



Thermo Scientific Support Guide

For: EDS - EDXRF

Customer Name: _____

Instrument Model: _____

System Serial Number: _____

Master Equipment Number: _____

Keycard Number: _____

Customer Support

Phone: 800-532-4752

Email: us.techsupport.analyze@thermofisher.com

Knowledge Base: www.thermokb.com

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1. Introduction

Your Thermo Scientific analytical system is an advanced system often composed of multiple instruments for which many support resources are available. This guide is intended as a first stop reference whenever you experience technical difficulties.

1.1. When you need support...

For the fastest possible problem resolution, please follow the troubleshooting guidelines available for your instrumentation, as described in section 3.2 of this guide, as soon as you encounter a problem. The results of these troubleshooting steps will be needed by the support representative to determine the next appropriate action, which may include:

- Further testing or diagnostic suggestions,
- Part replacement suggestion,
- Online access of instrument PC by technical support for further Diagnostics(see section 3.2 for more information on support online access)
- Method modification suggestion,
- Software patch or fix, or
- If required, a recommendation for an on-site visit by a qualified Thermo Scientific Field Service Engineer.

Contact support by calling 800-532-4752 between the hours of 8 AM and 6 PM Eastern Time (some contracts may have special support arrangements). Alternatively, you may contact us via email: us.techsupport.analyze@thermofisher.com. Whichever method you choose, please, always provide the customer service representative your Master Equipment ID, or the master serial number of your system. Both of these numbers should appear on the cover of this Guide.

All of our instruments have serial numbers permanently affixed, usually on the rear of the instrument. A system composed of two or more instruments will have a master instrument, and it is this serial number that is needed when you contact us. The serial number for your system is printed on the front of this document,

and is permanently affixed to the rear of the instrument. This enables us to access your instrument service records, and allows us to create a database record which may then be monitored to verify the resolution of the support issue. A reference number for the database record is generated and will be provided to you for your records and to use for any follow up communications.

2. Troubleshooting

This section contains information for several instrument manuals and concludes with general troubleshooting methodology.

2.1. Manuals and other Instrument Documentation

All system manuals in electronic form in PDF format, and the latest versions may be downloaded from our knowledge base via the “fast help” links located at www.thermokb.com (see section 3.1). Printed manuals are available through customer service; most manuals have the part number printed on the cover. The next few sections present a brief listing of documents that are particularly important for troubleshooting and operations these technical areas:

- NORAN System Six
- MicroXR
- IbeX/MAXray
- EBSD
- ARL QUANT’X

2.1.1 NORAN System Six Documentation

For Noran System Six systems, the manuals in PDF format are provided on the NORAN System Six installation CD.

PreInstallation Manual—NORAN System Six has its own separate preinstallation instructions for site preparation. This manual describes the conditions the customer must provide for the system to operate properly such as electrical requirements, environmental conditions,

Model 100 User’s Handbook—Operators guide to the following

1. Overview of the system software
2. Sample preparation

3. Collecting spectra
4. Identifying peaks
5. Caring for your detector

Models 200/300 User's Handbook—Operators guide that includes the information of the Model 100 plus:

1. Spectral Imaging
2. X-ray Mapping Mode
3. X-ray Line scan

Feature Sizing with Chemical Typing—Brochure explaining available optional software.

2.1.2 MicroXR Documentation

For MicroXR systems, manual is provided as a hard copy. The User Manual and Guide to System Operation manual includes the following listed here:

Overview—Provides a general overview of Micro XR hardware and software features, basic system operation, and safe operating practices.

Calibrating the Micro XR—Intended to quickly familiarize the operator with essential calibration procedures.

Measuring with the Micro XR—Tutorial of the procedures necessary for analysis of actual samples. .

Stage Automation—Micro XR systems feature powerful stage programming tools that enable the operator to automate analysis operations.

Periodic Maintenance—Routine and preventative maintenance that can be performed by the user

System User's Guide—additional information for users specific system configurations .

Theory of Operation—Provides an introduction to the principles of X-ray Fluorescence measurement and a general overview of major Micro XR components.

Pattern Recognition—Optional hardware/software package that incorporates pattern recognition technology into XYZ stage automation program.

Advanced FP Tutorial—Demonstrates a typical Ni-Fe, Ni-Fe/Ni-Fe/AlTiC, or Ni-Fe/AlTiC calibration using the optional Advanced Fundamental Parameters software package

Micro XR Wafer Handler—Provides operating instructions for the Xpert 300mm Wafer interface software.

2.1.3 IbeX/MAXray Documentation

For IbeX/MAXray system the manual is provided as a hard copy. The IbeX/MAXray User Guide manual includes the following list here:

Precautions and Safety Summary — Discusses labels and documentation for the IbeX/Maxray indicating safety precautions.

Using IbeX/MAXray—Provides information on software operation, collecting a spectrum, and quantitative analysis. The sections major topics include:

- Software controls and layout
- Starting IbeX/MAXray
- Displaying a Spectrum
- Acquiring a spectrum
- Quantitative analysis
- Printing reports
- Procedure for combining EDS-WDS analysis

Menu References — Detailed description of each menu and options within the menu

2.1.4 EBSD Documentation

The manual for our EBSD instruments is provided in electronic in PDF form on the HKL Channel 5 installation CD. The Channel 5 manual covers the suite of programs that have been developed to

allow the user to manipulate, analyze, and display Electron Backscatter Data. Manual sections include:

General Introduction – Installation instructions and general overview of the software.

Twist – Program that automates the creation of reflector data needed for EBSD indexing.

FLAMENCO1-6 – Data acquisition software. It will show the operator how to setup the software, tips to make EBSD data acquisition easier and basic instruction on sample preparation.

Project Manager – Central part of the Channel 5 software. It maintains data and subsets.

Mambo – Program for generating and displaying (inverse) pole figures from EBSD orientation and misorientation data.

TANGO – Software tool for generating, displaying and measuring a wide variety of maps from EBSD data.

MAPSTITCHER – Software tool for stitching together maps collected in FLAMENCO.

Salsa- Statistical tool for generating and displaying (mis) orientation distribution function.

FORSCATTERSYS – Discusses use of controller electronics used to produce orientation contrast images.

2.1.5 ARL QUANT'X Documentation

The following are descriptions of the primary manuals for the Wintrace software. The manuals are loaded on the PC in PDF format and included on the Installation CD

Wintrace Operator's Manual — This manual covers the three main components of the Wintrace software, Acquisition Manager, Method Explorer, and Standards Library.

- “Getting Started” section discusses installation, system configuration as well as how to calibrate the system.
- “Quick guide” section provides an overview of acquisition manager, method explorer, and standards library,

- “Setup Tutorial” chapter serves as a step-by-step guide to the setup of an analysis method for the acquisition of standards and unknowns.

Excitation Guide —Periodic table for help in determining the correct analysis condition for selected elements

Technical Support Manual — Covers the hardware, theory of operation, error messages and trouble shooting guide

2.2. General Problem Troubleshooting Methodology

This section contains basic troubleshooting logic that is common to most of our instruments. The documentation listed in section 2.1 will contain specific and detailed information for your instruments.

2.2.1 Fundamental Microanalysis Troubleshooting

Below is a checklist of general milestones, all of which must be achieved for proper instrument operation. The points are stated in general terms to apply to many models of microanalysis/XRF spectrometers. Specific items of information such as ‘typical procedure to run software and pre-calibration conditions for instance will be found in your instrument’s manuals or in the Knowledge Base (section 3.1).

If you fail to achieve one of the milestones: review your hardware manual and the Knowledge Base for further troubleshooting guides. This list is not complete, but by searching the Knowledge Base you will discover additional resources.

1 Power on

The spectrometer must be plugged into a power source and turned on. Observe the power light and any other pertinent LEDs that indicate the start up health of the instrument.

2 Communicate

A network connection exists and the spectrometer internal computer communicates with the data system PC.

The analyzer internal computer boots up, initializing the spectrum processing and detector. The network icon will reflect communications has been established

3 Detector Stabilization

Verify with PHA status the detector resets, zero width, detector temperature are within system specifications.

4 Pre-calibration conditions

- For EDS systems, Electron microscope electron beam on, sample in chamber.
- For xrf systems, system initialized motors, x-rays enabled, and sample in chamber

5 Energy calibration

Following an appropriate stabilization time period, successfully energy calibrate

3. Online Self Help Technical Resources and Forums

The Thermo Scientific Website, www.thermo.com, besides allowing you access to the wide breadth of products offered, contains many resources that are helpful for instrument support. The sections below describe how to easily access the areas that are most useful for instrument support.

3.1. Knowledge Base for Microanalysis and EDXRF.

Use your web browser to access the online resources available at www.thermokb.com, and then select the knowledge base that pertains to your product. Login access is provided for our warranty and service plan customers and provides some extra information for them as part of their contract relationship with us; however, you may find much useful information in the knowledge base without logging in. If you are a warranty or contract customers, please use your *keycard number* as both username and password. At the current time there may be up to a two week delay after installation or contract initiation before your login will become valid.

3.2. Technical Support – Online Computer Access

If your own troubleshooting efforts fail and you contact technical support for further help, one of the tools available is the ability of our support representatives to view and control your instrument workstation directly. In this way, they are able to investigate many software and instrument performance issues. To enable this, your instrument workstation must be connected to the Internet. Please see Section 5 Connecting Your Instrument Workstation to the Network located in this guide.

To initiate online access, the Thermo support representative will send an email to you which will contain a hyperlink that you must open on the instrument PC. Alternatively, you may type this link's URL address directly into the address bar of Internet Explorer. A software plug in will automatically be installed on your PC during this process upon the first time you use this function.

4. Dell Computer Support

All Thermo Scientific instruments that utilize a PC data system will usually be supplied with a Dell PC. Our technical support can handle issues related to the use of our software and instruments, but for PC hardware or operating systems problems, it is often necessary to contact the PC manufacturer for support.

4.1. Dell Warranty – 3 Year Coverage

The All Dell computers that are sold by Thermo Scientific have a 1 year standard warranty and an additional 2 year Dell service plan. This results in 3 total years of coverage from the date of installation and provides the following features:

- Onsite hardware service with next business day response (dependent on parts availability)
- 24 x 7 Technical Support

Thermo customers should call 1-800-624-9896 or visit Support.Dell.com for service and technical support. Have your PC express service code ready when you call (section 4.1.1, step 3).

4.1.1 Update New Owner Form

1. **Use the online computer ownership transfer form, located at:**

http://support.dell.com/support/topics/global.aspx/support/change_order/en/tag_transfer

As the new owner of the computer, it is important that you update the computer ownership information on Dell's website. This is easily done using the online computer ownership transfer form, located at:

http://support.dell.com/support/topics/global.aspx/support/change_order/en/tag_transfer

Websites often change over time so in case the above link does not work, search for "ownership transfer" from Support.Dell.com.

2. **Fill out the Owner Information.**

The top part of the form asks for the current owner information, in this case Thermo Scientific. You may skip the top portion of the form and proceed to the next section where you must enter both the

"service tag" and the "express service code" in the appropriate spaces.

3. Fill out the Service Tag information.

You must enter both the "service tag" and the "express service code" in the appropriate spaces. The location of these is shown below. The current owner information will automatically transfer to Dell.

Both express service code and the service tag on a black sticker on top of the Dell Optiplex PC. The white tag on the rear carries only the Service Tag (Fig 2).

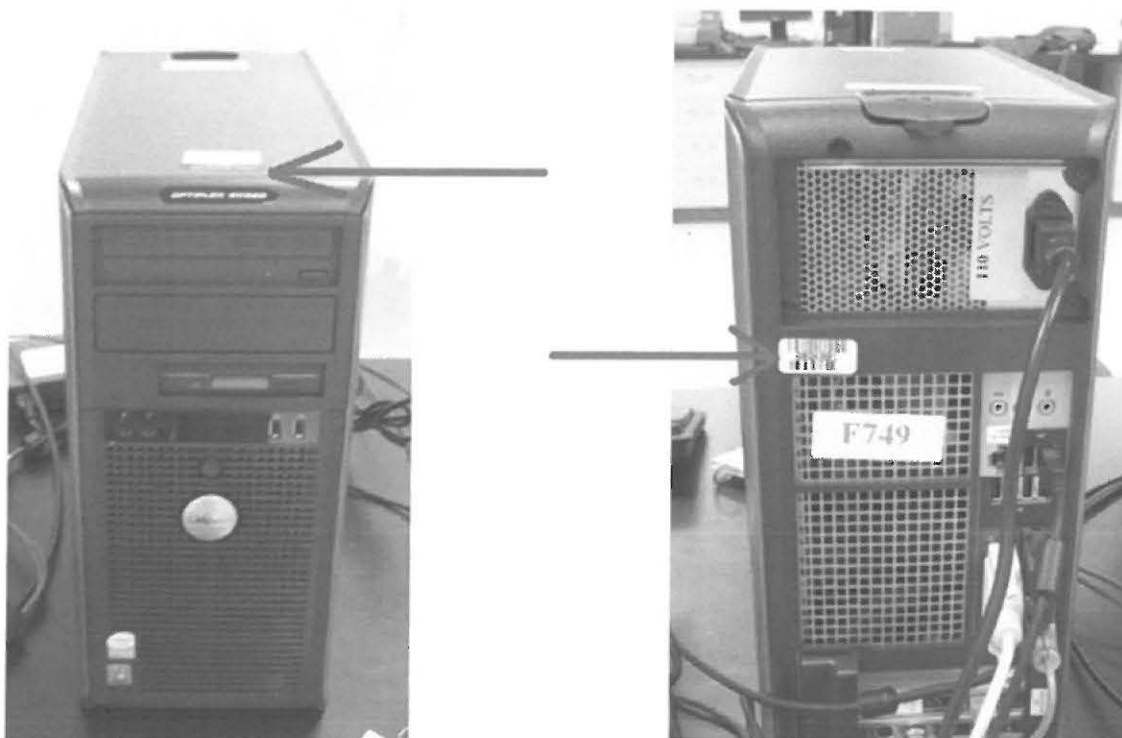


Figure 1 Dell PC Express Service Code and Service Tag Locations

4. Complete the Firm Contact Information.

Proceed to the New Owner Section and complete the form with your firm's contact information. When complete, click the submit button and the warranty will be transferred. From this point on,

should you have any problems with the Dell computer you can contact Dell directly for service and support.

4.2. Contact Dell for PC Support

If you have a hardware problem with your Dell PC (hard drive crash, power supply failure, monitor problem, etc.) you must call Dell for support. You must provide them with the service tag number or the express service code, the location of these is discussed in the previous section. These provide them with the configuration of your PC and its warranty status. Call Dell support at 1-800-624-9896. Alternately, you may submit a support request through their website: Support.Dell.com.

5. Connecting Your Instrument Workstation to the Network

Your Thermo instrumentation depends on a fast reliable data system that often utilizes Ethernet communications.. These data systems may be connected to your company LAN and the internet, as long as the necessary security precautions are followed, including the automatic installation of Windows updates. It is very important that your network and any associated security software not slow down the data system or otherwise interfere with the instrument to PC communications. If instrument communications are lost due to new network settings or software, it may be necessary to disconnect the PC from the network, recheck the instrument Ethernet configuration, and possibly uninstall any interfering network or security software.

The TCP/IP network configuration for your instrumentation may be found in the “Getting Connected” section of your instruments User. Please check your system documentation or the Knowledge Base for further network troubleshooting instructions.

6. Training

Thermo Scientific offers a comprehensive selection of training courses derived from years of working in close partnership with the world’s leading manufacturers, research organizations, and universities. We can help you optimize the use of your products and achieve your professional development goals through training programs designed to provide the depth of instruction you need.

To learn more about all training opportunities including a current calendar of classes, please visit ThermoKB.com, Knowledge Base for Molecular Spectroscopy, and select the link: Product Training. Or you may send a message to

us.training.analyze@thermofisher.com or call 800-532-4752 to discuss options with the training registrar.

6.1. Institute Training

At multiple locations in Europe and North America, our training centers provide environments conducive to learning. Regional courses may be available in additional cities to provide continued flexibility and convenience in planning your professional growth and development.

Please visit our Product Training web page, located on the Knowledge Base as described in section 3.1, for classes and locations near you.

6.1.1 Operation Training

We teach basic operation theory, proper use, and routine user-level maintenance, including calibration and setup procedures if required for your instruments. Students should have a general understanding of X-ray Spectroscopy and Windows software.

6.1.2 Application Training

We offer a range of training courses that focus on the techniques and protocols required for specific applications. We will familiarize you with our systems in detail and teach the skills needed to obtain high-quality data. Our courses emphasize hands-on training to provide students with a wealth of practical experience.

6.1.3 Maintenance Training

Service-level training is available if you need to be certified on the repair and calibration of Thermo products. These courses typically cover troubleshooting tips, technical specifications, and optimization techniques based on similar protocols used to train Thermo's engineers.

6.1.4 Software Training

We offer a comprehensive range of courses and workshops that cover our broad software product portfolio. From basic instrument software training and instrument integration to data management, our software courses offer the skills you need.

6.1.5 Onsite Customized Training

Our experts will work closely with yours to develop a training program to accommodate the specific needs, method development, applications, and proficiencies of your end users – often

incorporating your procedures – for optimal performance all the time. Thermo products are designed to be configured for your application. At your facility, our expert instructors will guide you in tailoring your system setup so you achieve maximum performance and lab productivity. Our custom training program is particularly cost-effective if you have multiple students and operators to train. Call 800-532-4752, to discuss options with the training registrar.

6.2. Seminars / Webinars

Please contact your local sales representative for the latest information regarding available seminars.

7. Thermo Scientific Product Warranty

Thermo Scientific warrants that each product we sell you is free from defects in labor and materials and shall conform to its product specifications as defined in product user documentation.

If the product does not function as warranted during the warranty period, we will repair or replace it without charge. In the unlikely event that field service is unable to affect repair, an escalation process that systematically focuses our resources on instrumental or customer satisfaction issues is employed to expedite a rapid solution that is satisfactory to you.

Your Microanalysis system has a 12 month warranty. This warranty begins on the date that the installation acceptance form was signed. Extended warranty and support plans are available. Please contact your service or telesales expert for information.

8. Support Plan Information

We understand the challenges you face today: increasing productivity and reducing costs, while achieving better results in less time. The strategy selected to maintain your laboratory instrumentation plays a key role in determining the productivity of your lab, the long term performance of your instrumentation, and the total cost of instrument ownership. The selection process typically revolves around two prevalent choices:

- **Reactive Maintenance Strategy (Time & Material):** The basis of a reactive maintenance strategy is to only pay for service after an instrument has failed or has significantly

declined in performance. Since Thermo instruments are the most reliable in the industry, this strategy may appear to be an ideal way to reduce operating expenses. However, simply reacting to problems will actually prove costly over time since there is no effort to prevent future problems, optimize instrument performance, or help your operators get better results.

- **Proactive Maintenance Strategy (Support Plan Coverage):** The core concept of a proactive maintenance strategy is to predict and prevent problems before they occur in order to maximize instrument availability and overall laboratory productivity. The maintenance activity is planned in advance and ensures that your instruments are performing optimally, are running with the latest software advancements, and provides operators with assistance needed to stay consistent and productive. A Thermo Support Plan that includes priority preventive care as an integral part of your maintenance strategy will help you increase overall lab productivity, extend the life of your instrumentation, lower your total cost of ownership, and control your annual maintenance costs.

8.1. Support Plans to Match Your Needs

We offer a range of Support Plans to help you gain the greatest value from your technology investment by maintaining top performance from your instruments, maximizing uptime and productivity, and eliminating the uncontrollable cost of unplanned maintenance and repairs.

8.1.1 Critical Support Plan

This plan is specifically designed for customers with critical operations that require high sample throughput and absolute maximum operation time. The plan is ideal for instruments that are utilized as key components of a manufacturing, production, or quality control process. The Critical Support Plan offers our most comprehensive and personal support coverage resulting in improved productivity and guaranteed uptime. Features include:

- Designated Account Manager
- Guaranteed Instrument Uptime above 95%
- Priority Status for On-Site Service, Response within 48 Hours

- Engineer Labor and Travel is Included
- Priority Status for Technical Support Inquiries, Response within 2 Hours
- Planned Preventive Maintenance Visit(s)
- Factory-Certified Replacement Parts Included
- Thermo Fisher Scientific supplied personal computers are covered
- Software Updates and Notifications
- Subscription to e-Support Online Technical Resources

8.1.2 Essential Support Plan

This plan is designed for customers with sustained operations and delivers an essential blend of hardware and software support that will help you boost productivity. The Essential Support Plan provides the assurance that your instruments will perform at a high level, provide the data you need when you need it, and your lab will keep pace with the rapidly changing environment of today and tomorrow. Features include:

- Unlimited Number of Demand On-site Service Visits
- Priority Status for On-Site Service, Response within 72 Hours
- Engineer Labor and Travel is Included
- Priority Status for Technical Support Inquiries, Response within 2 Hours
- Planned Preventive Maintenance Visit(s)
- Factory-Certified Replacement Parts Included
- Thermo Scientific supplied personal computers are covered
- Software Updates and Notifications
- Subscription to e-Support Online Technical Resources

8.1.3 Limited Support Plan

This plan is best for customers that are seeking to maximize resources and instrument performance on a limited budget. This Limited Support Plan is an affordable option that delivers predictive and preventive maintenance services with the added assurance of having experienced engineers ready if an issue does occur. This plan will help you save resources, decrease downtime, and sustain employee efficiency. Features include:

- Planned Preventive Maintenance Visit(s)
- One (1) Demand On-site Service Visit, Response within 5 days
- Engineer Labor and Travel Charges Included
- Priority Status for Technical Support inquiries
- Factory Certified Replacement Parts Required for On-Site Service
- Software Updates and Notifications

8.1.4 Proactive Support Plan

This plan is ideal for customers that utilize internal maintenance resources and are seeking to infuse predictive and proactive measures to help increase uptime and eliminate issues before they arise. You will have the peace of mind that you will have the backing of industry experts, the convenience of priority electronic or telephone support as often as you need it, and your instruments will remain current with the latest software advancements. Features include:

- Planned Preventive Maintenance Visit(s)
- Engineer Labor and Travel Charges Included for PM visit(s)
- Priority Status for Technical Support Inquiries
- Software Updates and Notifications

8.1.5 e-Support Plan

This plan is designed for customers that desire full access to comprehensive online information twenty four hours a day, seven days a week for the purpose of self maintenance. The e-Support

Plan is an excellent choice to supplement a Proactive or Limited Support Plan. Features include:

- Subscription to e-Support Online Technical Resources
- Priority Status for Technical Support Inquiries

8.2. List of Contract Exclusions (all contracts)

Consumable items and parts such as calibration materials, sample cups, cryo P-14 refill kits, pump oil and lamps. Also excluded are operator training and components that cannot be repaired or replaced due to lack of availability from Thermo supplier (obsolescence). Complete system replacement is not covered under contract.