter key corresponding to the option's underlined letter to display the selection screen.

6.1. FILE MENU





PC CONFIGURATION

Selects the computer's hardware configuration and data directory for the stored files. Unless otherwise directed, all files are stored under the MAX2000XL Communication directory.

The Polling Interval selects the time interval between polling units for results. The input is in minutes. To input less than a minute, use tenths of a minute. Enter .5 to poll every 30 seconds and enter .2 to poll every 12 seconds.

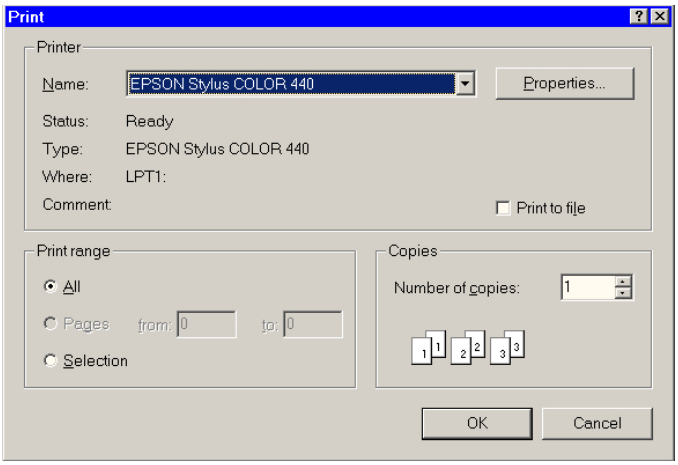
Polling/Capture File Start selection controls when a new stored data file of tests will begin. The selections are Daily, Weekly, or Monthly.

Sample Validation Enabled, when selected, enables the validation check to determine if a test result is within the pass/fail criteria set into the Instrument menu, Test Parameter Set, Sample Validation window discussed later in this manual.

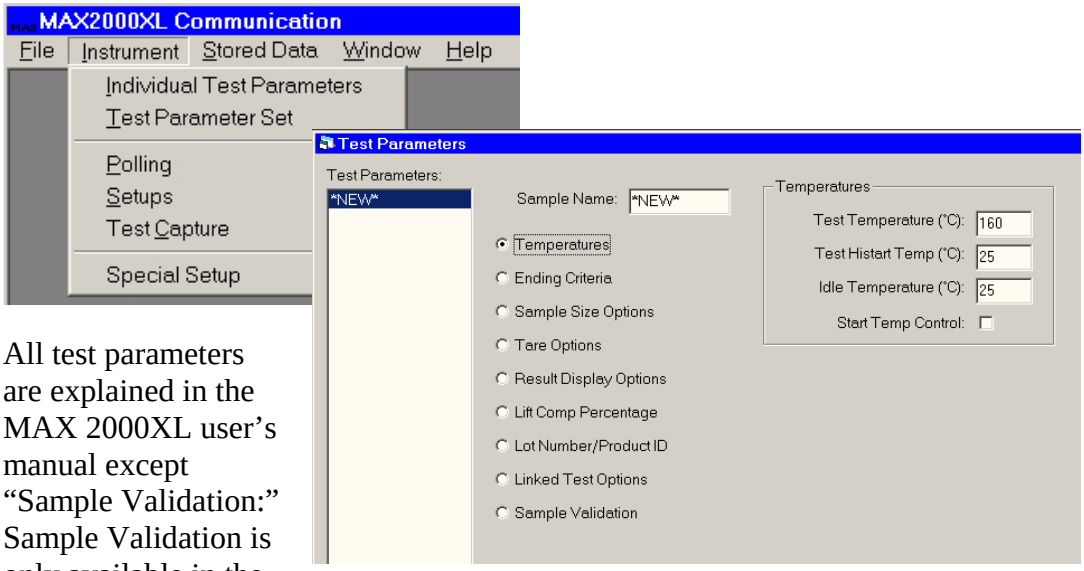
Network Enabled was used to access the Interface Network Module (INM) functions in the Communications software. INM was an early network technology that is now rare, and the INM's are no longer manufactured or supported by Arizona Instrument. This option is still available for integration with legacy systems, but for the majority of applications, this box should NOT be checked.

Printer Setup

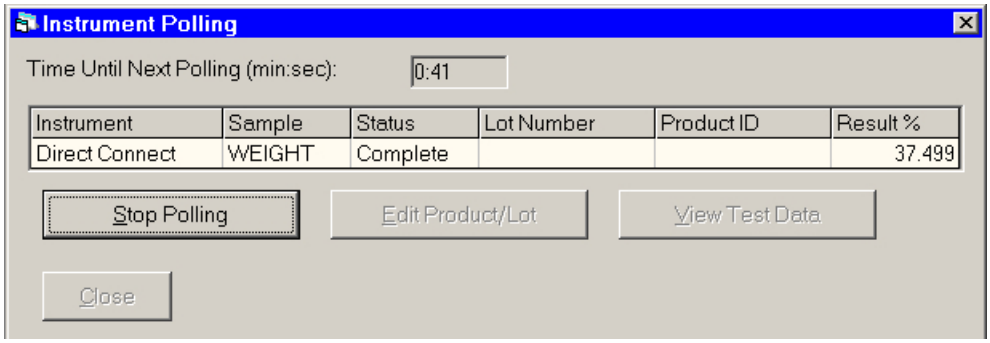
Selects the printer type and the output orientation for any printouts. The software program uses the available printers under the Windows software



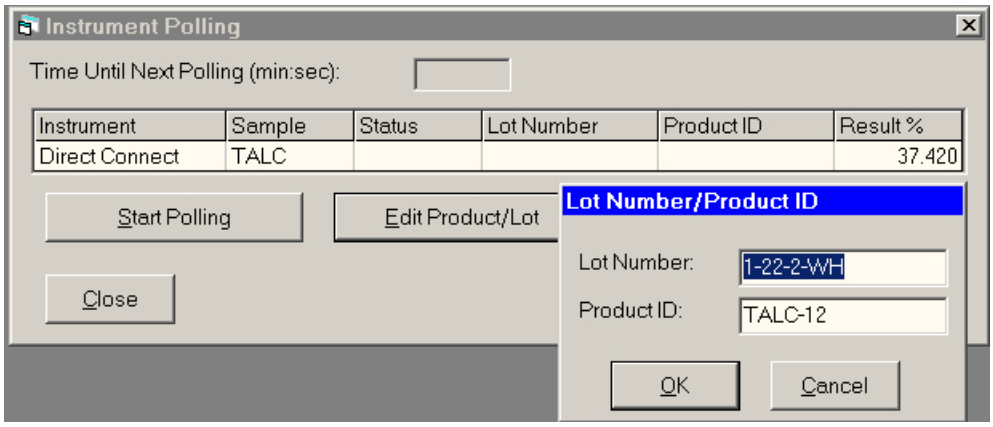
6.2. INSTRUMENT MENU



All test parameters are explained in the MAX 2000XL user's manual except "Sample Validation:" Sample Validation is only available in the communications program and is used with the Stored Data options. The selected result range from 0-100% will then present a valid pass/fail indication.

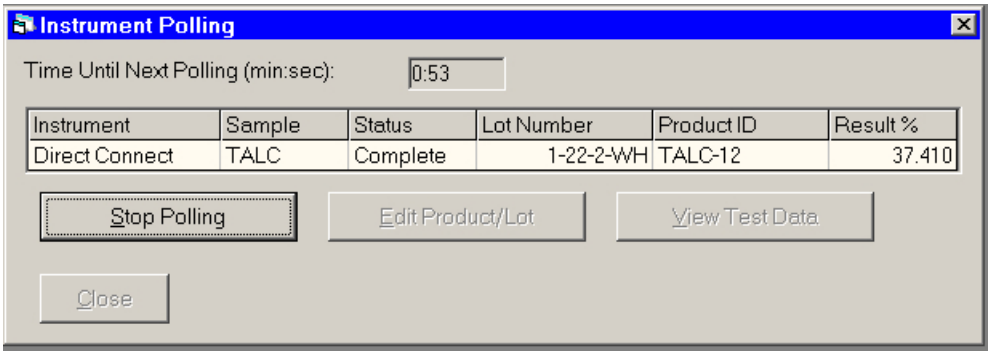


POLLING: Displays the time interval, the units to be polled, and the results from the last poll.



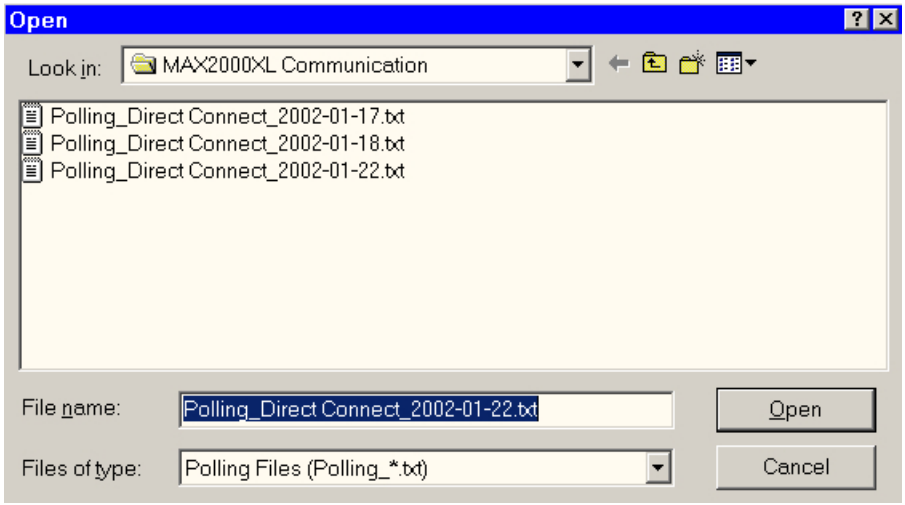
Lot numbers and Product ID can be changed from this selection provided polling is stopped. Select Edit Product/Lot and enter the new data.

The next test polled will show the new data.

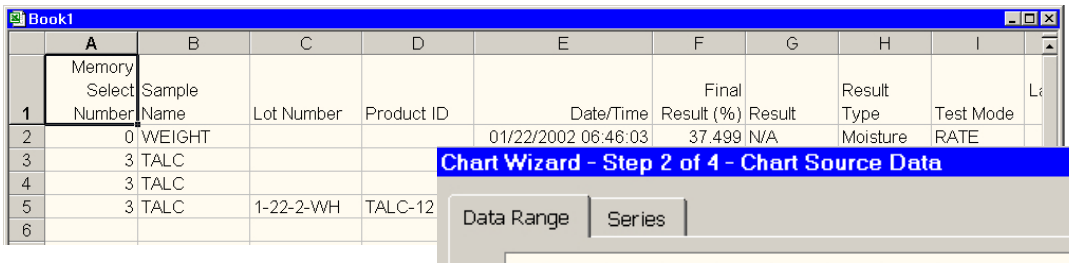


VIEW TEST DATA

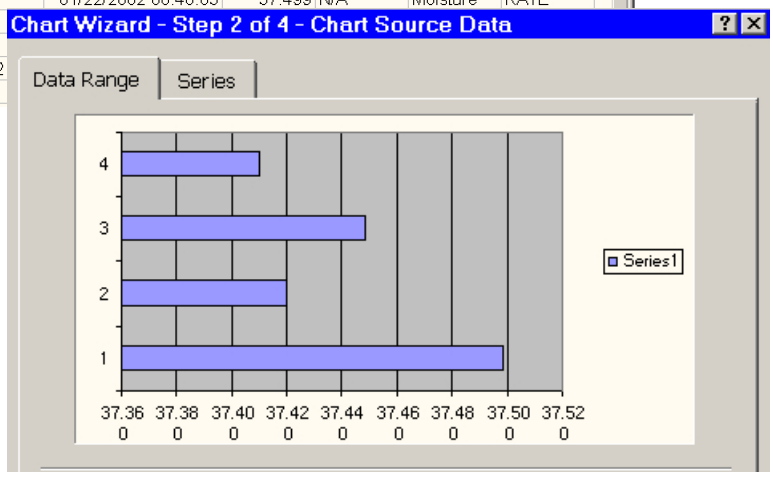
The View Test Data selection brings up a list of polled data.



Making a selection from the list exports the data to a Microsoft Excel spreadsheet



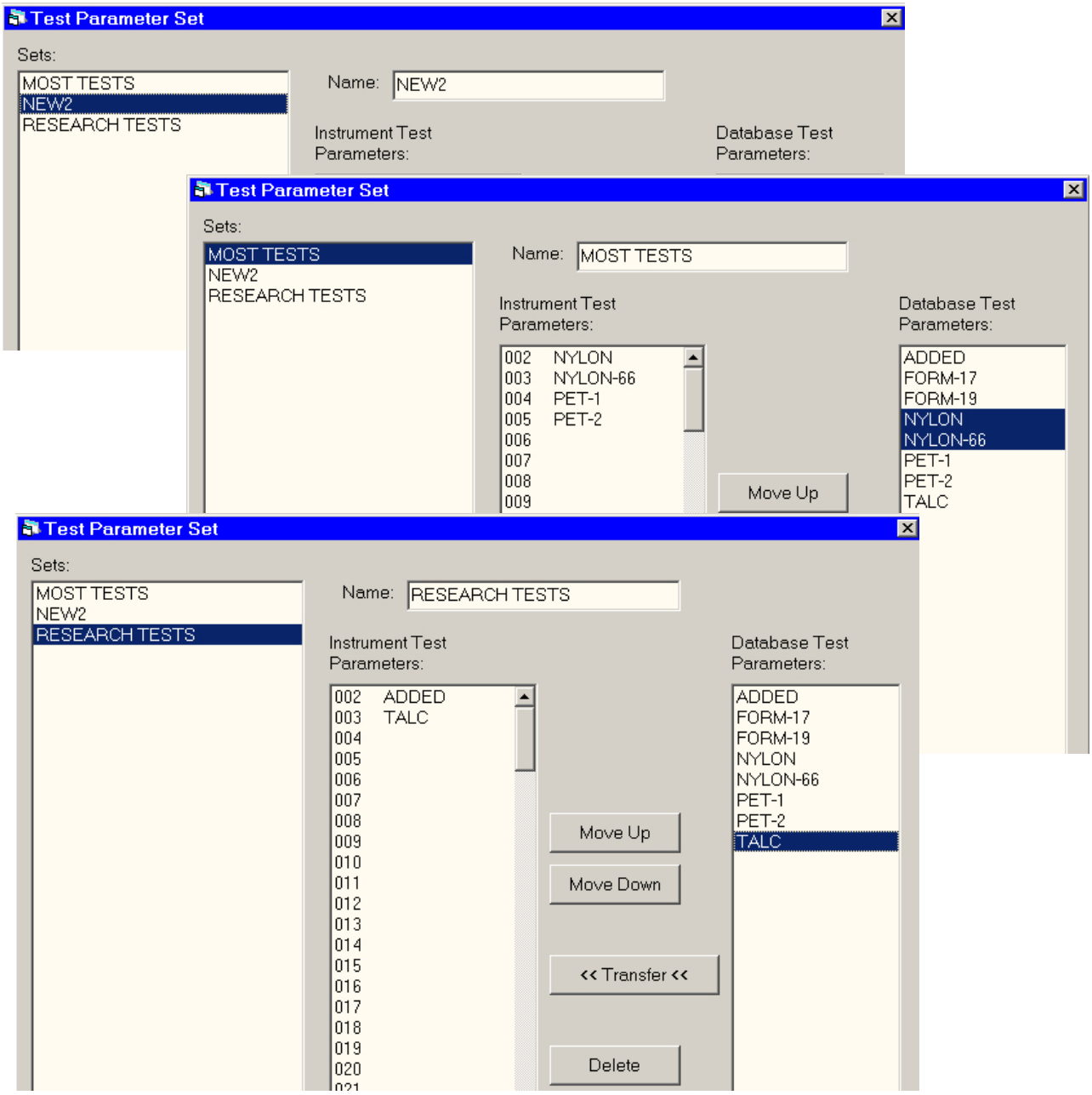
Data can be used or displayed in the many ways available in Excel. The graph to the right shows a detail comparison of the final results.



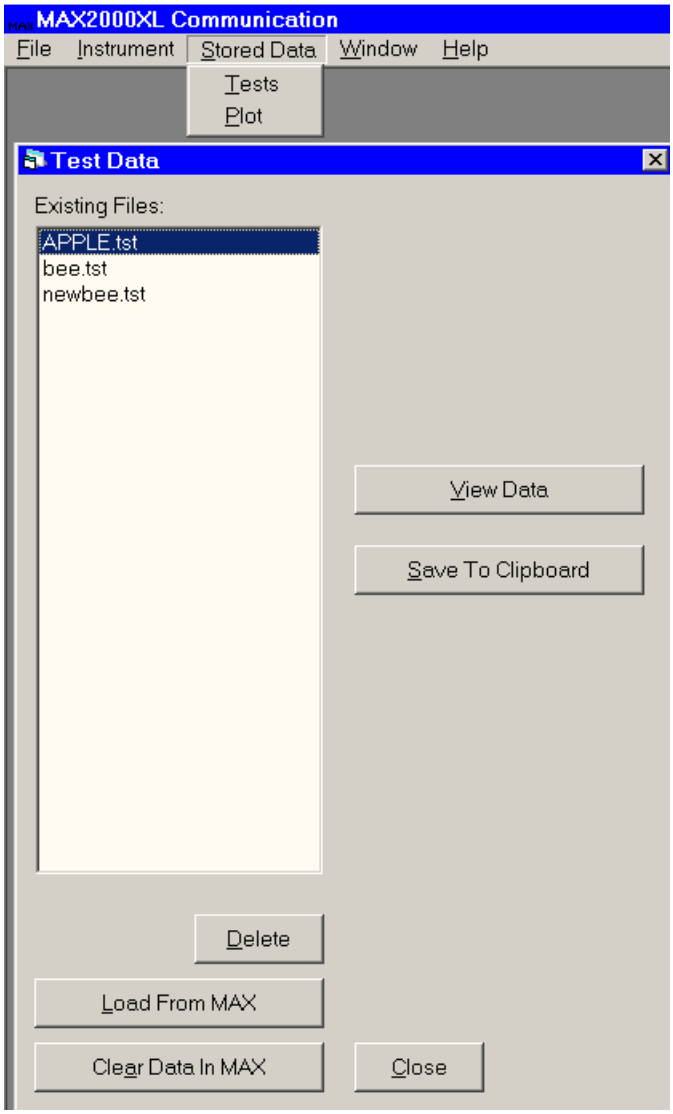
TEST PARAMETER SETS

The MAX1000/MAX 2000XL Communications program allows sets of parameters to be stored and moved to the instruments as needed. All test sets can be stored in the computer but only those required within a given department need be transferred into the instrument. Even though the instrument can store 250 parameter sets, only the ones required can be loaded to reduce access time.

The figures below show example test parameters stored in the database but loaded into the MAX 2000XL by way of the three named parameter sets at the left.



6.3. STORED DATA MENU



TESTS

Data from the MAX 2000XL may be loaded into the computer by clicking on the "Load From MAX" button and assigning a name. The name may be the series of tests being run, the date, or any other definitive series of numbers or letters.

Once a series of data are loaded, highlight the name and click on the "Save to Clipboard" button. Open Microsoft Excel and "paste" the data to the spreadsheet.

From the spreadsheet, the data may be compared, graphed or used in any manner available to the program.

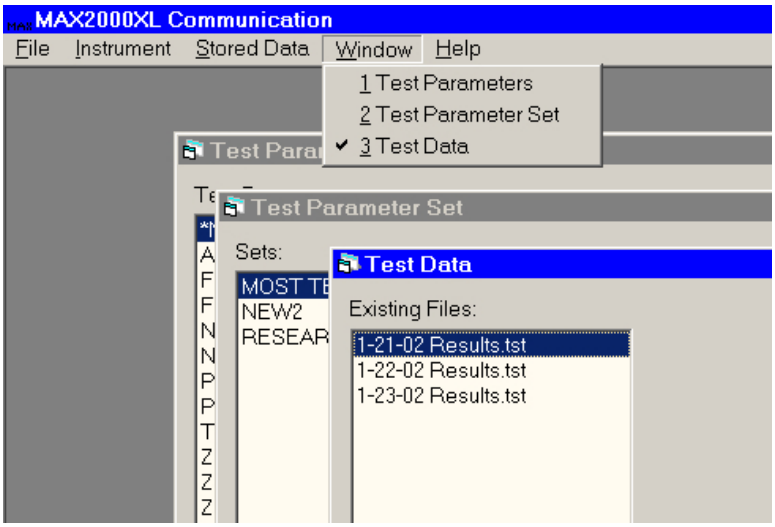
A second feature available from the menu is the "Clear Data in MAX." By clicking on this button, data stored in the MAX 2000XL will be cleared. This is much faster than the Delete Stored Data function in the MAX Stored Data Menu.

PLOT

Stored Data Plot is similar to Tests but only loads graph plot data. Once loaded into the computer and saved to clipboard, it may be pasted into the spreadsheet or graphing application and viewed in the application.

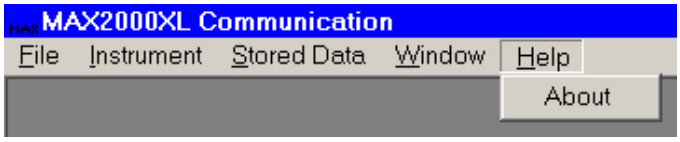
6.4. WINDOW MENU

The Windows pull-down menu allows switching between open windows if they are maximized and fill the screen.



6.5. HELP MENU

The Help pull-down shows an "About" prompt which will display information about the program when it is selected. The information includes the revision level and the serial number of the program.



TRADEMARK AND COPYRIGHT PROTECTION

Computrac, MAX, MAX 2000XL, Arizona Instrument, AZI, and the stylized AZI are all registered trademarks of the Arizona Instrument LLC.
MAX1000/MAX2000XL Communication Software is Copyright 2004-2007 Arizona Instrument LLC, All Right Reserved

Windows and Excel are registered trademarks of the Microsoft Corporation
IBM is a registered trademark of the International Business Machines Corporation.

ARIZONA INSTRUMENT LLC
MAX1000/MAX2000XL Communication Software
Part Number: 710-0010 v3.06
Software Manual Part Number 700-0032-C1

If you have any questions regarding the operation of this product, please call our toll free number (800) 528-7411 from the US and Canada.
Internationally, call (602) 470-1414 or FAX (480) 804-0656

Arizona Instrument LLC, 3375 N Delaware St, Chandler, AZ 85225, USA
http://www.azic.com
e-mail
azi@azic.com - General
intl@azic.com - International
support@azic.com - Customer Support