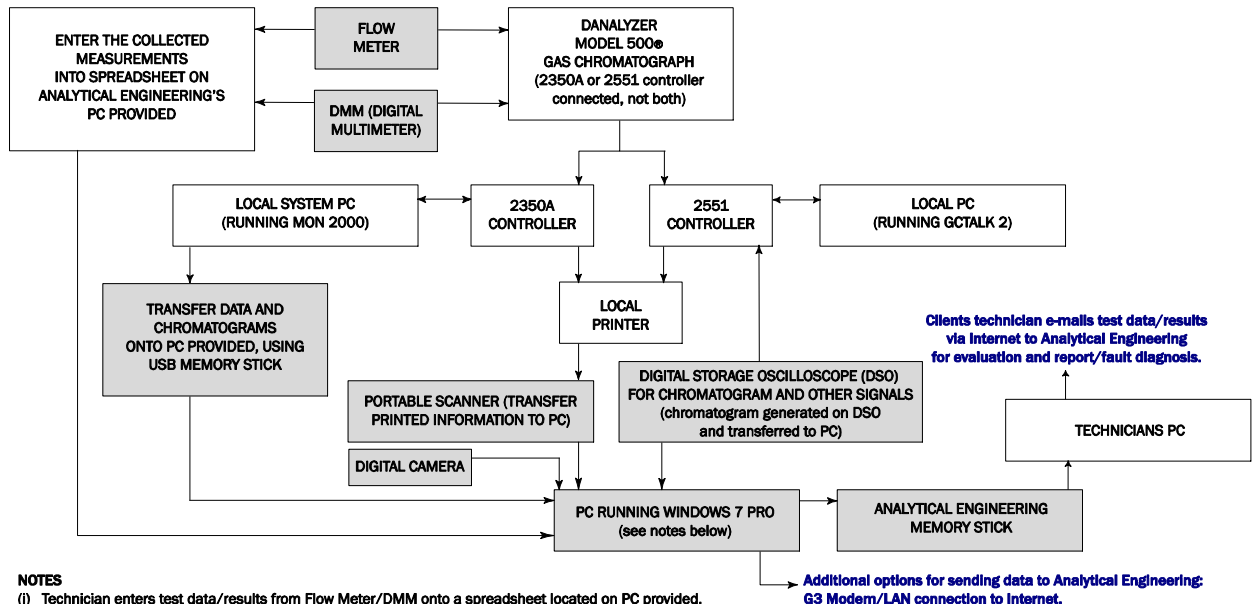


Danalyzer Model 500[®] Remote Maintenance & Support Option

This document describes how the 'Danalyzer Model 500[®] Remote Maintenance and Support Option' offered by Analytical Engineering operates.

Remote Danalyzer Support System

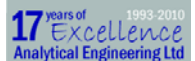


NOTES

- (i) Technician enters test data/results from Flow Meter/DMM onto a spreadsheet located on PC provided.
- (ii) Data is transferred between different PC's using Analytical Engineering's memory stick.
- (iii) Once data is collected, technician transfers data via memory stick to his own PC ready to transmit results.
- (iv) Optionally, data can be transmitted via G3 Modem/LAN connection to Internet.
- (v) Results are then e-mailed to Analytical Engineering for evaluation and report.

 The items in grey form the 'test equipment package' provided in accordance with the Hire Agreement as specified by Analytical Engineering Limited.

Transferable skills - the cornerstone of our business



The flow diagram above shows an overview of the system. The items in grey are provided in the test equipment package. The diagram can be read in conjunction with the more detailed 'Typical Scenario' which follows.



Typical scenario

- Danalyzer Model 500® Process Gas Chromatograph operated with either the 2551 or 2350A controller raises an alarm.
- Client investigates alarm and attempts to rectify situation.
- Should additional assistance be required, client would typically contact Analytical Engineering by telephone or e-mail and request technical support.
- We would offer technical support in an attempt to rectify the fault. If it becomes clear that additional test equipment or spares are required client can decide on one or a combination of the following options:
 - i. Ship via courier, 'Specialist Test Equipment and Tools' to site.
 - ii. Ship via courier, package of 'Specialist Spares' to site.
- Once the above items have been received, site personnel to follow the instructions contained in the package to set-up and operate test equipment as directed by Analytical Engineering engineer¹.
- The kit contains a portable scanner that can be attached to the laptop. Technician uses the scanner to scan in the required printouts from the local system printer.
- Once tests and scans have been completed all data will be located on the laptop. Additionally, any fault or analyser descriptive notes can be written by the technician in a 'Text Document' or, pre-formatted MS Word document.
- The information² now requires to be sent to Analytical Engineering's engineer. Several methods will be available to transmit data for analysis and assessment.
 - i. Transfer data files to a supplied memory stick. These files are then read into the technicians' personal laptop or the operators' computer system. Files are then attached to an e-mail and sent to Analytical Engineering's engineer.
 - ii. If acceptable to client and signal strength is sufficient, included with the test system will be a G3 Modem. This modem can be attached to the system PC and used to remotely connect to Analytical Engineering's server. Data files can then be transmitted.
 - iii. If acceptable to client and possible, included with the test system will be an Ethernet connection cable. This cable can be attached to the system PC and used to connect to clients' local server and in turn the Internet. Data files can then be transmitted to Analytical Engineering's server.
- Analytical Engineering's engineer will access the files sent by the site technician.
- Additional testing, or information as required, maybe requested with results being sent to Analytical Engineering's engineer.
- Engineer will request local technician carry out various maintenance tasks using the supplied specialist tools and spares³.
- Once complete instrument will be returned to normal operation.
- If necessary, the operator can call out Analytical Engineering to attend site to complete repairs should it be decided by the operator that the local technician does not possess the required skills to perform the maintenance tasks required.

Remote Maintenance/Support charge structure

Analytical Engineering would charge based on the following criteria for this service:

- i. Charges to cover shipping test system and specialist tools to site.
- ii. Charges to cover shipping spares to site.
- iii. Hire charges for test equipment while away from Analytical Engineering.
- iv. Insurance to cover our test system, specialist tools and spares.
- v. Spares used.
- vi. Engineers time on an hourly basis.
- vii. Any items missing from, or damaged in either test equipment/tools or spares packages to be charged for.
- viii. Should Analytical Engineering be called to attend site this would be charged additionally in accordance with our standard or a previously agreed rate.

Test equipment and tools package

- Full list of kit contents.
- Laptop. Ruggedised Mobile PC running MS Windows 7 Pro.
- USB Memory Stick.
- Ethernet cable assembly (RJ-45) – optional.
- G3 Modem complete with SIM card (USB 2.0) – optional.
- Portable Scanner (USB 2.0).
- Digital Storage Oscilloscope and signal conditioning box to record chromatograms from 2551 controller (USB 2.0).
- Digital Camera.
- Digital Thermometer.
- Digital Multimeter.
- Burette Flow Meter, connection tubing, compression fittings, mounting bracket, fixings and consumables.
- Full test system connection instructions.
- System operating instructions.
- PC will contain pdf's of all documentation such as user manuals and spares installation instructions where available and appropriate.
- Typical Method Statement.
- Typical Risk Assessment.
- Set of special tools including, various spanners, sockets, torque wrench, screw drivers etc.
- Set of consumable, cleaning wipes etc.

Danalyzer spares package

- Full list of kit contents.
- Chromatographic valve seal kit, 8-port.
- Chromatographic valve seal kit, 6-port.
- Sample shut off valve seal kit.
- Sample inlet filter.
- Alcon actuation valve assembly.
- Alcon valve internal pcb.
- ASCO stream selection valve pneumatic service kit.
- Carrier regulator.
- Temperature control board.
- Pre-amp board, through hole integrated circuit type (old style pcb).
- Pre-amp board, surface mount integrated circuit type (new style pcb).
- Valve drive, pcb.
- Valve decoder driver, pcb.
- 20VDC power supply module.
- Power transformer.
- Set of various fixings.
- Set of consumable, cleaning wipes etc.

Sufficient quantities of spares will be supplied to permit repairs to be completed several times, thus allowing for potential local technician errors.

Test equipment and spares to be stored and shipped in a suitable highly protective knock, vibration, dust, and water proof case.

Footnotes

¹ Test equipment package will contain a comprehensive range of test equipment, assembly instructions and details of how to carry out the various tests. The results are to be recorded on a pre-formatted and locked Microsoft Excel spread sheet, pre-loaded onto the laptop contained in the kit.

It is assumed that the site technician has instrument technician level skills. The technician completing the tests only requires to understand how to safely and correctly install and operate the equipment, record the results on an Excel spreadsheet etc., and perform basic Windows tasks. Interpretation of the results is not required as this will be completed by a skilled engineer at Analytical Engineering Limited.

² The data now located on the test system PC will include:

- i. Excel spread sheet where results such as flow, pressure, voltages, CV results, as may be required, have been recorded.
- ii. Scanned analysis results, instrument configurations and calibrations etc., taken from the system printer.
- iii. Chromatograms generated by our test system in a specific file format that can be read in detail by an Analytical Engineering's engineer.
- iv. Any other files required such as a fault or other descriptive note written on a 'Text Document' or pre-formatted and locked 'MS word document'.

³ Any spares removed from analyser to be placed in the spares kit shipping case and sent to Analytical Engineering. These items can then be assessed by Analytical Engineering to confirm fault diagnosis.