



THE SERVICE DETAIL

Surface Analysis Systems Newsletter

May, 2001

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New Format for Newsletter

In the past, RBD Enterprises has provided a printed version of our newsletter, *The Service Detail*, as a benefit to our customers. Most of you have commented on how much you appreciate the tech tips, and also how you look forward to each issue. But in order to help conserve paper and trees, we are now providing *The Service Detail* in a Web-based format. You will be able to read the entire newsletter on-line, access internet links directly from the newsletter, and print only the articles that you are interested in. We feel that this is a socially responsible and economical position, and hope that you agree. If you would still like to receive a copy in the mail, please let us know by e-mailing us at <mailto:sales@rbdenter.com>

PCMAPII Board Design Completed; Results in New Features for PHI 590, 595 and 600 Systems.

The design of our next generation of scanning interface, the PCMAPII, has been completed and is now available for purchase. This circuit card supercedes the PCMAP1 and provides significant improvements to the system functionality. An on-board V/F converter now allows for automated control and acquisition of ABS and SED images. The software controls the 32-100 SED multiplier supply and automatically sets up and

acquires SED video maps. As a result, we can also offer new features that were never included in the original design of the 590, 595, and 600 Scanning Auger systems. Most notably:

Image Registration – Although image registration was introduced on PHI 660 systems, it was never an option on the 600 and older systems – until now. The PCMAPII upgrade allows for automated SED video maps, which in turn allows our AugerMap software program to periodically compare the position of the image and guarantee that the electron beam remains on the feature(s) of interest. Auger Map 2.0 is required for image registration.

Improved performance – The PCMAPII provides substantial improvements in linearity, stability, speed, and control. It is designed to provide real time imaging that is displayed on your PC monitor, and to also provide a wide array of scan speeds and resolution.

Real time PC imaging – Electrohome TV monitors are no longer required if the real time imaging option is chosen. The image is digitally displayed on your PC monitor in real time. This results in two noticeable improvements: better images and less neck strain.

No additional PC slots required – Because the PCMAPII card resides inside the [147 system interface unit](#) chassis, no additional slot is required in the PC. The 147 unit uses a single PCI slot and is required when you upgrade your system to the PCMAPII.

NT and Windows 2000 compliant – The PCMAP1 card could not run under NT or Windows 2000. However, since the PCMAPII card does run under NT and 2000, you can now upgrade your operating system if you desire.

Please contact us for a price quotation on this upgrade for your PHI 590, 595, or 600 scanning Auger System. If you currently have a PC137A interface, you will need to upgrade to the RBD147 interface unit. Essentially, the RBD147 and PCMAPII replace the PC137A, PCMAP1, and National I/O card.

New! Interactive Web-Based Training and Support.

RBD Enterprises has initiated a powerful new Web-based service that provides instantaneous communication between multiple locations anywhere in the world. Using the Internet, voice communication, and video, all aspects of your system's operation can be analyzed simultaneously in real time.

This means that when the PC you are using to run your system is connected to the Internet, you can share the software that controls your system and we can diagnose problems and provide training on your system from our main office. This service provides you with access to expert knowledge without the added time and expense of travel. And, if you have only one phone line for telephone and Internet access, a voice-over capability is also possible so that we can talk to you while we are also looking at the same screen in real time.

The implications for training and support are extraordinary. For example, by using a Web Cam, RBD can now trouble-shoot your system much more effectively than was possible before. In addition to being able to see and control your AugerScan and AugerMap programs, we can also see your system. Using your electronics technician to physically

perform test measurements, we can now solve practically any problem remotely without the need for an on-site visit. This not only saves you time and money, it is a lot of fun.

Another planned use of this technology is for software seminars. We can train an unlimited number of users at the same time, without any travel related expenses! You attend the seminar at your own office, on your own PC.

See our website at www.rbdenterprises.com/ContactUs/RBDEnterprises.asp (under Contact Us – RBD Enterprises – Interactive Training and Support Center) for more information. The next time you have a problem that needs technical support, please contact us to find out more about how this service can help you save time, money and frustration.

ACT! Contact Management Software

ACT! is a very useful contact management tool for small to medium sized companies. Although you may not need this type of program yourself, you probably know someone who either owns or is starting a small business. Read on to see how ACT! can help save them time and increase their chances of success.

Unlike most contact management programs, ACT! is neither expensive nor difficult to use. With ACT! you can:

- Manage all standard data fields such as names and addresses, phone numbers, e-mails and notes.
- Set reminders for things that you need to do (like telephone calls or follow-up activities), create macros for repetitive tasks, and even create custom reports to filter information that you need.
- Maintain information about all your interactions with customers and clients, including keeping track of sales and service activities.

In short, ACT! can help small businesses and individuals manage contact information to help provide the best possible customer service.

Although ACT! is not difficult to use, you can increase its effectiveness by getting some personal training, and the best way to get that is from a certified consultant such as *dScribe*. Using interactive Web-based training and support, *dScribe* can fill in the gaps between using the on-line Help supplied with the ACT! software and real world situations. Just as with RBD Enterprises' interactive Web-based support, *dScribe* provides personal and group training by trained professionals without ever having to leave your desk.

For those of you who are unfamiliar with Web-based interactive support, it works by letting you connect to a training center using your PC's Web browser. You'll be prompted to download a communication driver. You can then join the meeting with the consultant. If you do not have access to a separate phone line, voice-over IP is an option. Connecting is simpler than ever before as the communication driver negotiates all the

security protocols and cross-platform handshaking. Once connected, files, programs and even desktops can be shared which enables both parties to see exactly the same thing at the same time. The result is that you can have immediate access to the knowledge of experts without the expenses of travel.

For more information on how ACT! can help you or someone you know, please visit the *dScribe* web site at <http://www.contactcentral.net> or call 541-330-1512.

ACT!™ is a registered trademark under exclusive license to Interact Commerce Corporation by its owner, Symantec Corporation, in the United States and other countries.

Refurbished Systems and Components

We now list refurbished systems and components on our Web site at [RBD Enterprises - Products - Used Equipment](#). Please visit there when you are looking for used surface analysis equipment. All RBD refurbished systems include a one year warranty. If you are looking to sell a used system, please contact us on that same page.

Software Corner

Windows 2000

RBD now offers support for Windows 2000 for all software and hardware upgrades (with the exception of upgrades currently using the PCMAPI board). Windows 2000 offers a more stable environment than Windows 95/98/ME, along with the Plug-and-Play support that makes hardware installation and administration easier than with Windows NT. Contact RBD for software and driver upgrades.

Support for PHI EIA-485 Ion Gun Interface

Did you know you now have the option of upgrading your PHI ion gun and using it with your current AugerScan upgrade? RBD now supports PHI ion gun /controllers using the EIA-485 serial interface. Here's how it works: You install the ion gun and the PHI ion gun control software, then set the Ion Gun selection in AugerScan's Hardware Properties for the EIA-485 control. Although you set up the gun parameters using the PHI software, control of the gun during depth profiles and timed sputter is still automated using your AugerScan software.

4200 System Upgrade Being Developed

We are in the process of completing the necessary drivers to control the PHI 4200 Digital Scanning Auger Systems. This will be finished this summer and will be yet another PHI system type that RBD can upgrade.

Currently we upgrade these Φ PHI systems:

Auger Systems	XPS Systems	SIMS Systems
540, 545, 590, 595,600, 660, 3017	550,560, 570, 3057,5100, 5300,5400,5000LS, 5500	6100, 6300

If you have a system not listed here, please contact us to see if we are developing an upgrade for your specific system.

Auger Map 2.0 features

Auger Map 1.4 has been released recently and represents the end of the 1.xx series for that program. Our next generation of Scanning Auger Software, Auger Map 2.0, will be released later this year. Among the new features included are:

- **Image Registration.** AugerMap 2.0 includes a powerful new feature: Image Registration. Most of you probably know what this is, but for those who don't – image registration is a software feature that allows you to accurately place the beam on small objects at high magnifications over a long period of time. (The beam currents are inherently small when doing high resolution scanning, and image registration ensures that the point or area selected remains constant over time.) Additionally, there is a certain amount of beam drift over time that is caused by thermal and mechanical conditions. Image registration will periodically stop the acquisition and check the samples' position to see if it is drifting. The software then applies any necessary corrections then continues the acquisition. This software feature has been around for a long time on PHI 660 and newer Scanning Auger systems, but only now is it available for PHI 600 and older systems. The PCMAPII is required for this feature to work. Please see the article [PCMAPII Design Completed](#) for more information.
- **Variable Speed Area Mode Scans.** Auger Map 2.0 also now includes area mode scans, which can now easily be selected and identified by simply dragging your mouse cursor to create a box over the area of interest. The PCMAPII card also allows you to select the speed of the area scan, which gives you better control over charging samples.
- **Automatic Setting of 32-100 SED multiplier voltage.** Auger Map 2.0 automatically sets the 32-100 SED multiplier voltage so that you no longer need to have to adjust it manually. When PHI designed the model 32-100 electron multiplier supply, the digital hardware was included to drive the SED multiplier voltage by the PC. However, the MACS software never utilized this capability. So until now, only 660 and newer Scanning Auger systems have automated the setting of the SED multiplier voltage. With AugerMap 2.0, this feature is available for all older PHI scanning auger systems including the 590, 595, and 600.
- **Multiple Window Image Display.** AugerMap 2.0 allows you to display multiple image windows at once, so you can compare video and elemental image regions. Images from multiple files can also be displayed at one time. Additionally, line scans can be viewed simultaneously with images.
- **Improved Interface.** The interface for AugerMap 2.0 improves on previous versions of AugerMap in significant ways. All acquisition types – video images, element images, line, area, and point scans – are organized in a workspace manager, making it much easier to see the contents of a file, delete regions, and view acquisitions. The electron gun control interface has been enhanced to enable faster and easier control of electron gun parameters.

Built-in Image Processing. Brightness, contrast, sharpening, and other image enhancement filters are built into AugerMap 2.0, reducing the need to use third-party image processing software.

RBD 04-303 Ionizer Rebuilds Last Longer

If you are not sending your 04-303 ionizers to RBD just because we charge much less than PHI does, then you might reconsider because our ionizers perform better and last longer. This letter from a satisfied ionizer rebuild customer sums up the benefits of our proprietary rebuilding technique:



November 27, 2000

RBD Enterprises
563 SW 13th Street, Suite 201
Bend, OR 97702

Randy,

I am writing to let you know that your first filament rebuild you did for me was just awesome. You convinced me to let you change the filament configuration from a five post back to a three post. Well, I don't know what else you did but that filament lasted three years. The longest I ever had a filament last before was about one year. And it wasn't unusual for them to last only six months or so. For a reference, I ran the filament at least eight hours a day, five days a week. Not only did it last a long time, but it was well-behaved up to (and including) the day before it died. Like I said, I don't know what else you did, but please do it again.

Sincerely,

A handwritten signature in black ink, appearing to read 'David Dahlgren', is written over a horizontal line.

David A. Dahlgren, Ph.D.
President

<http://www.photometrics.net/index.html>

Duoplasmatron Performance Without the Maintenance Hassles

A new ion gun being developed by Nonsequitur Technologies features an electron impact source with Duoplasmatron performance. It also has dual filaments so when one goes out, you simply flip a switch on the controller and you are back in business. This ion gun is ideal for AES, XPS, and SIMS applications. Contact Nonsequitur at www.nonsequitur-tech.com/ for more information.

Tech Tip: Replacement Batteries for PHI Model 78 Sample Bias Box

It has become difficult, if not impossible, to find replacement batteries for the bias box used on many PHI systems. When the 90 volt battery wears out, the target current measurement becomes inaccurate.

An easy solution is to install two 45 volt batteries in series. This involves replacing the battery snaps in the bias box with standard 9 volt types. Make a note of the polarity of the original battery before replacing it. Some soldering is required.

The description and part numbers are listed in the table below. You need two of each item to replace the defective 90 volt battery.

Description	EVEREADY PN	Newark PN
45 volt battery	Type 415 NEDA 213	03F7048
9 volt battery strap	Type 2241 vinyl 4" leads	16F436

You can find the closest Newark distributor by visiting www.newark.com.

Note: To reduce leakage current, you should wrap the batteries in electrical tape.

Tech Tip: Flow Switch Replacement for 16-020 X-ray Source Water Chiller

The PHI model 16-020 water chiller (also called the Heat Exchanger/Deionizer) utilizes a flow switch to ensure that water is flowing to the X-ray source during normal operation. However, the flow switch that is used by PHI has a tendency to burn up on a fairly regular basis and needs to be replaced. A much less expensive substitute is the flow switch shown below.

Available from McMaster-Carr, (<http://www.mcmaster.com>, PN 42015K4), this flow switch is rated at 1.5GPM and provides an adequate set point to protect the X-ray source from damage that can occur when it is operated without proper cooling.

To install the flow switch, simply cut the outgoing water line and insert the replacement flow switch. Connect the switch leads to pins A and D on the cable that goes to J3 (Flow Switch) on the manifold in the back of the 16-020 water chiller unit. You can cut the cable that goes to the existing flow switch and that should be long enough to reach to the new flow switch.

Once this switch is installed, it will never need to be replaced as it is a simple mechanical switch with no electronic components to burn up. These flow switches are also available from RBD Enterprises directly and we can provide you with technical support for the installation if you need some help.



A special thank you to Professor Howard Fairbrother of Johns Hopkins University (<http://www.jhu.edu/~chem/fairbr/surfacelab/surfacelab.htm>) for testing this flow switch on his RBD updated 5400 system, and also for providing the picture.

Tech Tip: Oil Free Aluminum Foil

Most aluminum foils found in grocery stores have a thin layer of lubricant that can transfer hydrocarbons onto the optics that you are trying to protect. One source for ultra-high vacuum compatible foil is:

All Foils Inc.
4597 Van Epps
Brooklyn Heights, OH 44131
1-800-521-0054
<http://www.allfoils.com>

Tech Tip: Solution for Overly Noisy Labs.

Besides being irritating, lab noise can also have long term negative effects on hearing. Illbruck provides PROSPEC[®] foam that can be used to line walls in noisy laboratories to reduce turbo pump and water chiller noise. For more information, look at their Web site at www.illbruck-sonex.com or call 1-800-662-0032.

RBD Enterprises Contact Information

To contact us:

RBD Enterprises, Inc.
563 SW 13th Street, Suite 201
Bend, OR 97702

Phone 541 330 0723 Fax 541 330 0991 Web site: www.rbdenter.com
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