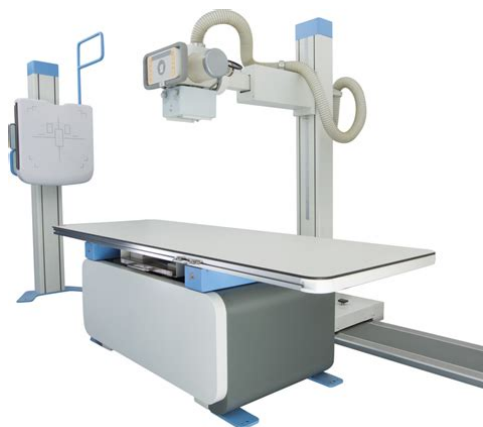




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Digital Radiography Manual

Del Medical's DelWorks Digital Radiography product is also referenced as DelWorks DR in this document. B Service Manual DelWorks Digital Radiography DelWorks Digital Radiography Service Manual Service Manual DelWorks Digital Radiography i DelWorks Digital Radiography. DelMedical is part of UMG, Inc. Windows is a registered trademark of Microsoft Corporation in the United States and other countries. PaxScan 4336R and PaxScan 4343pR are brand names of Varian medical Systems. While every precaution has been taken in the preparation of this book, Del Medical assumes no responsibility for errors or omissions or for damage resulting from the use of the information contained herein. The information in this manual is subject to change without notice. HIPAA logging DelWorks Digital Radiography supports HIPAA Access Control Standards. Its menu interface may be customized, and it supports multiple wired or wireless flat panel detectors. DelWorks DR defines convenience. Del Medicals open platform allows the technologist to adapt on the fly to changes in the industry and to clinical requirements. DelWorks Digital Radiography DelWorks DR is specifically designed for routine radiographic exposures where the image is captured on a digital sensor and stored as an electronic patient file in the computer. Acquired images are instantly viewable. DelWorks DR presents an intuitive touch screen. It supports cuttingedge flat panel detectors and offers integration with xray generators. DelWorks DRs userfriendly interface is tailored to exceed the needs and requirements of todays busy work environment. It standardizes and minimizes the steps required from image acquisition to optimal viewing and storage. User customizable acquisition profiles and work procedures can optimize patient throughput and image quality. With the use of advanced image processing algorithms, premium image quality is realized on the first view. http://www.salmododia.com.br/imagens/imagens_usuarios/burndy-crimper-manual.xml

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Patient throughput is enhanced while minimizing user intervention by reducing or eliminating the need for retakes. With the ability to support multiple flat panel detectors, DelWorks DR provides commonality for digital radiography. In addition, DelWorks DRs compatible panels fit most existing cartridgebased Bucky trays or chest units in radiographic rooms. This gives many clinics the economical option to upgrade almost any filmbased system to a digitalbased system. This manual gives the Del Medicaltrained and authorized Service Technician instructions to set up the hardware and to configure the software for use of DelWorks DR. It also discusses the xray generator interface, flat panel detector, and connection to a DICOM network server. Most of the technicians work takes place in the Service Mode of DelWorks DR, but this work affects nearly every aspect of how radiologic technologists will use DelWorks DR Clinical Mode. Please refer also to the documentation that accompanies the xray detector. When an xray generator is integrated with the digital software, please also refer to the generator's manual. Inspect components for dust or debris. Clean with a dry soft cloth, if necessary. Shut down all components of the system before cleaning. Some individuals may be allergic to the ingredients. Place no food, drink, or cigarettes around the computer. Safety Apply the directions here precisely to avoid damage to the System or any of its components, yourself, or others, loss of data, or corruption of files. The manufacturer assumes no liability for failure to comply. Cautions Mechanical. Use care to see that the image monitor is stable and cannot

fall. Use mounting brackets if necessary. Service Manual DelWorks Digital Radiography 3 1. EQUIPMENT HANDLING To maintain adequate signals and power among the hardware components, use securing mechanisms to fasten cables and connectors.<http://xn--c1ajqxf3c.xn--p1ai/userfiles/burnham-es2-manual.xml>

See that cables used in DelWorks Digital Radiography and associated equipment cannot create trip or fall hazards. Install the electronic components on secure and stable surfaces to prevent shifting and falling, to protect the equipment from damage, and to protect users of the equipment. Electrical. Use the equipment in a space that is properly ventilated. Provide sufficient free space around the components to permit their ventilation. Some electrical components, if operated beyond the stated temperature range may emit toxic fumes. Do not permit components to overheat. Isolation transformer To reduce the risk of electrical shock, do not remove cover. Refer servicing to qualified personnel. The isolation transformer must be properly grounded. Use the external ground screw head stud. Grounding reliability can only be achieved when connected to a receptacle known to be equivalent to hospital grade. When replacing the fuses, use replacements with the same rating and capacity. Software. Once operational, only properly trained and authorized personnel may use DelWorks DR to access patient records. Operating information about the Clinical Mode of DelWorks DR is available in the companion Operators Manual. Use no software other than that supplied by manufacturer on DelWorks Digital Radiography. Patients. Do not position or use this system in a location where it may be subject to splashed or spilled liquids. Review hardware safety requirements to ascertain whether the components may be cleaned and the best means of cleaning; see also preventive maintenance. All personnel must wear dosimeters during every phase of installation, operation, and maintenance of the system and the equipment to which it is connected. Servicing. Only properly trained and authorized personnel may install or configure DelWorks Digital Radiography. The power source must meet the power supply requirements defined in the site planning guide. Use of the system outside these limits voids the product warranty.

This instrument contains high voltages capable of causing death. Do not connect additional multiple portable socketoutlet or extension cords to the system. Follow instructions for correct cabling of components. Del Medical engages qualified translators who are trained in medical and computer terminology, and these translators are checked by editors who are similarly qualified, yet translated materials are the interpretation of the translator and are not considered Del Medicals responsibility. Each translation is based on the original English version release. At times, a translated manual may not be the same revision as its English counterpart. 4 Service Manual DelWorks Digital Radiography 1. EQUIPMENT HANDLING Only properly trained service personnel may alter any hardware components except for Operatorpermitted cleaning procedures or procedures supplied as instructions with a part provided by the manufacturer. Doing so could disrupt the functioning of the system and result in loss of images. Service personnel should contact manufacturer for applicable part numbers from the systems spare parts list. Operation. Do not use this instrument in the presence of an explosive atmosphere, including flammable anesthetics. Failure to comply could result in fire and explosion. Operate the system such that no patient contact with any part of the system is possible. Position the PC cabinet away from the patient and outside a 6ft radius of diagnostic area. Attempt no maintenance, including troubleshooting, in the presence of any patients or unauthorized staff. The system is interfaced with xray generating equipment. Follow the instructions for wearing proper lead shielding that came with the xray generator. Do not bypass the safeties provided by the xray generator during the installation or servicing of the hardware or software. Doing so could expose personnel to unnecessary radiation. Environment. Follow procedures with regard to electromagnetic compatibility.

<https://skazkina.com/ru/bose-wave-radio-cd-owners-manual>

At the end of its useful life, this equipment and its accessories must be disposed of safely and in

accordance with government regulations. Keep the boxes upright at all times. A packing list is attached to the outside of one box. Check this packing list when you first receive the shipment or if the items have been removed from the pallet when they are delivered to the xray room. DelWorks DR is composed of sensitive electronic devices. Follow caution stickers regarding careful handling. We recommend that you leave the components in their packaging until it is time to assemble them on site. Flat panel detectors are sensitive and often require special handling including extensive acclimatization times. Refer to information about the detector in the pertinent chapter of this manual and to documentation that accompanied the detector. To save time when troubleshooting problems and for the best image quality, the xray room components and peripheral devices must be in place, working properly, and configured before installing DelWorks DR. Check that the following are in place. Packing list. Check the shipment for the packing list. Room layout. Discuss with the site personnel the preferred location for each component. Sketch the room layout to assist with placement of the components and cabling of DelWorks DR. Enough shelf or table space. A flat work surface table or cart is required to hold the Operator's controls. Check that the area has enough room for comfortable use of the keyboard and pointing device and that the table or cart is at a suitable height. If space is limited, consider using a retractable keyboard shelf not supplied by Del Medical. Some configurations replace the physical keyboard with an onscreen touch keyboard. Consult the site personnel for their preferences. See page 28 for information on configuring the onscreen keyboard. Suitable conduits.

<http://kovonerez.com/images/Design-Review-2013-Manual.pdf>

Refer to later chapters in this Manual for details on required cables, routing restrictions, cable sizes and lengths. Also, consider cables for other devices in the xray room and control room. See that there is an acceptable path for each cable. Service Manual DelWorks Digital Radiography 7 Generator functioning. The generator must function properly before making any connections between it and DelWorks DR. Power source. If the power source does not meet criteria as outlined in this Manual "Power" on page 14, install the Del Medical power conditioner. Image monitors. Consult site personnel to determine preferred location of the image monitors. Monitors are shipped with removable bases. Del Medical recommends you remove the tiltswivel base from the monitor before mounting the monitor to an unstable surface such as a cart or hanging bracket. If using a cart, Del Medical recommends that you attach a handle to the cart for safe use of the cart and monitor. To attach the monitor to a cart or to a hanging bracket, consider how the monitor will be attached to the surface. Blank disks. To test DelWorks DR's recording capabilities, you need at least one CD or DVD. Network drop. The site must provide the network connection cable. Work with the sites network administrator to have this arranged. Network information. The network address must be obtained from the local network administrator. This information can then be entered into DelWorks DR when the system parameters are set. Remote DICOM services. The site must provide connectivity data for DICOM service classes, print, store, worklist, and so forth that are necessary for the particular site. Refer to the Preinstallation Site Survey for data forms, or contact Del Medical Customer Care Call us toll free at 18008006006 US only or 18472887000. This is equivalent to 1 inches of aluminum. 8 Service Manual DelWorks Digital Radiography CHAPTER 3 Xray Generator Connections Refer to the next chapter for information on your detector.

<https://participativedemocracy.com/images/Design-Search-Code-Manual-Uspto.pdf>

DelWorks DR supports several flat panel detectors. The panels can connect with cables or through a wireless access point to the DelWorks DR operating computers. The xray exposure must be synchronized with Film Bucky. Motion of the grid. Digital detector. Integration window of the device. Systems that have dual xray detectors are required to use the Select 1 and Select 2 input signals. When a system has only one xray detector, these signals are optional. Interface signal sources may vary depending on the specific detector used. Consult the detector interface section of this manual

for detector-specific information. Use the Variansupplied installation DVD. The panel has an amorphous silicon digital xray imager. It is a portable xray flat panel detector designed for mobile digital radiographic xray systems. It fits 14 x 17 inch standard Bucky trays 36 x 43 cm. The ruggedized outer shell has a handle. Position it within 11 ft 10 m of the PC or the gigabit switch, if the switch option is used. Limit patient contact in line with warnings in manufacturers recommendations. Preventive maintenance The panel can come into direct contact with patients and needs to be sterilized. The flat panel detector and connected cables are likely to be soiled during use. The specific material most likely to become soiled is the xray grade carbon fiber input window and magnesium housing. Cleaning, disinfection, and sterilization of the input window should be performed as needed. Proper disinfection and sterilization requires that a disinfectantsterilization solution be used. Wiping the surfaces with a soft cloth dampened with soap and water will generally clean the surfaces. See Figure 2 for drawing. The panel includes an attached cable. Interface between the detector and the DelWorks DR system. It provides power to the detector and an RJ45 Ethernet. It is also an interface for the external synchronization. Connect the detector cable to the imager connector on the power supply.

Plug the power supply into the main AC supply. Gigabit Ethernet connection. External synchronization cable connection. Provides DelWorks DR with a means to synchronize the imager. October 2008. Service Manual DelWorks Digital Radiography 13 FIGURE 3. Cabling for PaxScan 4336R panel and DelWorks DR system Generator interface DelWorks DRs digital interface board accommodates all interfacing between the xray generator and the PaxScan 4336R detector. No interface signals are required between the host xray system and the detector. Input and output signals from the host xray must be direct current DC voltages greater than 5 V and less than 28 V when active. The signals are VPREP, VREQ, and XRAYEN. The interface cable has part number 739102G1; see page 13 for illustration. Table 4 lists the signal lines. Figure 4 shows which signal lines are required and which are optional. Inputs have polarity. Follow these steps to configure the PaxScan 4336R for DelWorks DR 1. Enter DelWorks DR's Service Mode. 2. Select the Config option from the top of the Service Mode menu. 3. The configuration dialog window opens. 4. Select the Panel Configuration from options in the listing on the left of the configuration dialog. 5. In the right pane of the configuration window, click the Add button, and select the PaxScan 4336R panel. After configuration, touch or click the Verify Settings button to see if communication has been established. DelWorks DR responds with a popup window that a confirms successful communication or b notes that communication did not take place. For specific calibration functions, follow onscreen prompts with DelWorks DR. Several images are acquired in the calibration procedure. Note If your xray generator is integrated with DelWorks DR, an icon showing that connection appears in the lower right of the gain calibration window see Figure 6. With an integrated generator, you may select this icon to bring up the generator interface. You may then adjust the xray techniques.

These are the steps for gain calibration 1. Begin at Service Mode for DelWorks DR. Select Calib. 2. In the new window Figure 6, left, select Gain. 3. Follow the onscreen instruction to set SID, collimator, and filter. 4. Click the Play button. The progress of the calibration displays in the middleright of the calibration window Figure 6, right. A new window displays below. You may then with the selection of Options add new xray tubes or workstations and with the selection of Configuration organize the generator connection and default settings. You may add or delete see buttons in figure above. The information that you enter here will be used to describe the tube used for exposure in the Generator Interface dialog of DelWorks DR in both Service Mode and Clinical Mode. Thus, the technologist will begin with the generator interface that you set here. He or she may alter it before imaging, however. Configure the tube or workstation with the data listed in Table 6. TABLE 6. Configure xray tube or workstation When adding a tube 1. Give it a unique name of your choosing to identify it. 2. Give it a unique identifier of your choosing. 3. If you wish, add additional descriptive information. 4. Select microfocal spot if you wish to use this setting. When adding a

workstation 1. Give it a unique name of your choosing to identify it. 2. Give it a unique identifier. It must match the workstation's ID. 3. If you wish, add additional descriptive information. 4. Specify if images are to be captured locally by DelWorks DR. If selected, Local displays on generator interface in Service and Clinical Modes. 5. Specify the receptor type mediafilm, mediadigital, or mediaignored. 6. Specify the detector that will be used. 7. Select an icon to identify the workstation. Bottom pane Enable, with an X, the controls you wish to use in the Generator Control dialog window in both Clinical and Service Modes.

Configure integrated generator Select Configuration on the Generator Interface window see figure below, and then configure the generator by means of a set of dropdown menus explained below but not shown. First set the view for the default patient dose, the default somatotype, and the communication settings. Dose. Select the type that the generator supports. Somatotype default patient size. Set the somatotype according to the clinics preference. This is the default that will be used by the Acquisition Profile Generator APR. Communication with generator. Set the communication parameters between DelWorks DR and the integrated generator Com port, data bits, stop bits, baud rate, parity, flow control, and poll refresh. These values depend on the capabilities of the generator. Quick tips for service mode Bring up xray generator control menu, if generator is integrated. Learn version of each software component of DelWorks DR, see listing of hardware components, review character of database, and view system options. Exit Service Mode and return to Clinical Mode. To exit completely from DelWorks DR, start in Clinical Mode 1. Select green arrow at bottom of Clinical Mode menu to open the Functional Menu Bar across the bottom of the screen. 2. Select the closingdoor icon on the Function Menu Bar. Service Manual DelWorks Digital Radiography 25 26 Service Manual DelWorks Digital Radiography CHAPTER 6 Sitespecific Configuration To begin to customize DelWorks DR for the clinical site and technologists, select Config from the Service Mode menu. A new window opens Figure 10, and this window presents several aspects of DelWorks DR that may be customized for a site. The menu groups in the left pane may be collapsed. The row of icons along the bottom of the screen mean, respectively, a return to factory defaults, b back up configuration information including to removable media, and c restore configuration information.

When you have completed making changes, you may record them click or touch the floppydisc icon or cancel the changes square icon with white X. Site info See Figure 10. Site information is set at the Del Medical factory. The remaining fields, notably the serial number, are set by the manufacturer and should not be altered. System options When the Service Technician configures the System Options for DelWorks DR, he or she considers the work flow at the particular site. The equipment and habits of RTs at the site determine how the System Options are configured. To begin, select System Options from the main Service Mode menu under Config. If enabled, each image acquired will be sent to archive when the patients session is closed. This feature cannot be enabled if no DICOM storage is available. Log off Service Technician on exit. When set to True, the Application logs off the Service Technician when he or she closes DelWorks DR. Otherwise, if False, the Service Technician has access to the Windows desktop on exit. Log reject reason. When this option is set to True, the technologist acquiring images must specify a reason each time he or she rejects an image, including images that are first rejected then later accepted. These reasons are collected in a log that the Operator, Superuser, and Service Technician may review in the Service Mode. If set to On Open Patient, the technologist is required to enter his or her initials before opening a patients file. This feature controls if and when patient files are automatically deleted from the hard drive storage of the DelWorks DR computer. In most clinics, patient records are maintained on the PACS system and not on an application computer such as the one that runs DelWorks DR. 28 Service Manual DelWorks Digital Radiography 6. SITESPECIFIC CONFIGURATION If the selection is Never Auto Delete, patient files will never automatically be deleted from the DelWorks DR computer.

The technologist will have to delete them manually as desired. The patients files can also be designated for autodeletion when the hard drive of DelWorks DRs computer reaches 50, 75, or 90% of its capacity. How does this work Say, the threshold of 50% is selected. Once the PCs hard disc reaches 51% of capacity, it deletes the oldest patient records until the discs capacity is again at or under the 50% threshold. The deletion of files continues in the background to keep the hard discs storage where specified. CAN Interface Card. Select none unless you have a device, such as a collimator, that is controlled by the CANBUS Interface. If you have such a device, select the ADLink card. DR system options Log reject reason. When this option is set to True, the technologist acquiring images must specify a reason each time he or she rejects an image, including images that are first rejected then later accepted. GIMDSelect ASP. Auto advance. Auto advance applies to the individual work items in a work procedure, when a technologist is acquiring images for a patients exam. When set to True, DelWorks DR moves ahead to the next work item of the work procedure as soon as the current image is accepted. If auto advance is False, the technologist must select the next work item after accepting the current work items image. Both of these features can aid a clinics efforts to keep information confidential. DelWorks DR can be set up to logout the technologist after a given time period once a patients record is closed; that is, the amount of time that elapses after the last patient was closed. Choose any number of minutes between 1 and 30. Use the up and down arrows to change the time period, or use the slider control beneath the number. The same can be done for activation of DelWorks DRs screen saver. The screen saver will then activate after the selected number of minutes after the technologists last input to DelWorks DR.

To disable either or both features, place an X in the box to the right of the up arrows. Monitor lookup tables This feature is awaiting future development for DelWorks DR. Service Manual DelWorks Digital Radiography 29 6. SITESPECIFIC CONFIGURATION Panel configuration To add or remove panels, use the Panel Configuration function see figure below. The top pane of the Panel Configuration window displays the panels that have successfully been configured to work with DelWorks DR. The fields that you see in the rightlower pane depend on the options that you have purchased with DelWorks DR. ONCE A PANEL IS INSTALLED WITH THE DELWORKS DR SYSTEM, IT CANNOT BE REMOVED, UNTIL A SECOND PANEL HAS BEEN INSTALLED. This button opens a list of files on DelWorks DRs PC. Select the correct new panel. To remove a panel, highlight the row with the panels information figure above, top pane, and then touch or click Remove Panel. Note If this choice is not available, it is grayedout. Once the parameters describing the panel have been entered, touch or click Configure Panel for the configuration window. The window that you see depends on the panel that is attached to your DelWorks DR. Follow the onscreen prompts to complete the configuration of your panel. 30 Service Manual DelWorks Digital Radiography 6. SITESPECIFIC CONFIGURATION Default panel rotation As you work with DelWorks DR, you may find it convenient to orient the flat panel detector in one direction or another. Yet, to have the resulting image presented on the screen in the proper orientation, each image may need to be rotated. Use the Default Panel Rotation option here see figure above to accommodate difference in which the panel is oriented when the image is taken and when the image is shown on the screen. The options are 0, 90 clockwise, 90 counterclockwise, and 180.

Verify settings After configuration, touch or click the Verify Settings button figure above to see if communication has been established between DelWorks DR and the panel. DelWorks DR responds with a popup window that a confirms successful communication or b notes that communication did not take place. Through this setup function, you specify fields, generally, as a required, b optional, or c unused. Patient data Patient data applies to the individual who is imaged. Select this option, and DelWorks DR displays all the fields available for record keeping for patient data. Along side each field is a dropdown menu. For each field, select among the following options a required, b used, and c not used. Series data To define the data that apply to the images for a particular patient, select Series data just below Patient data. The fields available in series data are description, position,

laterality, and body part examined. The dropdown menu for each of these options allows the choice between a used and b not used. None of these fields may be required. Service Manual DelWorks Digital Radiography 31 6. SITESPECIFIC CONFIGURATION Study data To define the data that apply to the imaging examination for a patient, select Study data. Your choice for each of these fields is a required, b used, and c not used. The list of physicians is created in Clinical Mode. One of these fields will be used in the Clinical Mode's work procedures. See the Operator's Manual, part number 721201G2, for details of how the technologist will use this feature. Additionally, you may need to consult with the site's IT department to see what field is being used to query the patients. See page 39 for instructions about how this field is specified for DelWorks DR. Restore points Configuration information for the DelWorks DR is critical to its proper functioning. Therefore, DelWorks DR provides you with the facility both to backup and to restore configuration information.

Use the Restore points option Figure 12. Restore data If a configuration is found to be unsatisfactory and you wish to return to a configuration from an earlier date, you may select the date from which the data will be restored. You may also select the sets of data that should be restored. Choices are system configuration info, system optionssite settings and patient data patient, series, and study data. Note This function does not include panel configuration data. Rather than use data from configurations that the Service Technician has made for your site, you may choose to return to the factorydefault settings. To do so, select the factory building icon at the bottom of the window Figure 12. 32 Service Manual DelWorks Digital Radiography 6. SITESPECIFIC CONFIGURATION FIGURE 12. Restore previous setup Follow these steps with the restore points function 1. Select the range of dates for which you wish to evaluate changes in the configuration. For example, DelWorks DR may have been in operation for 6 months, but the unsatisfactory changes in the configuration may have taken place within only the last week. Use the calendar icons on the top of the restore points screen, then, to select dates encompassing only the last week. 2. Next, DelWorks DR lists each time the configuration was changed during the last week — or whatever time frame you have chosen, noting the user, date, and time. If changes had been made many times, you may need to scroll through the list. 3. From among these items, select the time at which the configuration was satisfactory. See highlighted item in Figure 12. 4. Touch or click Restore Data in the upperright of the Restore points screen. A small window opens, and you click the data you wish restored. In that same window you may specify where the data is to be drawn from for the restoration. 5. Confirm you choice, and the configuration from that time is restored — writing over the previous configuration data.

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