

DX-D 100

Applicable for all DX-D 100 system versions

Type 5410/050

This document has the following files attached:

- Service Information Note “Replacement of the DMC board to rev H”, in section 7.5.
- Maintenance Checklist, in chapter 9.

**DOCUMENT CONTROL NOTE:**

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WARNING:

Improper operation or service activities may cause damage or injuries.

- (1) Read the *Generic Safety Directions* prior to attempting any operation, repair or maintenance task on the equipment.
Refer to Document ID [11849633](#).
- (2) Strictly observe all safety directions within the *Generic Safety Directions* and on the product.



IMPORTANT:

The installation and service of the product(s) described herein is to be performed by qualified personnel who are employed by Agfa NV or one of its affiliates or who are otherwise authorized by Agfa NV or one of its affiliates to provide such services.

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0 About this manual

0.1 Purpose of this document

This document contains all information that service engineers need for installation as well as for corrective and preventive maintenance of DX-D 100.

It does *not* contain:

- Specific service information for other target readers, for example Clinical Application Specialists or Service Managers
- Service Bulletins
- Information for DX-D 100 Wireless:
The version with wireless detectors has its own service manual.
Refer to Document ID [66210593](#).



NOTE:

This Service Manual is applicable for all DX-D 100 versions. It replaces all previous version-specific manuals.

0.2 Changes compared to previous revision

The following changes have been implemented:

- Some layout changes.
- Updated section 1.2.1 Mobile X-Ray Unit.
- Added section 7.6 Symptoms of defect monitor/touchscreen.
- Updated section 8.4 Clean installation of the integrated NX PC.
- Added Maintenance Checklist in section 9.
- Updated System version overview in section 10.1.
- Reworked structure of section 11, added sections 11.1 and 11.1.2.

0.3 Referenced documents






#	Document	Reference
1	DX-D 100 - List of Service Documents	Document ID 66589867
2	Generic Safety Directions	Document ID 11849633
3	User Manuals	Refer to the Agfa Medimg Library
4	Additional documents are referenced in the corresponding sections.	

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0.4 Explanation of notes

Safety-relevant notes

Icon	Signal word	Situation
	CAUTION:	Hazardous situation which, if not avoided, can lead to a minor injury to a user, engineer, patient or any other person.
	WARNING:	Hazardous situation which, if not avoided, can lead to a potential serious injury to a user, engineer, patient or any other person.
	DANGER:	Direct, immediate danger: If not avoided, it can lead to a serious injury to a user, engineer, patient or any other person.
	-	Instruction to avoid damage to equipment and/or environmental pollution.
	-	Prohibition to avoid damage to equipment and/or environmental pollution.

Non-safety-relevant notes

Icon	Name	Type of information
	IMPORTANT:	Highlights very important actions which have to be carried out to prevent malfunction.
	NOTE:	<ul style="list-style-type: none"> Indicates advice to facilitate the following step or action without having a direct influence on the step or action. Highlights unusual points. Indicates background information. Can be used to explain or highlight displays of the graphical user interface.

0.5 Conventions

Style	Use case	Example
(1) Step 1 (2) Step 2	Step by step task description	(1) Connect the cables. (2) Mount the cover.
Bold	Menu topics, keyboard keys, device buttons, commands, and so on	Press F9 or double-click the Refresh button.
<i>Italic</i>	Emphasizing a word or indicating references in continuous text.	Do <i>not</i> insert the USB flash drive yet. Refer to section 10, <i>Release information</i> .
Courier bold	System messages	When the success message appears, close the window.

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1 System description

1.1 Intended use

The intended use statement is listed in the *User Manual* of the DX-D 100.

1.2 Components of the system

The DX-D 100 system consists of the following components:

#	Component	Purpose
1	Mobile X-Ray Unit	<ul style="list-style-type: none"> Control the X-ray tube. Make the X-ray unit mobile.
2	NX PC with touch screen ELO 1739L 17" LCD, 1280 x 1024 pixels	<ul style="list-style-type: none"> Image processing Linking demographic data to the images Interface to RIS and archive For detailed specifications see page 9.
3	Portable (tethered) DX-D 10 or DX-D 20 detector including IO Box	<ul style="list-style-type: none"> Image capture
4	Portable (tethered) DX-D 60 detector with SCU Box (for US Navy only *)	<ul style="list-style-type: none"> Image capture

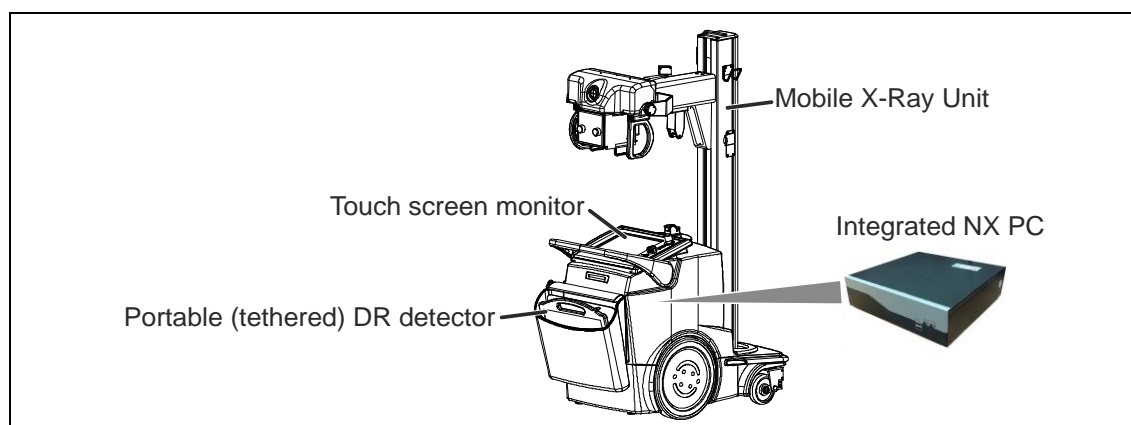


Figure 1

* For more details refer to section 14 *Appendix – DX-D 100 with tethered DX-D 60 detector*.

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1.2.1 Mobile X-Ray Unit

The Mobile X-Ray Unit consists of the following sub-components:

#	Component	Purpose
1	Generator with X-ray tube	The generator produces the required power to allow the X-ray tube to generate X-rays.
2	Collimator	Narrows the X-ray beam to the region of interest.
3	Motor and related hardware	Makes the X-ray unit mobile.
4	Batteries for X-ray exposure	Provide required energy* for the X-ray generator during mobile usage.
5	Batteries for motor	Provide required energy* for the motors.
6	Infrared remote control (optional)	Allows remote exposures.
7	Keypad	Switches system on by entering a numeric code.
8	Touch Screen	Allows the user to interact with the NX by using their finger or stylus.

* Rule of thumb: Batteries last for one workday. For details about the battery capacity refer to the *DX-D 100 Mobile X-Ray Unit User Manual*.

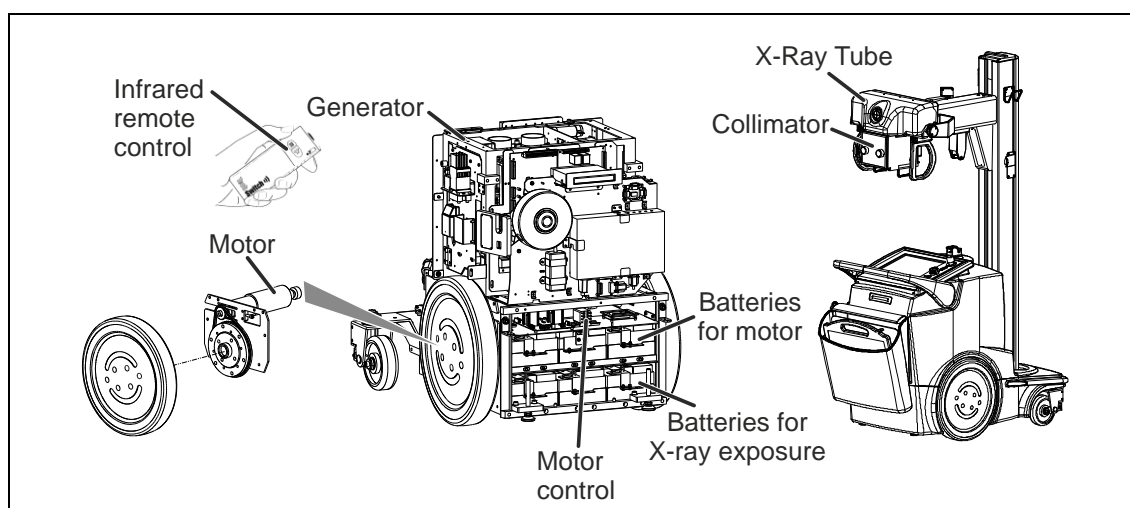


Figure 2

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**NOTE:**

For the product description of the components, refer also to:

- *DX-D 100 - Service Application Manual*, Document ID [31424256](#)
- *DX-D 100 - Service Plan*, Document ID [29435390](#)
- *DX-D 100 Technical Tender Database*, Document ID [38136666](#)
- The corresponding Service Documentation of the components.

1.2.1.1 Keypad

The numeric Keypad (replaces the key lock) allows to power on the system via a numeric code.

It is possible to save up to 20 codes.

For description of the LEDs and troubleshooting refer to section 7, *Troubleshooting*.

For already installed systems the Keypad is optional.



Figure 3: Keypad

1.2.1.2 Touch Screen

DX-D 100 V1 was equipped with a 15" Touch screen.

As from V2 the touch screen ELO 1739L 17" LCD, 1280 x 1024 pixels is installed.

1.2.2 NX PC

The integrated PC differs from the specifications that are listed for the different NX PCs in the NX service manual.

The specifications for the integrated PC are enclosed below. Note that the specifications and design may change without further notice.



Figure 4

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Up to DX-D 100 V3, the NX PC was equipped with the Windows XP operating system (field upgrades by installing Windows 7 were possible with a Sparklan network card). DX-D 100 V11 introduces a new Windows 10 PC in production for DX-D 100 Wireless only. For PC specifications refer to the *DX-D 100 Wireless - Service Manual*, Document ID [66210593](#).

Parameter	Value / Comment	
ex-factory	WIN 7 PC (\leq V5)	WIN 7 PC (V6 to V10)
	system SN < 1000	system SN \geq 1000
Dimensions	280 mm x 77 mm x 268 mm	280 mm x 77 mm x 268 mm
Processor	Intel Core2Duo T7500 – 2.2 GHz	Intel Core™ i7-3610QE Processor
Chipset	Intel® GME965	Intel® HD 4000
Graphics	Integrated Graphics Media Accelerator X3100	Integrated Graphics with VGA Connector HDMI and DVI-D are also available.
Operating System	Windows 7 32bit	Windows 7 32bit
Memory	2 GB RAM	8 GB DDR3 1333, Dual Channel
Network Interface 1	Gigabit Ethernet (RJ-45) Realtek RTL8111B	Intel® 82579LM Gigabit Network Connection
Network Interface 2	Gigabit Ethernet (RJ-45) Realtek RTL8111B	Intel® 82583V Gigabit Network Connection

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Parameter	Value / Comment	
ex-factory	WIN 7 PC (\leq V5)	WIN 7 PC (V6 to V10)
	system SN < 1000	system SN \geq 1000
Network Interface 3	Sparklan WUBR-507N* WiFi network card Used for wireless connection to the local hospital network. * required for Win 7	Qualcomm Atheros AR938x Wireless adapter Used for wireless connection to the local hospital network.
Hard disk drive	320GB SATA Toshiba MK3276GSX	500GB 2.5" SATAIII ST500LM000 Seagate
Serial ports (rear)	2 serial ports (RS-232)	2 serial ports (RS-232)
Ethernet (rear)	2 RJ-45	2 RJ-45
USB ports (rear)	8 USB 2.0	4 USB 3.0
USB ports (front)		2 USB 2.0
Power supply		Medical Grade Power supply (220 W) Model FSP180-50MP

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1.2.3 Options

- Storage bin for hand sanitizer, Sani wipes, gloves
- Dose Area Product (DAP) meter, mounted below the collimator
- Wireless exposure button
- LED beacon light (LED Status Indicator)
- Blue tooth connection (USB Bluetooth Stick)
- Infrared remote control
- Log-on keypad (option for field upgrades)
- Anti-scatter click-in grid

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2 Safety directions

**IMPORTANT:**

For each service intervention follow the instructions in the *Generic Safety Directions*. Refer to Document ID [11849633](#).

The Generic Safety Directions document comprises the general safety-relevant information including relevant environmental and occupational safety instructions for the Service Engineer.

2.1 Component-specific safety notes

**NOTE:**

For component-specific safety notes, refer to the corresponding *Service Documentation* of the components.

For a complete overview of component Service Documentation, refer to the *DX-D 100 - List of Service Documents*, Document ID [66589867](#).

2.2 System specific safety notes

**WARNING:**

Incorrect “exposure presetting” received by Generator can cause no or delayed exposure.

Cross check that the “X-ray pre-settings” configuration of the “exam tree” corresponds with the correct generator / tube specifications.

2.3 Labels

**NOTE:**

For labels on the DX-D 100 refer to the corresponding *DX-D 100 User Manuals* and refer to the *Generic Safety Directions*.

For component-specific labels, refer to the corresponding *User Manuals* and *Service Documentation* of the component.

For a complete overview of component Service Documentation, refer to *DX-D 100 - List of Service Documents*, Document ID [66589867](#).

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2.4 Safety devices - Emergency stop button

**WARNING:**

Press the Emergency stop button in case of danger to patients, operators, third parties, or one of the units. The entire system will be shut off and the power supply will be disconnected.

Do *not* use the Emergency stop button to switch OFF the Unit to avoid damaging software.

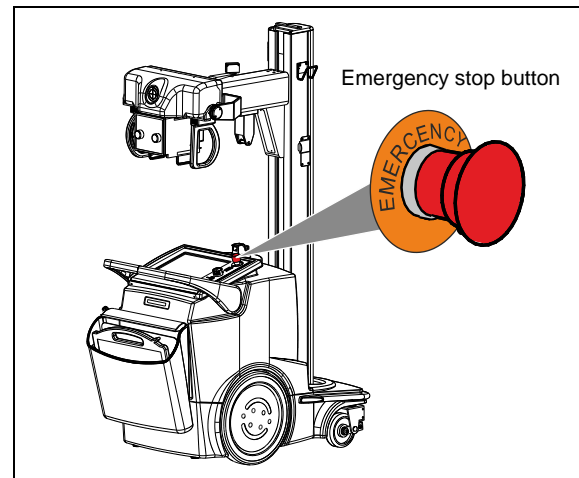


Figure 5

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3 Pre-Installation



NOTE:

For the pre-installation instructions of the components (NX, DR detectors), refer to the corresponding *Service Documentation* of the components.

For a complete overview of component Service Documentation, refer to *DX-D 100 - List of Service Documents*, Document ID [66589867](#).

For the installation preparation refer to the following document(s):

#	Document	Reference
1	DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Service Manual, chapter "Startup Primer"	Document ID 41600560
2	DX-D 100 - Service Application Manual, chapter "Preparation Activities" Target Reader: Clinical Application Specialist	Document ID 31424256



IMPORTANT:

DX-D 100 has a built-in WiFi network card to allow wireless communication with the RIS, Archive, and so on.

Inform the customer that it is his/her responsibility to provide the required hardware. For an example setup refer to page 19.

3.1 Technical data



NOTE:

For the technical specifications of the DX-D 100, refer to the *DX-D 100 Mobile X-Ray Unit User Manual* and to the *Datasheet*.

For component-specific technical data (NX, DR detectors), refer to the corresponding *User Manuals* of the components.

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4 Installation and configuration



IMPORTANT:

For some procedures a description is available in this Service Manual and in the Service Documentation provided by the manufacturer of a component.

In this case, always follow this Service Manual.

4.1 System installation sequence



IMPORTANT:

The DX-D 100 is delivered as a pre-staged system:

- NX has license installed and is activated. NX comes with following settings:
 - **crservice** user (with service password*) configured.
 - Date, time and time zone set for UTC + 1 h (Copenhagen, Brussels, Madrid, Paris).
 - X-Ray device DX-D 100 is configured.
 - DX-D 10 or DX-D 20 detector is configured (depends on order).
 - Network address of local area network (local & WiFi): Not set (set for *obtain an IP address automatically*).
 - Touch screen is calibrated, rotated and configured for a resolution of 1280 x 1024 pixels.
 - Default factory exam tree for DX-D 10 / DX-D 20 DR detector loaded.
- Generator workstations are configured. See NOTE below.
- DX-D 10 / DX-D 20 DAT file is converted and loaded.



* NOTE:

Up to NX 2.8.9000 / 3.8.9000 SU1 the NX service user “crservice” used a standard password which was communicated in the NX class room trainings.

With introduction of NX 2.8.9000 / 3.8.9000 SU2, each NX computer has its own individual computer generated service password assigned via Electronic License Management System (ELMS).

The password must be organized in ELMS before upgrade to or before installation of new systems with NX 2.8.900 SU2 (or later) installed ex-factory.

The password is automatically created when requesting license in ELMS. First log in is with old password, as soon the license is loaded it is needed to use the new password.

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**NOTE:**

The generator workstations are configured as follows:

WS	Tube	WM	AEC IC	Sync Type
WS1	0	Direct	0	HW
WS2	1	Direct	0	HW
WS3	1	Bucky 1	0	HW
WS4	0	Direct	0	HW
WS5	0	Direct	0	HW
WS6	0	Direct	0	HW
WS7	0	Direct	0	HW
WS8	0	Direct	0	HW

**NOTE:**

As from V10.0.13 (see section 10):

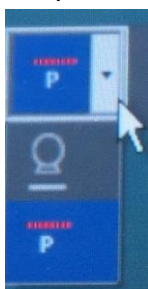
Make sure that ATP Generator firmware V7R1b94 (or later) is installed.

The

C:\Agfa\HealthCare\Sedecal\SiteConfig.xml file is pre-configured as shown in Figure 6.

Two workspaces are defined:

- Unknown free
- DR portable free



For details about the Sedecal softconsole configuration refer to the *X-Ray Generator – Softconsole Configuration Options*, Document ID [37216687](#).

```
<?xml version="1.0" encoding="UTF-8"?>
<Workstations>
  - <WS>
    <Number>2</Number>
    <Tube>1</Tube>
    <Position>32</Position>
    <WorkspaceName>UnknownFree</WorkspaceName>
    <DetPos>Free</DetPos>
    <DetType>Unknown</DetType>
    <DetParamLimits>True</DetParamLimits>
    <DetField>MAXMS</DetField>
    <DetTypedList>550,1000</DetTypedList>
    <Detmin>0</Detmin>
    <Detmax>0</Detmax>
    <RemovableGrid>0</RemovableGrid>
  </WS>
  - <WS>
    <Number>3</Number>
    <Tube>2</Tube>
    <Position>16</Position>
    <WorkspaceName>DRPFree</WorkspaceName>
    <DetPos>Free</DetPos>
    <DetType>DRP</DetType>
    <DetParamLimits>True</DetParamLimits>
    <DetField>MAXMS</DetField>
    <DetTypedList>1000,3000</DetTypedList>
    <Detmin>0</Detmin>
    <Detmax>0</Detmax>
    <RemovableGrid>1</RemovableGrid>
  </WS>
  <!--UNKNOWN-->
</Workstations>
```

Figure 6

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**NOTE:**

The following table shows the most efficient installation workflow. Some other sequences are possible, too.

System installation sequence:

#	Step	Reference
(1)	Unpack all components.	Mobile X-Ray Unit Service Manual, Document ID 41600560 , chapter "Startup Primer – Installation and Configuration"
(2)	Connect the DX-D 100 to the mains and switch on. Perform following NX settings: <ul style="list-style-type: none"> • Adapt date, time and time zone. • Adapt regional settings. • Edit security settings, if required. • Add users. • Perform user configuration via NX configuration tool. • Adapt network settings if required. • Load antivirus software, if required. 	NX/MUSICA Acquisition Workstation - Service Manual, Document ID 74737949 , chapter "Installation and Configuration". For network setup see also NOTE on page 19.
(3)	Load and adapt NX default exam tree.	Service Application Manual DX-D 100, Document ID 31424256 , chapter "Configuring the NX Workstation"
(4)	Calibrate the detector.	DX-D 10 / DX-D 20 / Fixed Detector - Service Manual, Document ID 41222172 , chapter "Calibration"
(5)	Perform Service Quality Test.	See section 6.
(6)	Create backup of NX configuration data.	NX/MUSICA Acquisition Workstation - Service Manual, Document ID 74737949 , chapter "Backup/restore principles"

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#	Step	Reference
(7)	Take a copy of the converted Varian DAT file (already loaded on the NX in the factory in C:\IMAGERS\<detector serial number> directory) and store it on a save place.	None
(8)	Train customer.	Service Application Manual DX-D 100, Document ID 31424256 , chapter “Customer Training and Hands-on Assistance”

**NOTE:**

The NX in the DX-D 100 can be installed to communicate via WiFi and via fixed (cabled) Ethernet connection to the hospital network.

Figure 7 shows an example for a network setup. Perform the network setup together with the hospital network system administrator.

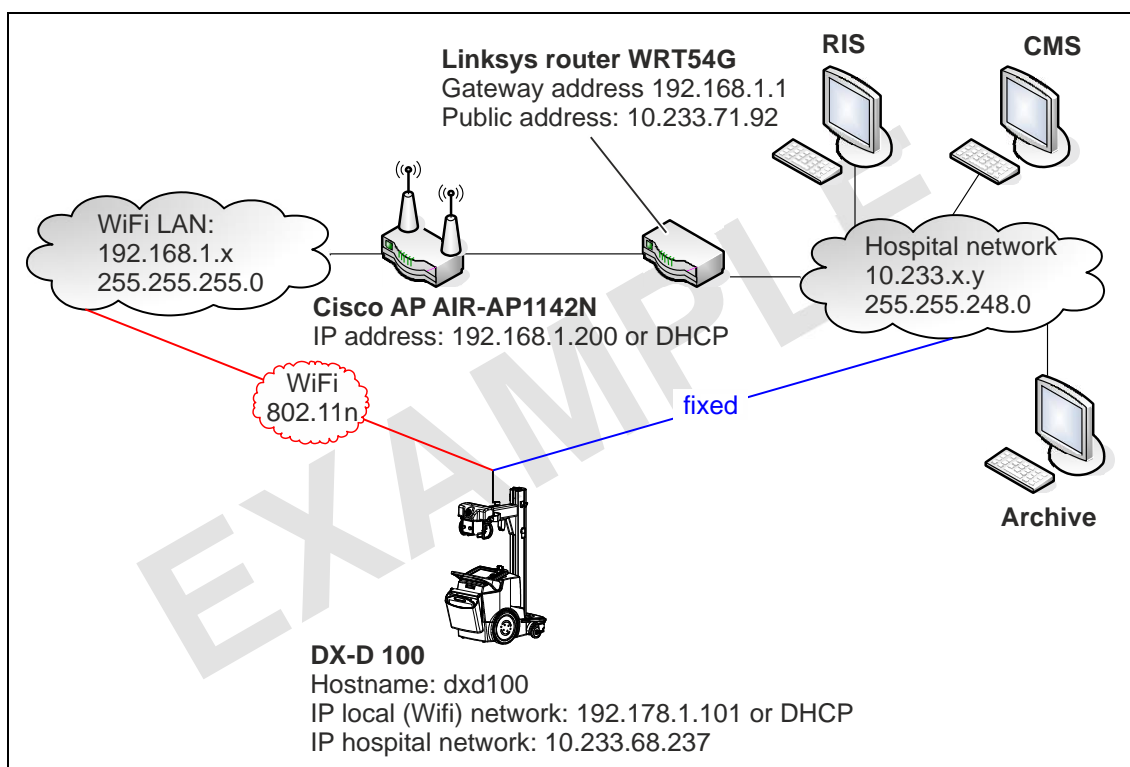


Figure 7: Example network setup

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4.2 Storage of the Allen wrench (manual movement of the system)

The DX-D 100 system is delivered with an Allen wrench for removing clutch screws at the wheels in case the DX-D 100 needs to be moved manually. It is a tool for the customer.

For details refer to the *DX-D 100 User Manual*, chapter *Problem solving* and *Storage of Allen wrench*.

For latest versions of the User Manuals refer to the Agfa Medimg Library.

4.3 Steps after completed installation

4.3.1 Handing over the system

- (1) Hand over a print-out of the following “one page” user manuals in user language:
 - [Disinfecting the DR System \(Wall Poster\) 3271](#) (html file; needs to be transferred for example via email or USB flash drive)
 - [MUSICA Acquisition Workstation Reporting a Problem 3270](#)

Refer to NOTE next page for contents of the “one page” user manuals.

- (2) Hand over the system to the Clinical Application Specialist, to perform the activities as described in *the DX-D 100 - System Application Manual*, Document ID [31424256](#).

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**NOTE:**

Contents of the “one page” user manuals:

Disinfecting the DR System (Wall Poster) 3271

This interactive html file indicates per DR system and used DR detector, which disinfectant to be used on site.

Purpose of the document:

- The user can see on one page which disinfectants are allowed. It is not required to consult each single system and component user manual.
- No damage on equipment due to wrong disinfectants.

MUSICA Acquisition Workstation Reporting a Problem 3270

This document contains an instruction on one page, how to proceed in case the NX software does not work as expected. It instructs the user how to collect some basic data for troubleshooting.

Purpose of the document:

- More efficient troubleshooting by service and Research & Development (R&D) as all relevant data are collected. No second visit required to collect relevant data.
- Quicker and more accurate feedback towards customers having issues with our systems.

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5 Calibration

For calibration information of the DR detector refer to the following document:

#	Document	Reference
1	DX-D 10 / DX-D 20 / Fixed Detector - Service Manual, chapter "Calibration"	Document ID 41222172

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6 Service Quality Test / Acceptance Test

**NOTE:**

The SQT is supported by a software tool (SQT Tool), which is available on the Agfa Medimg Library.

Individual tests vary depending on performed service activities, for example system installation or detector exchange.

Refer to the *Service Quality Test Tool*, Document ID [55022710](#).

6.1 Acceptance Test of the components

**NOTE:**

For the acceptance test instructions of the components, refer to the corresponding *Service Documentation* of the components.

For a complete overview of component Service Documentation, refer to *DX-D 100 - List of Service Documents*, Document ID [66589867](#).

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7 Troubleshooting



NOTE:

- For the troubleshooting instructions of the components, for example NX and DR detector, refer to the corresponding *Service Documentation* of the components. For a complete overview of component Service Documentation, refer to the *DX-D 100 - List of Service Documents*, Document ID [66589867](#).
- For troubleshooting of the Mobile X-Ray unit (Generator, motor, batteries etc.) refer to the *DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Service Manual*, Document ID [41600560](#), chapter *Troubleshooting*.
- For the escalation procedure refer to the *Field Service ABCs*, Document ID [25722561](#).

7.1 Motorized movement has stopped and system cannot be moved

In case motorized movement is not possible, the system needs to be moved manually. Therefore, the two clutch screws (Allen type) located on each wheel must be removed (with the Allen wrench provided with the DX-D 100).

For details refer to the *DX-D 100 User Manual*, chapter *Problem solving* and chapter *Storage of Allen wrench*.

For latest versions of the *User Manuals* refer to the Agfa Medimg Library.

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7.2 Blue LED at keypad always on

Symptom Blue LED is permanently on.

Expected cause Code array is full.
It is possible to save up to 20 codes.

Solution Erase the code array by entering the service code **92643718**.
All saved codes will be erased automatically.



NOTE:

When the system goes to “Switched on state”:

- Green LED is “Blinking”.
- Blue LED is either “On” or “Off” or “Blinking”:
The state of the blue LED depends on the code array state:
 - LED is “On” if code array is full
 - LED is “Blinking” if code array is empty
 - LED is “Off” if code array has at least one entry

Instructions how to remove a single code from the code array can be found in the *DX-D 100 Wireless User Manual* on the Agfa Medimg Library.

7.3 Configuring the intensity of the LED Status Indicator Light

In case the default setting of the LED Status Indicator Light is too intensive, it is possible to adjust the light in the following way:

- (1) Open the **C:\Agfa\Healthcare\XRD\Configuration\GUI** folder.
- (2) Create a new text file named **BeaconLightConfig.txt**.
If the file already exists, open it with a text editor.
- (3) Change a value if required:
 - Change the value to 30 for weak light
 - Change the value to 200 for strong light

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7.4 Detect bad batteries

Symptom Generator Batteries drop down after several exposures from 100 % charge level to 40 % and lower.
At that moment the battery indicator is going from green to amber. The customer is still able to make exposures.

Cause One or more broken batteries in the battery trays.

Solution (1) Detect bad batteries by performing the *complete* Troubleshooting procedure (chargers, batteries, Battery Monitor Board, ATP), as described in the *DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Service Manual*, chapter *Troubleshooting*, section *2.7 Battery Monitor Board* and *2.8 Batteries and Chargers*, Document ID [41600560](#).



IMPORTANT:

Perform the Battery Capacity measurements *not* on fully charged batteries, but rather after the LED charge level indicator dropped to the lowest level.

(2) Consult the description of the battery check with the Battery Monitor Board and its handling as described below.

7.4.1 Check battery load capacity with DX-D 100 Battery Monitor Board

The firmware resident on the board controls the Battery Monitor Board. It is however individually programmed for each specific battery type.

The current general firmware version for the lead gel batteries is V4R1b8, the version for the Crystal Lead batteries is V5R1b2.

For the lead gel batteries (the old type) the board version A3580-12 has to be used, for the new lead crystal batteries the board version A3580-15 is required.

The Battery Monitor Board measures in real time the voltage coming from the inverter and Motors Charger Boards (battery voltage after a resistor divider).

The inputs for the inverter battery voltage are J1-4,3 and J1-2 for motor battery voltage.

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The voltage is compared with the charge level stored in the memory in the battery monitor PCB.

- If the voltage measured is higher than the data level stored in the memory, the Battery Monitor PCB will display the status corresponding to the data stored in the memory.
- If the voltage measured is lower than the data stored in the memory, the Battery Monitor PCB will store the new data in the memory (image of the voltage) and display the status corresponding to the new data.

To display a steady charge level, the battery monitor filters the battery voltage. Therefore, instantaneous voltage fluctuations during regular unit operation are not displayed.

The battery monitor provides to the ATP console the percentage levels in a binary code so that the ATP console knows the charge level of the battery. These levels in % are also being logged in the BatteryReport.log files.

Additionally, there is a BATTERY LOW signal coming from the Battery Monitor Board on J3-4 connected to J2-7 at the ATP Console. This signal is generated as soon as the Battery level has reached 10 % and is resulting in the **Critical Battery Level** message and **error 25**.

Based on the reported Battery Levels the ATP board and consequently the NX Soft Console issue following messages:

40 %	Low battery status When the battery level reaches the middle LED, the operator can still make exposures, but it's recommended to charge the unit for better battery usage.
20 %	Very low battery status When the battery level reaches the middle LED and the LED is blinking, the operator can still make exposures, but it is urgently recommended to charge the batteries.
< 10% + Battery low signal	Critical battery status (error 25) When the battery level reaches the lower LED and the LED is blinking, the operator is no longer allowed to make exposures.

When the mobile unit is in charging mode, the Battery Monitor PCB will measure the time that the mobile remains in charge and increase 10% the charge level stored in the Battery Monitor PCB every hour of charge.

If the symptom is "Inverter Battery Voltage dropping after low number of exposures, e.g. 50":

- (1) Compare the real DC Bus voltage, e.g. measured between the two highest voltage test points on the Battery Test Board 03 with the voltage measured on TP1 on the Battery Monitor Board (see Figure 8). For comparison use the conversion table shown in the functional description below.

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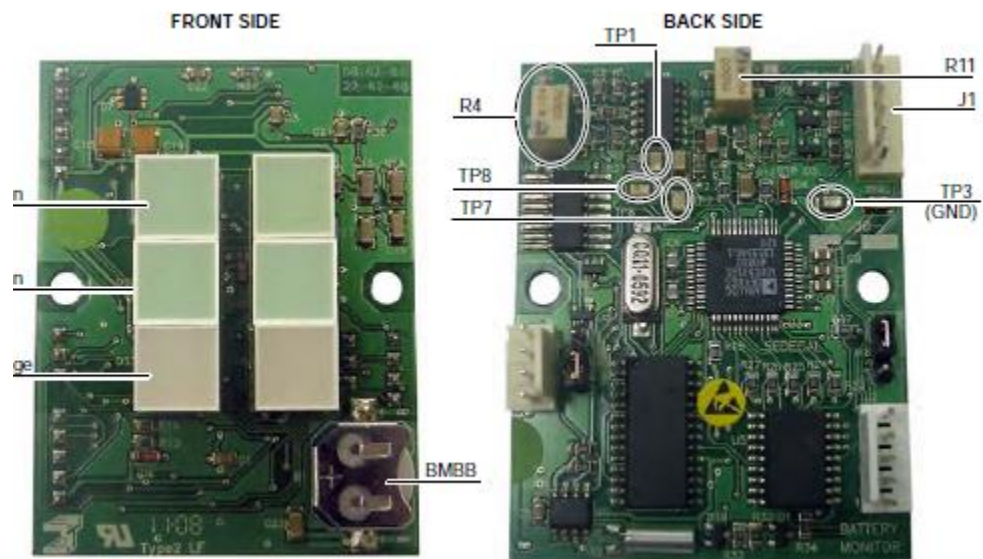


Figure 8: Test point TP1 on Battery Monitor Board

The conversion from Volt to % is the following for the Crystal Lead batteries:

Crystal Lead batteries		
%	Battery voltage (V)	V TP1
100	381.0	0.5
90	379.5	0.636
80	378.0	0.772
70	376.5	0.909
60	375.0	1.045
50	373.5	1.181
40	372.0	1.317
30	370.5	1.454
20	369.0	1.59
10	367.5	1.726
0	366.0	1.862

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The conversion table Volts to % for the Lead gel batteries

(Old) Lead gel batteries		
%	Battery voltage (V)	V TP1
100	385.5	0.747
90	384.5	0.863
80	383.8	0.944
70	383	1.036
60	382	1.152
50	381	1.268
40	380	1.384
30	379	1.5
20	378	1.616
10	377	1.732
0	376	1.848

Voltage measure examples:

- If the DC Bus voltage is 372 V, then the TP1 voltage must be 1.317 V or at least between 1.18 V and 1.453 V. Additionally compare the measured values with the entries in the **BatteryLevel.log**. All three values must correspond to each other.
- If the voltage on TP1 matches the entries in the log, but not the voltage on DC Bus, then the Battery Monitor board is wrongly adjusted and needs to be readjusted by potentiometer R4.
If the DC Bus voltage is other than the values in the table, which means between two values in the table, then interpolate accordingly.
Example: DC Bus voltage is 374 V, then the TP1 voltage should be approx. 1.11 V.
- If the voltage on TP1 matches the DC Bus voltage (matches the table), but the log entries are wrong, for example 20 % instead of 40 %, then check the binary code on the output of the Battery Monitor board, J2-2,3,4,5.
The measured code has to correspond to the voltage on TP1 and the most recent log entry.

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Log entry example:

The log entry is 30 %, then the code must be 1100 (2,3,4,5) and the TP1 must measure approx. 1.45 V.

- If the code is wrong, then replace the Battery Monitor Board.
- If the code is correct, measure the same at ATP J13-1,2,3,4.
 - If correct, then replace the ATP board.
 - If not correct, then replace the cable between the Battery Monitor Board and the ATP board.

Hints for estimation of the battery capacity:

- It is normal that the battery voltage drops by up to 20-30 % after just several average power images. It is just important that the battery voltage recovers from the after-shot-drop quickly enough.
- A good quick test is:
Check the current battery voltage level in the **BatteryReport.log**.
- Make ten exposures with 80 kV, 10 mAs quickly after each other (free exposures).
- Wait two minutes and then reopen the **BatteryReport.log** and check the recent voltage level. It should be back on the level before the exposures.
- Depending on the initial voltage level it is possible that the message Low Battery or Very Low Battery or even Critical Battery will appear temporarily, but they will disappear after the two minutes, after the batteries recover.

Example of such a voltage drop and voltage recovery pattern in the **BatteryReport.log**:

```
24/01/2017 13:41:22.267 : Battery Level Percentage = 80
24/01/2017 13:42:15.294 : Battery Level Percentage = 70
24/01/2017 13:42:22.341 : Battery Level Percentage = 60
24/01/2017 13:42:44.238 : Battery Level Percentage = 50
24/01/2017 13:43:22.451 : Battery Level Percentage = 60
24/01/2017 13:43:32.419 : Battery Level Percentage = 70
24/01/2017 13:44:12.466 : Battery Level Percentage = 80
```

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7.5 Preventing unintended movement

7.5.1 Checking firmware version of the DMC board

Preparation: Removing power input for the NX PC:

- (1) Shut down the system.
- (2) Open the front cover.
- (3) Disconnect power input of the NX PC.

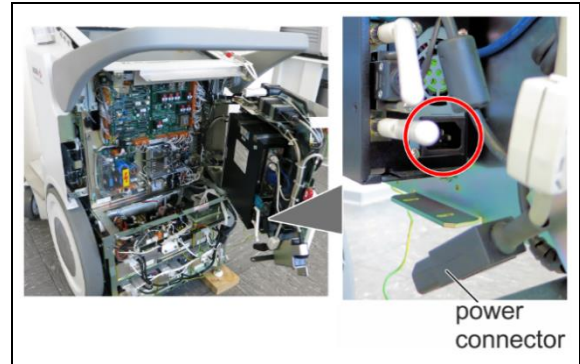


Figure 9



NOTE:

The system needs to be powered on and off.
With NX PC disconnected, the system can be powered off via emergency switch. This saves about 5 minutes per power on/off activity.

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Hardware and Firmware check:

- (4) Connect the **J8** connector of the DMC Programming Cable (A7130--xx) to **J8** of the Digital Motion Control Board.
- (5) Connect the other end (SubD9--PC) of the cable to the available COM Port of the Service PC.

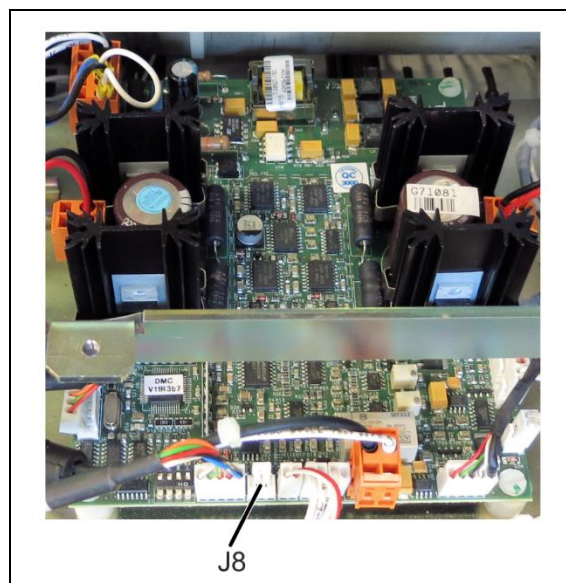


Figure 10: J8 of Digital Motion Control Board

- (6) Start **HyperTerminal** on the Service PC with default settings.
- (7) Switch on the DX-D 100.
- (8) Check DMC software version and DMC hardware revision shown in the HyperTerminal.

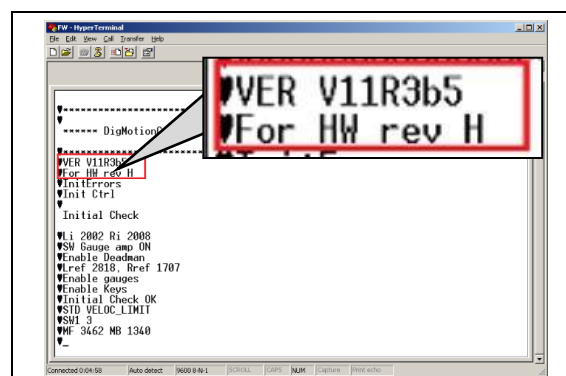


Figure 11: Example DMC boot log

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There are the following upgrade scenarios:

- (9) When DMC firmware (on a board revision H) is *below* V11R3b5, an upgrade to V11R3b5 (mandatory) or later (V11R3b7*) is required.
- In case the cable to load firmware on the board is present:
 - Download firmware from the Agfa Medimg Library.
 - Upgrade firmware to V11R3b5 or later.
 - In case the cable to load firmware on the board is *not* present:
 - Order the cable, which is part of "Upgrade dig. mot. control V11R3b5".
 - If required, download firmware from the Agfa Medimg Library.
 - Upgrade firmware to V11R3b5 or later.

The firmware upgrade is described in the DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Service Manual, chapter *Troubleshooting*, section 6.8.6 *Updating the Microcontroller*, Document ID [41600560](#).

- (10) When DMC hardware is *not* revision **H**, new DMC board revision H has to be ordered and replaced.

The replacement of the DMC board to rev H is described in the attached *Service Information Note*
SIN 13-08-13 Replacement of the DMC board to rev H.



SIN 13-08-13
Replacement of the



*** NOTE:**

DMC firmware V11R3b7 improves the DX-D 100 driving behavior.

The installation of version V11R3b7 is not mandatory but recommended in case of issues.

Refer to *DX-D 100 - SB076 - Introduction of DMC firmware version 11R3b7*, Document ID [52181220](#).



*** NOTE:**

For released DMC firmware versions refer to section 10.

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7.6 Symptoms of defect monitor/touchscreen

The monitor/touchscreen seems to be defective, with the following symptoms:

Symptom of “defect” monitor:	Solution
1. Image of the keyboard and login screen logo is burnt-in.	Refer to DX-D 100 - SB 152, Document ID 74915961
2. Other like touchscreen not working, black monitor, etc.	Follow the instructions in <i>DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Service Manual</i> , Document ID 41600560 , chapter <i>Troubleshooting</i> , section 2.12.1 <i>Troubleshooting the Touch Screen Console</i> . Only if the troubleshooting was not successful, then replace the monitor.

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8 Repair

8.1 DR detector replacement

For the DR detector replacement instructions refer to the following document:

#	Document	Reference
1	DX-D 10 / DX-D 20 / Fixed Detector - Service Manual, chapter "Installation and Configuration"	Document ID 41222172

8.2 Repairs at the Mobile X-Ray Unit

For all repairs at the mobile X-Ray unit (Generator, motor, batteries, and so on) refer to the following document:

#	Document	Reference
1	DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Service Manual, chapter "Troubleshooting"	Document ID 41600560

8.3 NX PC replacement



IMPORTANT:

When replacing the PC, it is always necessary to perform a clean installation. Refer to section 8.4 Clean installation of the integrated NX PC.



IMPORTANT:

A Win 7 PC cannot be replaced by a Win 10 PC via Spare Parts channel, as a Win 10 license is not included in the Spare Part PC (status 09-2021).



IMPORTANT:

In case of Win 10 PC:

Varian detector software is only Windows 10 compatible as of VRN 8.0.

VRN 8.0 requires network interface i210-T1. Order the compatible network interface "Intel Gigabit Ethernet Card i210-T1" CM+6213690.

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- (1) Order the new PC.
- (2) Disconnect all cables from the old PC.
- (3) Replace the old PC with the new PC.
- (4) Connect all cables to the new PC.
- (5) Perform a clean installation.
- (6) If required, return the old PC.

8.4 Clean installation of the integrated NX PC

Perform a clean installation in case of hard disk drive or NX PC replacement.



IMPORTANT:

It is *not* possible to upgrade a Windows 7 PC by installation of Operating System WIN 10.

8.4.1 Applicable clean installation images and instructions



IMPORTANT:

Depending on the installed PC and the operating system, different Clean Install Image versions have to be used (see table on next page).

The applicable clean installation instructions are added to the applicable software directory on AgfaBox and they are available on the Agfa Medimg Library as well.

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Clean installation:

- (1) Check which PC is installed.
To identify installed Win 7 PC, check the installed processor type:
Control Panel > System and Security > System > Processor

PC	Applicable clean installation images and instructions
Windows 7 with Intel Core2Duo*	<ul style="list-style-type: none"> Windows 7 clean install image ver.1.1 DXD100 Base OS image1.1_Win7_Wireless.iso, Document ID 38106151 Clean Installation - Win7 PC - Image 1.1, Document ID 75824913
Windows 7 with Intel Core i7*	<ul style="list-style-type: none"> Win 7 image ver.6.0: 6.0.zip, provided as ten split zip files only, Document ID 52415023 Clean Installation - Win7 PC - Image 6.0, Document ID 74291906
Windows 10 with Intel Core i5*	<ul style="list-style-type: none"> Win 10 image: DXD100-BASE-image-W10-vx.x.zip, Document ID 67877797 Clean Installation - WIN10 PC, Document ID 74291597

* Used for identification. For further PC specifications see section 1.2.2.

- (2) Download the applicable image and clean installation instructions.
(3) Perform the clean installation as described in the instructions.

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9 Maintenance

For preventive maintenance of the DX-D 100 components follow the instructions in the attached Maintenance Checklist.

The checklist includes the time frames for preventive maintenance.

The checklist is available in the Agfa Medimg Library as well:

DX-D 100 / DX-D 100 Wireless - Maintenance Checklist, Document ID [77232061](#).



DX-D 100 DX-D 100
Wireless - Maintena

Observe the following safety note when performing preventive maintenance:



WARNING:

Incorrect “exposure presetting” received by Generator can cause no or delayed exposure.

Cross check that the “X-ray pre-settings” configuration of the “exam tree” corresponds with the correct generator / tube specifications.

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10 Release information

Released hardware and software versions with their features and limitations are described in the applicable Service Bulletin. Refer to the Agfa Medimg Library.

10.1 System version overview



NOTE:

The version overview tables on next pages list the software or firmware versions released with the respective system version for *production release*. This means, this is the status of system versions delivered ex-factory.

NX related software versions are controlled by the ALF, but there are also some software/firmware versions that only can be installed and updated manually. These versions are not controlled or checked by the Electronic License Management System (ELMS).

It is possible that legacy hardware/software items are installed at site (for example older firmware). Field upgrades may not be required. Refer to the referenced Bulletins for more details about released hardware/software versions with their features, limitations and about required field upgrades.

This overview tables do *not* show all compatibilities.

For more information about software compatibilities, refer to *XRDI - Service Manual*, Document ID [72453884](#).

Changes compared to a previous system version are marked with **bold** text.

DOCUMENT CONTROL NOTE:

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		DX-D 100 System Version *		
System Component		Initial version	V 2.0 / 2.1.x	V 3.0
Release date:		04-2011	06-2011	11-2012
NX and related installers (controlled by ALF)	Workstation Software	NX 8400	NX 8600	NX 8700 SU1
	Varian Detector Software	L05	L05 / L06	VRN 7.0
	Agfa Softconsole	n.a.	n.a.	n.a.
	Sedecal SoftConsole	SC 2.0	SC 2.0 / 2.0 SU1	SC 5.1
	X-Ray Device Interface	XRDI 10	XRDI 10.1 / 10.2	XRDI 13 SU1
Varian Detector/NX	CR/DR Service Toolbox *	n.a.	n.a.	n.a.
Generator	Sedecal TechServ *	6.10	6.10	6.14
	Generator firmware ATP Console (U24 EPROM)	V7R1b62	V7R1b62	V7R1b62
	HT controller software (U5 Controller)	V5R8.5	V5R8.5	V5R8.5
Mobile X-Ray Unit	Motion Control Board firmware	V5R1b4	V5R1b4	V5R1b4
Reference Bulletin:		SB 04 32942675	SB 05 33225076	SB 18 38197684

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 4.0.0	V 4.0.10	V 4.1.0
Release date:		01-2013	03-2013	02-2014
NX and related installers (controlled by ALF)	Workstation Software	NX 8700 SU1	NX 8700 SU1	NX 8800
	Varian Detector Software	VRN 7.1	VRN 7.2	VRN 7.2
	Agfa Softconsole	n.a.	ASC 1.0	ASC 1.0
	Sedecal SoftConsole	SC 5.1	SC 5.2	SC 5.2
	X-Ray Device Interface	XRDI 14	XRDI 15	XRDI 15
Varian Detector/NX	CR/DR Service Toolbox *	n.a.	v 1.0	v 1.1
Generator	Sedecal TechServ *	6.14	6.14	6.14
	Generator firmware ATP Console (U24 EPROM)	V7R1b62	V7R1b62	V7R1b62
	HT controller software (U5 Controller)	V5R8.6	V5R8.8b	V5R8.8b
Mobile X-Ray Unit	Motion Control Board firmware	V5R1b5	V5R1b5	V5R6b0
Reference Bulletin:		SB 19 38648378	SB 21 39783228	SB 25 40407827

Blue box: These software versions are controlled by the Application Licence File (ALF).

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* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 4.1.1	V 4.2.0 ¹⁾	V 4.3.0
Release date:		09-2013	09-2013	10-2013
NX and related installers (controlled by ALF)	Workstation Software	NX 8800	NX 8800	NX 8800
	Varian Detector Software	VRN 7.2	VRN 7.2	VRN 7.2
	Agfa Softconsole	ASC 1.0	ASC 1.0	ASC 1.0
	Sedecal SoftConsole	SC 5.2	SC 5.2	SC 5.2
	X-Ray Device Interface	XRDI 15	XRDI 15	XRDI 15
Varian Detector/NX	CR/DR Service Toolbox *	v 2.0	v 2.0	v 2.0
Generator	Sedecal TechServ *	6.14	6.14	6.14
	Generator firmware ATP Console (U24 EPROM)	V7R1b62	V7R1b62	V7R1b62
	HT controller software (U5 Controller)	V5R8.8b	V5R8.8b	V5R8.8b
Mobile X-Ray Unit	Motion Control Board firmware	V5R6b0	V5R6b0	V11R2b6
Reference Bulletin:		SB 28 42173128	SB 29 41271445	SB 34 42625401

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

¹⁾ Hardware changes only.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 4.3.10 ¹⁾	V 4.4.0	V 4.4.1
Release date:		05-2014	05-2014	02-2014
NX and related installers (controlled by ALF)	Workstation Software	NX 8800	NX 8800	NX 8800
	Varian Detector Software	VRN 7.2	VRN 7.3	VRN 7.3
	Agfa Softconsole	ASC 1.0	ASC 1.1	ASC 1.1
	Sedecal SoftConsole	SC 5.2	SC 5.3	SC 5.3
	X-Ray Device Interface	XRDI 15	XRDI 15	XRDI 15
Varian Detector/NX	CR/DR Service Toolbox *	v 2.0	v 2.0	v 3.0
Generator	Sedecal TechServ *	6.14	6.14	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b62	V7R1b73	V7R1b73
	HT controller software (U5 Controller)	V5R8.8b	V5R8.9	V5R8.9
Mobile X-Ray Unit	Motion Control Board firmware	V11R2b6	V11R2b6	V11R2b6
Reference Bulletin:		SB 37 43093231	SB 38 43870558 SB 39 43910047	SB 46 44987374 SB 47 45186624

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

¹⁾ Hardware changes only.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 4.5.0	V 4.6.0	V 4.6.1
Release date:		03-2014	07-2014	06-2014
NX and related installers (controlled by ALF)	Workstation Software	NX 8800 SU1	NX 8800 SU1	NX 8800 SU1
	Varian Detector Software	VRN 7.3	VRN 7.3	VRN 7.3
	Agfa Softconsole	ASC 1.1	ASC 1.1	ASC 1.1
	Sedecal SoftConsole	SC 5.3	SC 5.3	SC 5.4 (stopped)
	X-Ray Device Interface	XRDI 15	XRDI 15	XRDI 15
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0	v 3.0
Generator	Sedecal TechServ *	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b73	V7R1b73	V7R1b73
	HT controller software (U5 Controller)	V5R8.9	V5R8.9	V5R8.9
Mobile X-Ray Unit	Motion Control Board firmware	V11R2b6	V11R3b4	V11R3b4
Reference Bulletin:		SB 41 44765041	SB 49 45415049	–

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *	
System Component		V 4.6.2	V 4.6.95
Release date:		08-2014	06-2015
NX and related installers (controlled by ALF)	Workstation Software	NX 8800 SU1	NX 8800 SU1
	Varian Detector Software	VRN 7.3	VRN 7.3
	Agfa Softconsole	ASC 1.1	ASC 1.1
	Sedecal SoftConsole	SC 5.3	SC 5.5
	X-Ray Device Interface	XRDI 15 SU1	XRDI 15 SU1
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0
Generator	Sedecal TechServ *	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b73	V7R1b73
	HT controller software (U5 Controller)	V5R8.9	V5R8.9
Mobile X-Ray Unit	Motion Control Board firmware	V11R2b6	V11R3b4
Reference Bulletin:		SB 43 44968780	SB 57 46759296

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 5.0 ¹⁾	V 5.0.20	V 5.0.30
Release date:		10-2015	12-2014	05-2015
NX and related installers (controlled by ALF)	Workstation Software	NX 8800 SU1	NX 8800 SU1	NX 8800 SU1
	Varian Detector Software	VRN 7.3	VRN 7.3	VRN 7.3
	Agfa Softconsole	ASC 1.1	ASC 1.1	ASC 1.1
	Sedecal SoftConsole	SC 5.5	SC 5.5	SC 5.5
	X-Ray Device Interface	XRDI 15 SU1	XRDI 15 SU1	XRDI 15 SU1
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0	v 3.0
Generator	Sedecal TechServ *	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b73	V7R1b78	V7R1b78
	HT controller software (U5 Controller)	V5R8.9	V5R8.9	V5R8.9
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b4	V11R3b4	V11R3b5
Reference Bulletin:		SB 54 45533923	SB 63 47923613	SB 62 49682716

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

¹⁾ V5 was introduced due to a new improved storage bin for DX-D 100 Wireless.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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System Component		DX-D 100 System Version *	
		V 5.1.0	V 6.0 ¹⁾
Release date:		01-2015	07-2015
NX and related installers (controlled by ALF)	Workstation Software	NX 8900	NX 8900 SU1
	Varian Detector Software	VRN 7.3	VRN 7.3
	Agfa Softconsole	ASC 2.0	ASC 2.0
	Sedecal SoftConsole	SC 5.5	SC 5.5
	X-Ray Device Interface	XRDI 16	XRDI 16
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0
Generator	Sedecal TechServ *	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78
	HT controller software (U5 Controller)	V5R8.9	V5R8.9
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b5	V11R3b5
Reference Bulletin:		SB 61 47812640	SB 67 49266716

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

¹⁾ With Version 6.0 also a new integrated Win 7 PC was introduced.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 7.0	V 7.0.10.0	V 7.1.0
Release date:		12-2015	10-2015	11-2015
NX and related installers (controlled by ALF)	Workstation Software	NX 8900 SU1	NX 8900 SU1	NX 8900 SU1
	Varian Detector Software	VRN 7.3	VRN 7.3	VRN 7.3
	Agfa Softconsole	ASC 2.0	ASC 4.0 ¹⁾	ASC 4.0 ¹⁾
	Sedecal SoftConsole	SC 5.5 SU1	SC 5.5 SU1	SC 5.5 SU1
	X-Ray Device Interface	XRDI 16	XRDI 17.1 ¹⁾	XRDI 17.1 ¹⁾
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0	v 3.0
Generator	Sedecal TechServ *	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78	V7R1b78
	HT controller software (U5 Controller)	V5R8.9	V5R8.9	V5R8.9
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b5	V11R3b5	V11R3b7
Reference Bulletin:		SB 72 51834959	SB 74 51610670	SB 76 52181220

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

¹⁾ Only upgrade in the field.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 7.1.30	V 8.0	V 8.1
Release date:		01-2016	01-2017	10-2016
NX and related installers (controlled by ALF)	Workstation Software	NX 8900 SU2	NX 8900 SU2	NX 8950
	Varian Detector Software	VRN 7.3	VRN 7.3	VRN 7.3
	Agfa Softconsole	ASC 4.0	ASC 4.0	ASC 4.1
	Sedecal SoftConsole	SC 5.5 SU1	SC 5.6	SC 5.6
	X-Ray Device Interface	XRDI 17.1 ¹	XRDI 17.1	XRDI 18
	CR/DR Service Toolbox *	n.a.	n.a.	n.a.
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0	v 3.0
Generator	Sedecal TechServ *	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78	V7R1b78
	HT controller software (U5 Controller)	V5R8.9	V5R8.9	V5R8.9
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b7	V11R3b7	V11R3b7
Reference Bulletin:		SB 78 52650163	SB 83 55237759	SB 82 54614702

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 9.0.0	V 9.0.60	V 9.2.120
Release date:		02-2017	02-2017	02-2017
NX and related installers (controlled by ALF)	Workstation Software	NX 9000	NX 9000 SU1	NX 9000 SU1
	Varian Detector Software	VRN 7.3	VRN 7.4	VRN 7.4
	Agfa Softconsole	ASC 4.1	ASC 4.1	ASC 4.1
	Sedecal SoftConsole	SC 5.7	SC 5.7	SC 5.7
	X-Ray Device Interface	XRDI 18.1	XRDI 18.1	XRDI 18.1
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0	v 3.2
Generator	Sedecal TechServ *	6.17	6.17	6.17
	Generator firmware ATP Console (U24 EPROM)	V7R1b92	V7R1b92	V7R1b92
	HT controller software (U5 Controller)	V5R8.10 **	V5R8.10 **	V5R8.10 **
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b7	V11R3b7	V11R3b7
Reference Bulletin:		SB 88 58249189	SB 92 58553156	SB 96 60797744

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

** V5R8.10 only ex-factory.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 9.2.140	V 9.3.30	V 10.0.0 ¹⁾
Release date:		12-2017	05-2018	06-2018
NX and related installers (controlled by ALF)	Workstation Software	NX 20.00	NX 20.00	NX 20.00
	Varian Detector Software	VRN 7.4	VRN 7.5	VRN 7.5
	Agfa Softconsole	ASC 5.0	ASC 5.0	ASC 5.0
	Sedecal SoftConsole	SC 5.7	SC 5.7	SC 5.7
	X-Ray Device Interface	XRDI 19	XRDI 19	XRDI 19
Varian Detector/NX	CR/DR Service Toolbox *	v 3.2	v 3.2	v 3.2
Generator	Sedecal TechServ	6.17	6.17	6.17
	Generator firmware ATP Console (U24 EPROM)	V7R1b92	V7R1b92	V7R1b92
	HT controller software (U5 Controller)	V5R8.10 **	V5R8.10 **	V5R8.10 **
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b7	V11R3b7	V11R3b7
Reference Bulletin:		SB 102 62281551	SB 98 64509863	SB 106 65366037

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

** V5R8.10 only ex-factory.

¹⁾ V10: Introduced only new detectors for DX-D 100 Wireless systems.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 10.0.13	V 10.0.30	V 10.0.50
Release date:		06-2018	10-2018	12-2018
NX and related installers (controlled by ALF)	Workstation Software	NX 20.00	NX 21.00	NX 21.00
	Varian Detector Software	VRN 7.5	VRN 7.5	VRN 8.0 ²⁾
	Agfa Softconsole	ASC 5.0	ASC 6.0	ASC 6.0
	Sedecal SoftConsole	SC 5.8 ¹⁾	SC 5.8	SC 5.8
	X-Ray Device Interface	XRDI 19	XRDI 20	XRDI 20
Varian Detector/NX	CR/DR Service Toolbox *	v 3.2	v 3.2	v 3.2
Generator	Sedecal TechServ	6.17	6.17	6.17
	Generator firmware ATP Console (U24 EPROM)	V7R1b94	V7R1b94	V7R1b94
	HT controller software (U5 Controller)	V5R8.10 **	V5R8.10 **	V5R8.10 **
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b7	V11R3b7	V11R3b7
Reference Bulletin:		SB 107 65281810 SB 108 65365640	SB 112 66086365	SB 111 67257724

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

** V5R8.10 only ex-factory.

¹⁾ Only field upgrade.

²⁾ For Win 10: VRN 8.0 is released only in combination with Intel® I210-T1 network card.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 11.0.0 ¹⁾	V 11.0.05	V 11.0.20
Release date:		12-2018	12-2018	12-2018
NX and related installers (controlled by ALF)	Workstation Software	NX 21.00	NX 21.00	NX 21.00 SU1
	Varian Detector Software	VRN 8.0	VRN 8.0	VRN 8.0
	Agfa Softconsole	ASC 6.0	ASC 6.0	ASC 6.1
	Sedecal SoftConsole	SC 5.8	SC 5.8	SC 5.8
	X-Ray Device Interface	XRDI 20	XRDI 20	XRDI 20.1
Varian Detector/NX	CR/DR Service Toolbox *	v 3.2	v 3.3	v 3.3
Generator	Sedecal TechServ	6.17	6.17	6.17
	Generator firmware ATP Console (U24 EPROM)	V7R1b94	V7R1b94	V7R1b94
	HT controller software (U5 Controller)	V5R8.10 **	V5R8.10 **	V5R8.10 **
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b7	V11R3b7	V11R3b7
Reference Bulletin:		SB 110 65642421	SB 113 67009191	SB 114 67201943

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

** V5R8.10 only ex-factory.

¹⁾ Hardware changes only: Version 11 introduces WIN 10 PC ex-factory.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 11.1.40	V 11.1.90	V 11.2.025
Release date:		07-2019	09-2019	03-2020
NX and related installers (controlled by ALF)	Workstation Software	NX 22.00	NX 22.00	NX 22.00 SU1
	Varian Detector Software	VRN 8.0	VRN 8.0	VRN 8.0
	Agfa Softconsole	ASC 6.1	ASC 8.0	ASC 8.0
	Sedecal SoftConsole	SC 5.8	SC 5.8	SC 5.8
	X-Ray Device Interface	XRDI 20.1	XRDI 21.0	XRDI 21.0
Varian Detector/NX	CR/DR Service Toolbox *	v 3.3	v 3.3	v 3.3
Generator	Sedecal TechServ	6.17	6.17	6.17
	Generator firmware ATP Console (U24 EPROM)	V7R1b94	V7R1b94	V7R1b94
	HT controller software (U5 Controller)	V5R8.10 **	V5R8.10 **	V5R8.10 **
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b7	V11R3b7	V11R3b7
Reference Bulletin:		SB 115 69514962	SB 118 70118767	SB 121 72011909

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

** V5R8.10 only ex-factory.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 11.2.60	V 11.2.089	V 11.3.000
Release date:		08-2020	02-2021	04-2021
NX and related installers (controlled by ALF)	Workstation Software	NX 22.00 SU1	NX 22.00 SU1	NX 22.00 SU1
	Varian Detector Software	VRN 8.0	VRN 8.0	VRN 8.0
	Agfa Softconsole	ASC 9.0	ASC 9.0	ASC 9.0
	Sedecal SoftConsole	SC 5.8	SC 5.8	SC 5.8
	X-Ray Device Interface	XRDI 22.0	XRDI 22.0	XRDI 22.0
Varian Detector/NX	CR/DR Service Toolbox *	v 3.3	v 3.4 ¹⁾	v 3.4
Generator	Sedecal TechServ	6.17	6.17	6.17
	Generator firmware ATP Console (U24 EPROM)	V7R1b94	V7R1b94	V7R1b94
	HT controller software (U5 Controller)	V5R8.10 **	V5R8.10 **	V5R8.10 **
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b7	V11R3b7	V11R3b9
Reference Bulletin:		SB 123 73887735	NX 22 SB 18 75567189 ¹⁾ SB 131 75864967	SB 124 75544573

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

** V5R8.10 only ex-factory.

¹⁾ Updated logviewer for NX added, other sw components unchanged.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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		DX-D 100 System Version *		
System Component		V 11.3.150	11.3.160	Next version
Release date:		05-2021	08-2021	
NX and related installers (controlled by ALF)	Workstation Software	NX 23.00	NX 23.00 SU1	This overview is not updated daily. Check latest published Bulletins for announcement of new software/firmware versions.
	Varian Detector Software	VRN 8.0	VRN 8.0	
	Agfa Softconsole	ASC 10.1	ASC 10.1	
	Sedecal SoftConsole	SC 5.9	SC 5.9	
	X-Ray Device Interface	XRDI 23.1	XRDI 23.1	
Varian Detector/NX	CR/DR Service Toolbox *	v 3.4	v 3.4	For an up-to-date overview of released "NX and related installers" refer to the <i>Simplified ELMS DR Subproduct Interoperability Matrix</i> , Document ID 35878296 .
Generator	Sedecal TechServ	6.17	6.17	
	Generator firmware ATP Console (U24 EPROM)	V7R1b94	V7R1b94	
	HT controller software (U5 Controller)	V5R8.10 **	V5R8.10 **	
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b9	V11R3b9	
Reference Bulletin:		SB 134 76846007	SB 136 77528133	

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. The latest CR/DR Service Toolbox version can be used on all system versions.

** V5R8.10 only ex-factory.

* NOTE: The System Version shows the versions released for production (systems delivered ex-factory). Software versions at the site may vary. Required field upgrades are listed in the referenced Bulletin.

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11 Upgrade procedure

For the upgrade procedures refer to the following documents:



NOTE:

For the upgrade procedures of the system components, refer to the corresponding documentation of the components. For a complete overview of component Service Documentation, refer to *DX-D 100 - List of Service Documents*, Document ID [66589867](#).

This document contains the following upgrade scenarios:

Software Upgrades	section
Upgrading to a higher system version	11.1

Hardware Upgrades	section
Upgrade instructions (miscellaneous)	11.2
Replacing NX PC	8.3

11.1 Upgrading to a higher system version

This section contains a generic description how to upgrade to a higher system version (software upgrade).

11.1.1 Prerequisites for software upgrades

Look-up the required software in section 10, *Release information* or in the related release service bulletin.

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SOFTWARE:

- If NX software or related component installers like XRDI, Sedecal SoftConsole etc. are affected:
 - Create new Application License File (ALF) on Electronic License Management System (ELMS).
 - When organizing a new license file, ensure to write down the password for user crservice. This password will be active after loading the license file.
 - Download NX software and / or related component installers from the Agfa Medimg Library.
Recommendation: Use the ELMS software collection tool to create an installer, which contains all required NX software. For details see *NX 8900 SB 07*, Document ID [49695878](#).
- If other software components are affected:
 - Download the software items from the Agfa Medimg Library.
Follow the instructions in the related release service bulletin.

11.1.2 Updating or upgrading NX Software and related component installers

The following step is required only, if a higher NX software version or related NX component installer like XRDI, Sedecal SoftConsole etc. needs to be installed:

- (4) Perform a software update or upgrade on NX. For instructions refer to the *NX/MUSICA Acquisition Workstation - Service Manual*, chapter *Upgrade / update procedure*.
- (5) Install the CR/DR service toolbox if a higher version is part of the system release.

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11.2 Hardware upgrades

For possible hardware upgrades of an already installed DX-D 100 System, refer to the following documents.

Main hardware changes in the system versions

Version changes are mainly required for introduction of new parts and wireless detectors for DX-D 100 Wireless.

The version for DX-D 100 is changed only to keep version consistency.

System version	Detector	Main hardware changes	Field upgrades
V1 to V3	DX-D 10/20	V3: Operating System Win 7	yes
V4		Monitor Rotation	yes
V5		Option: Storage bin for hand sanitizer, Sani wipes, gloves	yes
V6		New Win 7 PC	yes
V7		Option: LED Status Indicator, Bluetooth stick	yes
V8/V9/V10		n.a.	n.a.
V11	DX-D 10/20 (DX-D 60 tethered)*	n.a.	n.a.
		n.a.	n.a.

* For more details refer to section 14 *Appendix – DX-D 100 with tethered DX-D 60 detector*.

For possible hardware upgrades of an already installed DX-D 100 System, refer to next sections.

11.2.1 17" ELO touchscreen monitor - rotation of monitor by 180°

- (1) Install and rotate the monitor as described in *DX-D 100 - SB019 - Announcement of DX-D 100 System Version 4*, Document ID [38648378](#)

11.2.2 Status LED indicator and USB Bluetooth stick

- (1) Install optional Status LED indicator and USB Bluetooth stick as described in *DX-D 100 - SB073 - REVISED - Optional upgrades to v7_LED Status Indicator_Bluetooth*, Document ID [53203069](#).

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11.2.3 Keypad

- (1) Install the optional keypad as described in *DX-D 100 - SB 89 - Upgrade Instructions to V 9.0 for new functionalities*, Document ID [58812426](#).

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12 Spare parts

For the spare parts list refer to the following documents:

#	Document	Reference
1	DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Spare Parts List	Document ID 30872155
2	DX-D 10 / DX-D 20 - Spare Parts List	Document ID 31372837

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13 Wiring diagram

For the wiring diagrams refer to the following document:

#	Document	Reference
1	DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Service Manual, chapter "Schematics"	Document ID 41600560



NOTE:

The *Mobile X-Ray Unit Service Manual*, chapter *Schematics* also contains a System Wiring Diagram. Refer to sheet number 54302201.

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14 Appendix – DX-D 100 with tethered DX-D 60 detector

The DX-D 100 with tethered DX-D 60 detector is used for US Navy only, as on Navy ships WiFi is not allowed.

This special DX-D 100 is based on a DX-D 100 Wireless (Type 5411/300), which includes the System Control Unit (SCU) Box Mini that is required for the tethered DX-D 60.

The Navy version has a dedicated subtype and ABC code to distinguish the systems.

Note that a DX-D 60 (wireless/tethered) detector is not released for Type 5411/300 itself.

type/subtype		ABC code
5411/083	DX-D 100+ DX-D60 TETH-40KW-300KHU-110V-TELESC	MAOFH

The DX-D 100 Navy version is prepared in production. In the field, only the detector has to be installed.

For more information refer also to *DX-D 100 - SB119 - Release of wired DX-D 60 Detector*, Document ID [70643746](#).



IMPORTANT:

For end-user, the Navy version it is considered as DX-D 100, but internally it is a DX-D 100 Wireless (Type 5411/300) system.
Observe related documents in section 14.3.

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14.1 System release version

The following table shows the software versions at *release* of the Navy version *. The table will be updated only in case the DX-D 60 firmware is updated ¹⁾.

System Component		At release: DX-D 100 Navy System Version
Release date:		01-2020
NX and related installers (controlled by ALF)	Workstation Software	NX 22.00
	Viewworks Detector Software	VDI 3.4
	Agfa Softconsole	ASC 6.1
	Sedecal SoftConsole	SC 5.8
	X-Ray Device Interface	XRDI 20.1
Varian Detector/NX	CR/DR Service Toolbox *	v 3.3
Generator	Sedecal TechServ	6.17
	Generator firmware ATP Console (U24 EPROM)	V7R1b94
	HT controller software (U5 Controller)	V5R8.10 ***
Mobile X-Ray Unit	Motion Control Board firmware	V11R3b7
Detector	DX-D 60 (tethered) firmware ¹⁾	v 1.0.1.44
SCU Box Mini	SCU Box Mini firmware **	V 1.0.3.35
Reference Bulletin:		SB 119 70643746

Blue box: These software versions are controlled by the Application Licence File (ALF).

Green box: These software or firmware elements are not controlled by the ALF and must be installed according to the applicable service documentation.

* Updates do not trigger a system version. For CR/DR Service Toolbox only: Install the latest available version.

** Detector and SCU Box firmware are related to VDI version.

*** V5R8.10 only ex-factory.

¹⁾ DX-D 60 is only released for the Navy version, not available for DX-D 100 Wireless Type 5411/300. This means, the DX-D 60 detector firmware version is listed only in this table.

For up-to-date software version releases (e.g. NX, XRDI, VDI), refer to *DX-D 100 Wireless - Service Manual*, Document ID [66210593](#)

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14.2 System installation



NOTE:

The DX-D 100 Navy version comes pre-staged. The following table shows the most efficient installation workflow. Some other sequences are possible, too.

System installation sequence:

#	Step	Reference
(1)	Unpack all components.	Mobile X-Ray Unit Service Manual, Document ID 41600560 , chapter “Startup Primer - Installation and Configuration”
(2)	Connect the DX-D 100 to the mains and switch on.	
(3)	Install latest released software versions, if applicable: <ul style="list-style-type: none"> • Install NX 22.00 (or later). • Install VDI 3.4 (or later). • Install latest firmware for SCU Box Mini and DX-D 60 detector. 	DX-D 100 - SB119 - Release of wired DX-D 60 Detector, Document ID 70643746
(4)	Perform the following NX settings: <ul style="list-style-type: none"> • Adapt date, time and time zone. • Adapt regional settings. • Edit security settings, if required. • Add users. • Perform user configuration via NX configuration tool. • Load antivirus software, if required. 	NX/MUSICA Acquisition Workstation - Service Manual, Document ID 74737949 , chapter “Installation and Configuration”
(5)	Load and adapt NX default exam tree.	Service Application Manual DX-D 100, Document ID 31424256 , chapter “Configuring the NX Workstation”
(6)	<ul style="list-style-type: none"> • Connect the DX-D 60 detector cable to the SCU Box. • Calibrate the detector. 	DX-D 40 / DX-D 45 / DX-D 60 - Service Manual, Document ID 41222172 , chapter “Calibration”
(7)	Perform Service Quality Test.	See section 6.

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#	Step	Reference
(8)	Create backup of NX configuration data.	NX/MUSICA Acquisition Workstation - Service Manual, Document ID 74737949 , chapter “Backup/restore principles”
(9)	Train customer.	Service Application Manual DX-D 100, Document ID 31424256 , chapter “Customer Training and Hands-on Assistance”

14.3 Appropriate documents for DX-D 100 Navy version

For system related information (for example repair, troubleshooting) refer to:

- *DX-D 100 Wireless - Service Manual*, Document ID [66210593](#)
- *DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Service Manual*, Document ID [41600560](#)

For information about DR detector / SCU Box Mini refer to:

- *DX-D 40 / DX-D 45 / DX-D 60 - Service Manual*, Document ID [45016244](#)

For spare parts refer to:

- *DX-D 100 / DX-D 100 Wireless - Mobile X-Ray Unit - Spare Parts List*, Document ID [30872155](#)
- *DX-D 40 / DX-D 45 / DX-D 60 - Spare Parts List*, Document ID [46149764](#)

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