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DX-D 100

Includes the following attached document:

AGFA – DX-D 100 Training and Instruction Protocol (chapter 9)

► Manufacturer

Agfa NV

Published by

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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.

► Purpose of this document

This document describes how to:

- Prepare the DX-D 100 Service Application tasks
- Configure the DX-D 100 System
- Train the customer on the DX-D 100 System

► Changes compared to previous revision

Revision 3:

- Added the Dura line XD/XD^{+} Detectors in chapter 1.5.4.1
- Added the DX-D 60 Detector in chapter 1.5.4.2
- Added successor of Barcode scanner in chapter 1.13
- Updated customer training in chapters 7.7.1 and 7.7.2
- Added Checklist - cleaning and disinfection in chapter 7.8
- Editorial changes

► Referenced documents

User Manuals are part of the Delivery.
They can also be downloaded from the Agfa Medimg Library:

- For DX-D 100: Direct Radiography → DR Equipment → DX-D 100 → User Manual
- For DX-D 100 wireless: Direct Radiography → DR Equipment → DX-D 100 wireless → User Manual
- For NX: Computed Radiography → CR Workstation Software → MUSICA Acquisition Workstation → [SW version] → User Manual

Referenced Documents	Document No. in Agfa Medimg Library
DX-D 100 User Manual	0187
DX-D 100 Mobile X-ray Unit User Manual	0188
DX-D Software Console User Manual	0189
DX-D 100 Technical Tender Database	38136666
DX-D 10G, DX-D 10C, DX-D 20G, DX-D 20C User manual	0129
DR 10e, DR 14e, DR 17e User Manual	0370
DR 10s User Manual	0351

Referenced Documents	Document No. in Agfa Medimg Library
DR 14s User Manual	0350
DX-D 30C User Manual	0197
DX-D 40C, DX-D 40G User Manual	0290
DX-D 45C, DX-D 45G User Manual	0292
DX-D 60 User Manual	0294
XD 10, XD^{+}10 User Manual	0432
XD 14, XD^{+}14 User Manual	0430
XD 17, XD^{+}17 User Manual	0434
DR Detector Calibration Key User Manual	0134
DR Full Leg Full Spine Mobile System User Manual	0166
NX User Manual	4420
NX Key User Manual	4421

LIST OF CONTENTS

1 DX-D 100 product description

The DX-D 100 is a mobile X-ray system equipped with integrated X-ray generator and NX software, X-ray tube with manual collimation and a portable DR Detector or a wireless Detector.

The mobile X-ray system is fully-motorized and the arm of the mobile unit is three-point articulated and facilitates easy patient positioning especially for examinations of immobile patients, for example in demanding trauma and ICU environments.

Limitations:

The DX-D 100 system is not intended for Mammography applications.

1.1 Solution definition

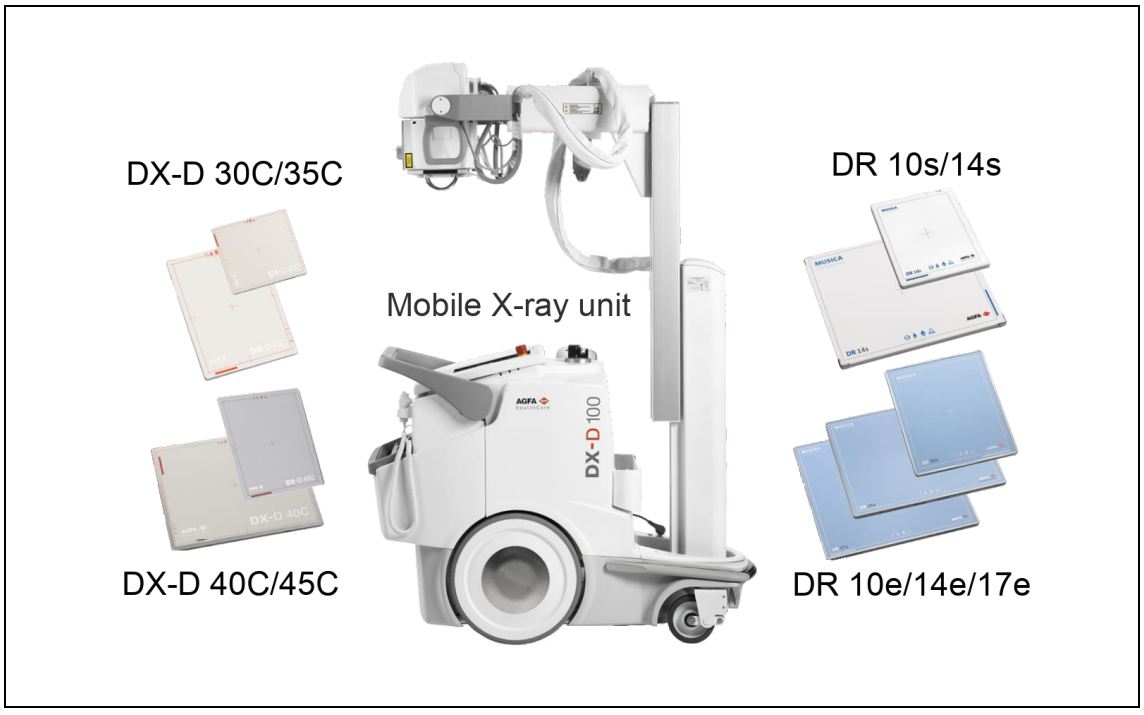

Figure 1

The DX-D 100 consists of four major sub-systems:

- X-ray system
- Tethered DR Detector or wireless DR Detector
- X-ray device interface (XRDI)
- NX Workstation on built-in PC combined with X-ray soft console

Solution options:

- Dose Area Product (DAP) meter, mounted below the collimator
- Wireless exposure button
- LED beacon light
- Bluetooth connection
- Logon keypad
- Detector battery charger DR10/14s
- Anti-scatter click-in grid
- RFID reader
- Barcode scanner
- DR Full Leg / Full Spine mobile

1.2 DX-D 100 configuration

DX-D 100 has six configurations:

Product	Type/Subtype	Detector type		System Serial Number
DX-D 100	5410/050	DX-D 10 C/G DX-D 20 C/G	tethered	A5410001xxx
DX-D 100	5411/050	DX-D 30 C DX-D 35 C	wireless	A5411001xxx
DX-D 100+	5411/300	DX-D 40 C/G DX-D 45 C/G DX-D 60 *	wireless tethered	A5411002xxx
DX-D 100+	5411/400	DR 10s C DR 14s C/G	wireless	A5411003xxx
		DR 10e C DR 14e C/G DR 17e C/G		A5411004xxx
		XD 10 / XD⁺10 XD 14 / XD⁺14 XD 17 / XD⁺17		A5411002xxx

* US Navy only

1.3 DX-D 100 variants

The DX-D 100 configuration with wireless DR Detector has two variants of the vertical column:

Figure 2

DX-D 100 with standard column DX-D 100 with telescopic column

1.4 Mobile X-ray unit

The Mobile X-ray unit consists of:

- Generator
- Tube
- Batteries
- Collimator
- Infrared Remote Control
- Control Console
- NX Workstation

Figure 3

1.4.1 Generator

The X-ray generator is controlled by multiple microprocessors, which render a higher exposure consistency, efficiency in operation and an extended tube life.
A high level of self-diagnostics streamlines serviceability, thereby reducing down time.

The default generator power is 40 kW.
Configurations with 20 kW, 32 kW and 50 kW are also available.

1.4.2 Tube

X-ray Tube	Anode angle	Tube Focus / Power	Heat Capacity (kilo Heat Units)
E7884X	12°	0.6 mm / 20 kW 1.2 mm / 50 kW	300 kHU
E7865X		0.3 mm / 3.5 kW 1.0 mm / 40 kW	140 kHU

1.4.3 Batteries

For Wheeling Motor (9 Ah)	Maximum energy capacity: 4 hours continuous driving (20 km)
For Generator	Maximum energy capacity: 137.500 mAs at 80 kVp

1.4.4 Collimator

Two collimator variants are available:

- DX-D 100 Manual collimator (default)
- DX-D 100 Manual collimator with Integrated manual filtration wheel and laser SID

Manual collimator (default)

- Minimum inherent filtration 2 mm aluminum equivalent
- Collimation area 0 x 0 cm – 43 x 43 cm at 90 cm SID
- Dose Area Product (DAP) meter below collimator

Figure 4

Manual collimator with integrated manual filtration wheel and laser SID (can only be ordered with a new unit).

Same features as the manual collimator above, and additionally:

- Collimator with double laser for optical SID (distance between focal spot and Detector)
  - 2 laser lines are projected when the SID is not 1 meter
  - 2 laser lines are projected as one line at a SID of 1 meter
- 2 laser SID measuring tool
- Integrated filtration wheel

With the filtration wheel four different positions are selectable:

- No filtration
- 0.1 mm copper + 1 mm Al (Al eq. 2.8 mm)
- 0.2 mm copper + 1 mm Al (Al eq. 5.6 mm)
- 1 mm aluminum + 1 mm Al support

Figure 5

1.4.5 MUSICA Acquisition Workstation

1.4.5.1 NX application

The NX application is integrated in the DX-D 100 Mobile Unit and supports DR only. CR exposures with DX-D 100 are possible, but have to be processed on another NX Workstation.

The NX is a workstation for image acquisition, identification, image processing and image transmission of digitized images received from an Agfa DR panel.

- The NX application is intended for linking patient and study data to images and for preparing these images for diagnostic use and sending them to a printer, an archive or a diagnostic station or burning them on CD/DVD.
- The NX application in the DX-D 100 configuration is connected to the DR Detectors to exchange image data.
- Using the X-ray Device Interface (XRDI) the NX application can send and receive X-ray exposure settings from the X-ray System Generator.
- The NX application supports a dedicated workflow to perform DR exposures.

For more information, refer to:

- NX Service Manual
- DX-D 100 System Manual

1.4.5.2 Soft console

The soft console is displayed on the 17” touch screen monitor of the DX-D 100 mobile X-ray unit.

The X-ray soft console manages the X-ray generator settings. It is displayed on the right hand side of the NX application in a separate window, which appears over the NX application, if required.

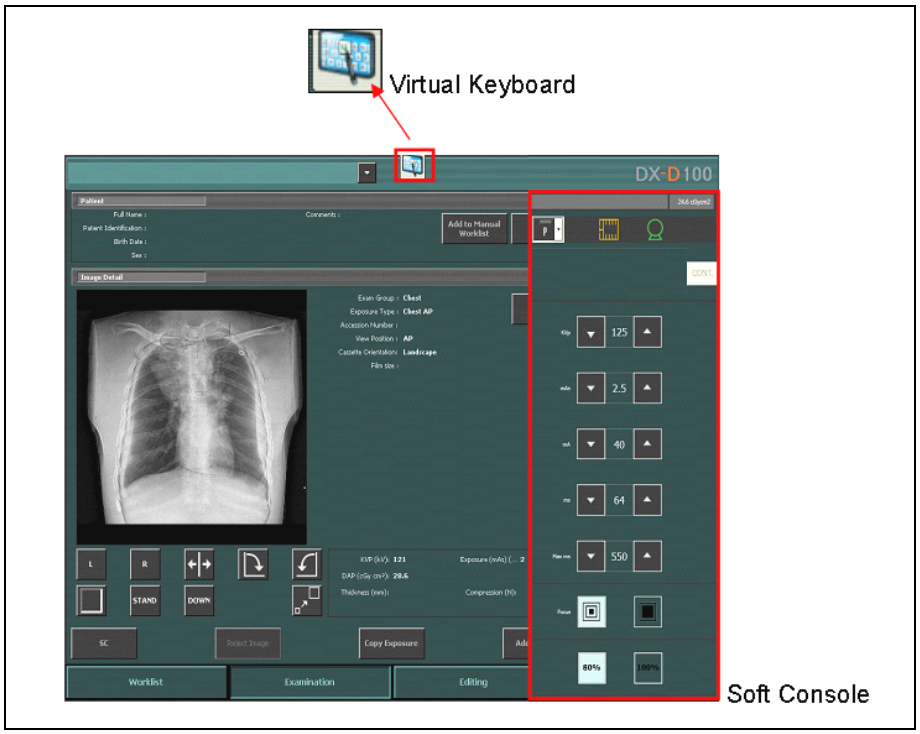

Figure 6: Soft Console and button for Virtual Keyboard

A Virtual keyboard, which appears automatically when text input is possible. It can also be activated manually via a button.

Figure 7: Virtual keyboard

1.5 Detector

1.5.1 Supported Detectors

- DX-D 10 C/G portable tethered, approx. 35 x 43 cm, End of life
- DX-D 20 C/G portable tethered, approx. 35 x 43 cm, End of life
- DX-D 30 C portable wireless, approx. 35 x 43 cm, End of life
- DX-D 35 C portable wireless, approx. 35 x 27.4 cm, End of life
- DX-D 40 C/G portable wireless, approx. 38 x 43 cm
- DX-D 45 C/G portable wireless, approx. 29 x 35 cm
- DX-D 60 C/G portable wired, approx. 46 x 46 cm, released for US Navy
- DR 14s C/G portable wireless, approx. 35 x 43 cm
- DR 10s C portable wireless, approx. 24 x 30 cm
- DR 17e C/G portable wireless, approx. 43 x 43 cm
- DR 14e C/G portable wireless, approx. 35 x 43 cm
- DR 10e C portable wireless, approx. 24 x 30 cm
- XD 10 and XD^{+}10 portable wireless, approx. 25 x 32 cm
- XD 14 and XD^{+}14 portable wireless, approx. 36 x 43 cm
- XD 17 and XD^{+}17 portable wireless, approx. 43 x 43 cm

1.5.2 Detector configuration (ex-factory)

	DX-D 100 5410/050	DX-D 100 wireless 5411/050	DX-D 100+ wireless 5411/300	DX-D 100+ wireless 5411/400		
DX-D 20C/G*	✓	-	-	-	-	-
DX-D 10C/G*	✓	-	-	-	-	-
DX-D 30C*	-	✓	-	-	-	-
DX-D 35C*	-	✓	-	-	-	-
DX-D 40C/G	-	-	✓	-	-	-
DX-D 45C/G	-	-	✓	-	-	-
DX-D 60 tethered**	-	-	✓ **	-	-	-
DR 14s C/G	-	✓	-	✓	-	-
DR 10s C	-	✓	-	✓	-	-
DR 10e	-	-	-	-	✓	-
DR 14e	-	-	-	-	✓	-
DR 17e	-	-	-	-	✓	-
XD 10/XD⁺10	-	-	-	-	-	✓
XD 14/XD⁺14	-	-	-	-	-	✓
XD 17/XD⁺17	-	-	-	-	-	✓

* End of Sale

** Released for US Navy

1.5.3 Supported mixed use

Mixed use:
Two or more Detectors of different brands (Innolux, Trixell, Canon, Vieworks) are used on one system:

- Mixed use of DX-D 30/35 and DR 10e/14e/17e Detectors, DR 14e/17e Detectors can be added to an existing systems with DX-D 30/35 (Type 5411/50)
- Mixed use of DX-D 40/45 and DR 10e/14e/17e Detectors, DR 14e/17e Detectors can be added to an existing systems with DX-D 40/45 (Type 5411/300)
- Mixed use of DR 10s/14s and DR 10e/14e/17e Detectors, DR 10s/14s can be added to an existing system with DR 14e/17e Detectors (Type 5411/400)
- DR 14e/17e can be added to an existing system with DR 10s/14s Detectors
- XD/XD^{+} in combination with DX-D 30/35 or DX-D 40/45 or DR 10s/14s or DR 10e/14e/17e *. Can replace a DX-D 40/45 or a DR 10e/14e/17e *, (Type 5411/400).

  * Win 10 only

1.5.4 Basic Detector data

1.5.4.1 XD 10, XD⁺10, XD 14, XD⁺14 and XD 17, XD⁺17

	XD 10 and XD⁺10	XD 14 and XD⁺14	XD 17 and XD⁺17
			
Receptor Type	Amorphous Silicon		
Scintillator	CsI	CsI	CsI
Data transmission	Wireless/wired	Wireless/wired	Wireless/wired
Resolution	4.0 lp/mm	Min. 3.5 lp/mm	Min. 3.5 lp/mm
Dynamic Dose Range	Max. Exposure Level 90 µGy	Max. Exposure Level 90 µGy	Max. Exposure Level 90 µGy
Size	287mm × 350mm × 15mm (11.29 x 13.77 inch x 0.59)	384.0mm × 460.0mm × 15.0mm (15.118 x 18.11 x 0.59 inch)	460.0mm × 460.0mm × 15.0mm (18.11 x 18.11 x 0.59 inch)
Effective Image Area	250.976mm x 314.464mm (9.88 x 12.38 inch)	358.4mm × 430.08mm (14.11 x 16.93 inch)	426.72mm x 426.72mm (16.8 x 16.8 inch)
Weight	XD 10: 1.95kg XD⁺10: 2.15kg (incl. battery) XD 14: One battery pack: 2.95 kg, two battery packs: 3.15 kg XD⁺14: One battery pack: 3.1 kg, two battery packs: 3.3 kg XD 17: One battery pack: 3.45 kg, two battery packs: 3.65 kg XD⁺17: One battery pack: 3.7 kg, two battery packs: 3.9 kg		

1.5.4.2 DX-D 40C/G, DX-D 45C/G and DX-D 60C/G

	DX-D 40	DX-D 45	DX-D 60
			
Receptor Type	Amorphous Silicon		
Scintillator	CsI or GOS	CsI or GOS	CsI or GOS
Data transmission	Wireless	Wireless	Wired
Resolution	3.1 lp/mm (CsI) , 2.8 lp/mm (GOS)		
Energy Range - Standard	40 – 150 kV		
Dynamic Dose Range	Max. Exposure Level 90 µGy		
Size	36.8 x 44.2 cm (14.49 x 17.4 inch)	approx. 28.7 x 35.0 cm (11.3 x 13.8 inch)	approx. 46 x 46 cm (17 x 17 inch)
Effective Image Area	35.8 x 43.0 cm (14.11 x 16.93 inch)	25.2 x 31.6 cm (9.92 x 12.45 inch)	CSI: 42.8 x 42.8 cm (16.9 x 16.9 inch) GOS: 43 × 43 cm (16.93 x 16.93 inch)
Weight	3.4 kg (7.5 lbs.) (incl. battery)	2.2 kg (4.9 lbs.) (incl. battery)	4.2 kg (9.3 lbs.)

1.5.4.3 DR 10e, DR 14e C/G and DR 17e C/G

	DR 10e	DR 14e	DR 17e
			
Receptor Type	Amorphous Silicon		
Scintillator	CsI	CsI or GOS	CsI or GOS
Data transmission	Wireless or wired	Wireless or wired	Wireless or wired
Resolution	3.36 lp/mm		
Energy Range - Standard	40 - 150 kV		
Dynamic Dose Range	0.088- 88 µGy		
Size	26.8 x 32.8 cm (10.6 x 12.9 inch)	46 x 38.4 cm (18.1 x 15.1 inch)	46 x 46 cm (18.1 x 18.1 inch)
Effective Image Area	230 x 288 mm (9.01 x 11.3 inch)	350.4 x 425.4 mm (13.8 x 16.7 inch)	424.8 x 425.4 mm (16.7 x16.7 inch)
Weight	1.65 kg (incl. battery)	2.95 kg (6.5 lbs.) (incl. battery)	3.65 kg (8.05 lbs.) (incl. battery)

1.5.4.4 DX-D 10C/G and DX-D 20C/G (End of Sale 2018)

	DX-D 10	**DX-D 20**
		
Receptor Type	Amorphous Silicon	
Scintillator	CsI or GOS	CsI or GOS
Data transmission	Cable	Cable
Resolution	3.6 lp/mm (CsI) 2.8 lp/mm (GOS)	3.6 lp/mm (CsI) 2.8 lp/mm (GOS)
Energy Range - Standard	40 - 150 kV	
Dynamic Dose Range	CsI: 0.3 µGy – 60 µGy GOS: 0.3 µGy – 75 µGy	
Size	42.7 x 35.6 cm (16.8 x 14.0 inch)	49.2 x 47.5 cm (19.4 x 18.7 inch)
Effective Image Area	42.4 x 35.3 cm (16.7 x 13.9 inch)	42.4 x 35.3 cm (16.7 x 13.9 inch)
Weight	approx. 3.9 kg (8.6 lbs.)	approx. 4.9 kg (10.8 lbs.)

1.5.4.5 DX-D 30C / 35C Detector (End of Sale 2016)

	DX-D 30C	DX-D 35C
		
Receptor Type	Amorphous Silicon	
Scintillator	CsI	CsI
Data transmission	Wireless	Wireless
Resolution	4 lp/mm	
Energy Range - Standard:	40 - 150 kV	
Dynamic Dose Range	0.03 - 50 µGy	
Size:	46 x 38.4 cm (18.1 x 15.1 inch)	30.7 x 38.4 cm (12.1 x 15.1 inch)
Effective Image Area	35.0 x 42.6 cm (13.8 x 16.8 inch)	27.4 x 35 cm (10.9 x 13.8 inch)
Weight	3.4 kg (7.5 lbs.) (incl. battery)	2.3 kg (5.1 lbs.) (incl. battery)

1.6 Anti-scatter grid

Refer to the Agfa website for specifications on the anti-scatter grids that have been found compatible with the system and the DR Detectors.

http://www.agfahealthcare.com/global/en/library/overview.jsp?ID=54332498

1.7 Infrared remote control

The Infrared remote control (wireless exposure button) permits the operator to perform exposures at a distance from the X-ray tube to protect against radiation.

The infrared remote control consists of:

- Collimator lamp button (a)
- Infrared window (b)
- Exposure button (c)

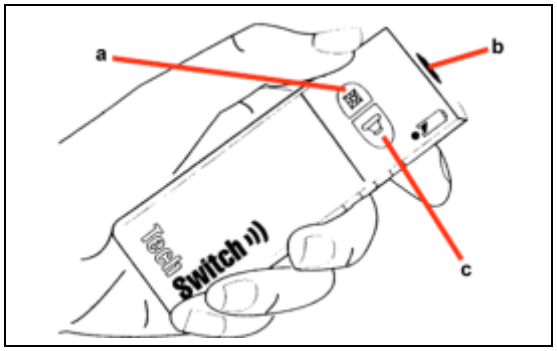

Figure 8

1.8 LED beacon light

- Led bar
- Placed under the Control console frame
- Indicating the status READY / PREP status or X-ray exposure status

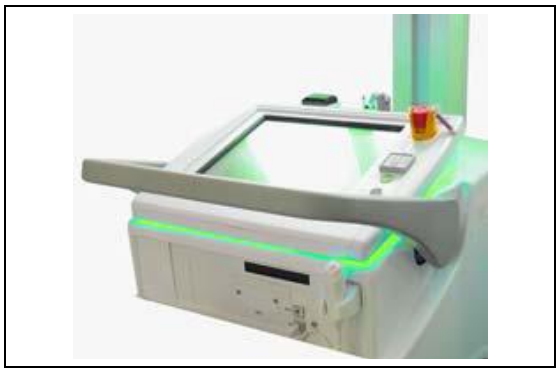

Figure 9

1.9 Numeric keypad for log on

- Numeric keypad (to replace the key lock)
- The Numeric keypad can be ordered as an option
- Only released for units based on DX-D 40/DR14s Detectors (DX-D 100+)
- Upgradeable on all systems
- When ordered together with the unit, it will be mounted in production instead of the key lock
- Can be ordered as upgrade kit for the installed base via service kit
- Access code
  Modifying, adding and deleting an access code is described in the DX-D_100_User_Manual_0187_H

Figure 10

1.10 USB - Bluetooth stick

The USB - Bluetooth stick can be used to connect accessories, for example:

- Keyboard
- Touchpad
- Mouse
- Barcode reader

Upgradeable to the installed base

Figure 11

1.11 Integrated battery charger DX-D 100+

- For type number 5411/300, DX-D 100+ with wireless Detector DX-D 40C/G and/or
  DX-D 45 C/G
  - Battery charger can charge 2 batteries simultaneously
    (1 DX-D 40 & 1 DX-D 45 battery)
  - **Not** upgradeable for the installed base

- For type number 5411/400, DX-D 100+ with wireless Detector DR 10s C and/or DR 14s C/G
  - Detector battery charger for DR 14s and 10s Detectors as option available
  - Charger will charge 1 battery of a DR 14s/10s Detector
  - Mounted in the grid storage bin (between main unit and the column)
  - Can be ordered for the installed base as service upgrade kit

Figure 12: Example of battery charger for *DX-D 40C/G* or *DX-D 45 C/G*

1.12 RFID (Radio Frequency Identification) reader for log in

- RFID (Radio Frequency Identification) reader for log in
- Log in with a card on which log in credentials are stored
- RFID Reader Kit contains reader, bracket, RFID card and tag
- To be installed by service, not pre-installed from factory
- Available through ABC and spare part code

Figure 13

1.13 Barcode scanner

The barcode scanner is used for capturing and storing barcodes, for example for patient data.

Barcode scanner Zebra CS4070-HC - End of Life

- Battery powered barcode scanner
- USB access point that receives the barcode readouts from the barcode reader via Bluetooth. The USB access point has a label with a barcode for pairing it to a barcode reader device.
- A cradle connected to power outlet to store the barcode reader and charge the battery
- To be installed by service, not pre-installed by factory
- Available through ABC and spare part code

Barcode scanner
Zebra CS4070-HC

Figure 14

The barcode scanner Zebra CS6080-HC is the successor of CS4070, which is end of life.
The barcode scanner CS6080-HC is used for capturing and storing barcodes, for example for patient data.

- Battery powered barcode scanner CS6080-HC
- Cradle
  - That stores the scanner and charges the battery
  - That receives the barcode readouts from the scanner via Bluetooth
- USB cable for power supply and data transfer between cradle and NX Workstation (length 2.1 m / 7 ft.)

Barcode scanner and cradle Zebra CS6080-HC

Figure 15

The Barcode scanner CS6080-HC will be delivered when stock of CS4070 is used up.

References:

- DX-D 100 Wireless - SB182 - Barcode Scanner CS6080-HC replaces CS4070, Document ID: 78852269
- Enclosure - DX-D 100 Wireless - Barcode Scanner Zebra CS 6080, Document ID: 78854407

1.14 DR Full Leg Full Spine Mobile

DR FLFS Mobile is released for DX-D 100 with wireless Detector. It is capable to stitch two DR images, taken with the patient in a horizontal position (AP or lateral), for example patient on an operation Table.

- Released for NX 20.0 SU1 + XRDI 19.0 or later
- Required license: NX DR FULL LEG/SPINE

DR FLFS Mobile consists of:

- Stitching cabinet
- Positioning partner

Stitching cabinet:

- To hold the wireless Detector.
- The Detector is manually shifted from position 1 to position 2.
- It has inside the “+” stitching pattern, to support the anatomic and grid stitching capabilities of the NX.
- Detectors can only be used with a click-on grid or a click-on handle.
- The following Detectors can be used with the stitching cabinet:
  - DR 14s
  - DR 14e
  - DX-D 30C
  - DX-D 40C/G

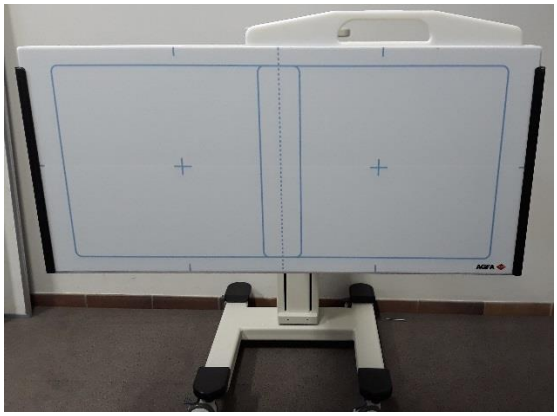

Figure 16: Stiching cabinet (in position for lateral use)

- Positioning partner
  - To hold the stitching cabinet
  - Easy to move and lift the stitching cabinet as close as possible to the patient (below or lateral to the operation Table)

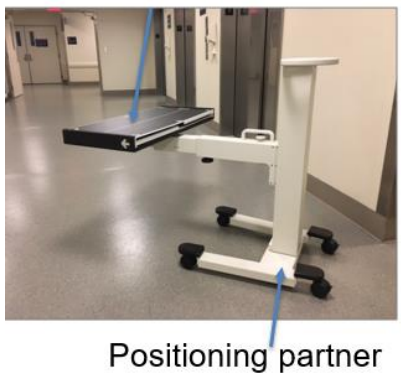

Figure 17

Principle of DR FLFS Mobile

Detector Positioning:

- From one side of the operation Table the DX-D 100 is positioned.
- From the other side the positioning partner is holding the stitching cabinet.
- Positioning here under surgical Table (see Figure 18).

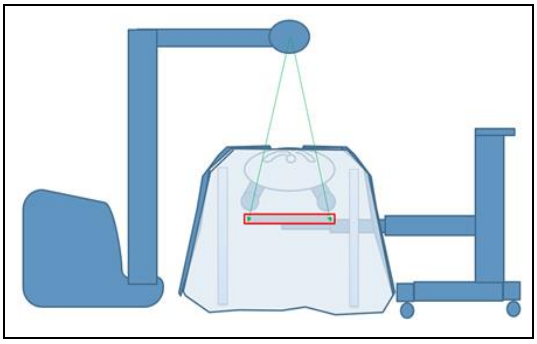

Figure 18

Detector Exposure:

- For the first exposure, the Detector is in the most left position inside the stitching cabinet, for image 2 in the most right position.
- Detector is manually shifted from left to right.
- Tube head is manually tilted between the two Detector positions
  Note: SID is not always high enough to cover both Detector positions.

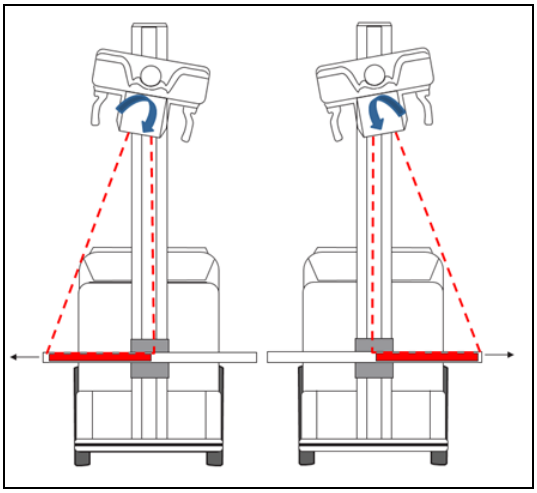

Figure 19

NOTE:

For more information, see:

- DR Full Leg Full Spine Mobile System User Manual, Document number 0166
- DX-D 100 Wireless – SB139 - DR FLFS mobile, Barcode scanner and RFID reader available for DX-D 100 Wireless, Document ID: 64229208

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.

WARNING:

Improper operation or service activities may cause damage or injuries.

Please refer to product-specific safety directions available in the different User Manuals applicable for the DX-D 100 system.

3 Task Overview

The following table gives an overview of required basic Service Application tasks.

Chapter	Activity	Description		Required Time
4	Preparation Activities	Prepare Service Application Tasks after Customer Contract Signature (organize visit).		30 min
5	System Takeover	System Takeover of the system from Field Service Engineer after installation		15 min
6	Configuration Tasks (= system set-up)	Perform NX default configuration		2 hours
7	System Test and Service Application Activity	Service Application inputs for the NX Acceptance Test		15 min
7	Customer Training and Hands-on Assistance on system level*	Radiographer training on NX, X-ray modality and integrated Detector	Operation of X-ray modality	4 hours

*One group of max. four trainees

Prerequisites to keep the timing for the basic application tasks:

1. The FSE has completed the installation. The system is fully operational (PACS, RIS, Printer, and so on).
2. The local default configuration (Exam Tree, X-ray parameters, GUI) must be available.
3. The customer has to be made aware that only the activities listed above are included in the standard offering. Additional customization or other application activities need to be ordered separately.

Restrictions:

1. No adaptation of the default exam tree and X-ray parameters
2. No protocol codes configured
3. No image quality adaptations including taste settings of MUSICA

4 Preparation Activities

DX-D 100 - Checklist for Preparation Activities		
Goal: The following list summarizes the activities that have to be carried out to prepare the DX-D 100 Service Application tasks.		
Topics:	**Done**	**Reference**
Preparation Activities		
Identify persons and representatives of the different groups which are involved in the project.	☐	*Not applicable*
Identify configuration / customization tasks for the solution together with the customer. Keep in mind the timing for the basic application. Extra activities need to be ordered separately by the customer.	☐	
Check if a grid shall be used and consider it for the exam tree configuration.	☐	
Observe if extra application relevant tasks are necessary and have been ordered.	☐	
Estimate the additional effort for adaptations of the default exam tree, if the customer does not accept the default. NOTE: A default exam tree in English is available: Download path on Agfa Medimg Library: Direct Radiography → DR Equipment → DX-D 100 → Software → DX-D 100 - Default exam tree	☐	
Take into account the required time for configuring Protocol codes. This is not included in the time for Application Services and should be offered as separate service to the customer.	☐	
Analyze the time plan according to application relevant tasks.	☐	
Current regulations and guidelines on regional, country and federal state level have to be filtered with respect to the relevance for the project.	☐	
Analyze the Customer Training Requirements (Experienced CR/DR customer, experienced with NX Workstation or customer changing from analogue to digital radiography).	☐	
Check next page →		

Topics:	Done	Reference
Preparation Activities		
Define together with the customer when and where the training should take place.	☐	
In case exposures will be performed during the training session: • Make sure that a suited room is available (X-ray room). • Make sure that the common X-ray safety regulations are followed.	☐	
End		

5 System Takeover from FSE

DX-D 100 - Checklist for System Takeover		
Goal: The following list details the topics to be checked with the Field Service Engineer to be sure that the technical set-up of the system is complete		
Topics:	**Done**	**Reference**
System Takeover Activities		
Check that all components ordered by the customer are present and technically set-up.	☐	*Not applicable*
Check which kind of Detector (Gadolinium Oxysulfide or Cesium Iodide) is installed.	☐	
Check that all (ordered) printers are available and connected.	☐	
Check the RIS connection.	☐	
Check that the PACS/Softcopy Reporting Stations are connected and images can be transferred.	☐	
Check if the DX-D 100 System User Manuals available on site (for example: on Documentation DVD which is part of the delivery)	☐	
Check if a grid shall be used.	☐	
Gather information about any open issue: for example missing components, unspecified settings, values or results.	☐	
Investigate if any open technical issues escalated according to the Agfa service procedures	☐	
End		

6 Configuring the NX Workstation

Required time for a DX-D specific NX configuration:

Approximately 30 minutes if a local and customized Exam Tree is used.
Approximately 4 hours and more have to be estimated only for Exam Tree configuration and customization if the standard default Exam Tree is used.

6.1 Overview of configuration steps

DX-D 100 - Checklist for NX Configuration		
Task		**Chapter**
Configure the X-ray Device	☐	6.3.1
Configure the DR Detector		6.3.2
Configure the DR recovery procedure		6.3.3
Exam Tree Configuration	☐	6.4/6.4.1
Import the local default exam tree for DX-D 100 or the customized exam tree.		
Configure the exposure settings.	☐	6.5.1
Configure the modality settings.		6.5.2
Configure *Add Image Pane* in *Compose Exam*.	☐	6.6.1
Arrange XRG Parameters / User Interface Configuration.		6.6.2
Enable/disable touch mode		6.6.3
Enable/disable Create DR Sequence button	☐	6.7.1
Enable/disable Automated DR FullScreen Sequence for Exposure Groups		6.7.2
Activate configuration	☐	6.8

6.2 Prerequisites

- NX Offline Tool is installed.
- XRDI software is installed.
- Generator Software SDL is installed.
- DR Detector-related software (depending on Detector) is installed:
  - Varian Detector Software VRN
  - Vieworks Detector Software VDI
  - Trixell Detector Software TRI
  - Canon Detector Software CDI
  - Innolux Detector Software IRI
- Local default DX-D 100 Exam Tree is available.
- Licenses are enabled.

6.3 Prepare the NX configuration with the NX Offline Config Tool

6.3.1 Configure the X-ray device in Device Configuration

(1) To add an X-ray device:
- Click the **New** button.
- Type in a reasonable name.
- Click **Upload** to select the corresponding X-ray device model file: Sedecal.DXD100.xml

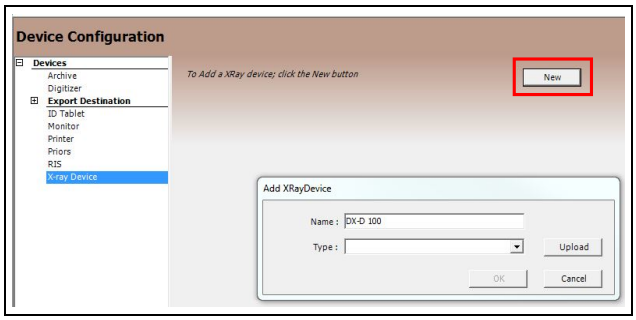

Figure 20

(2) Mark the model file Sedecal.DXD100.xml:

Click **Open** and then **OK**.

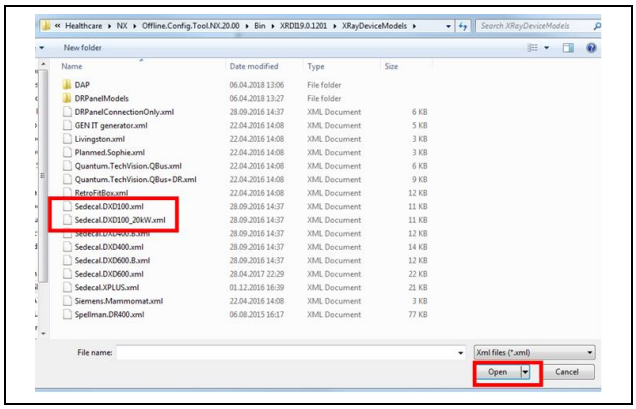

Figure 21

6.3.2 Configure the DR Detector

(1) To add a DR Detector:

- Select the X-ray device.
- In Tab Detector Settings Click **Add.**

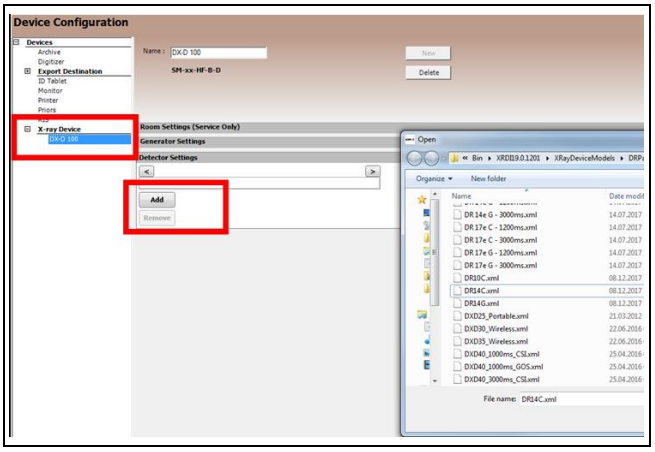

Figure 22

- Highlight the required DR Detector model.
- Click **Open** and click **OK**.

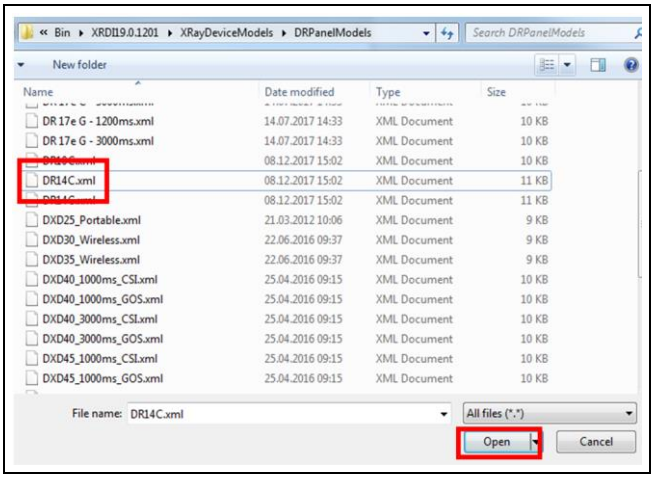

Figure 23

(2) In Detector Settings use the drop-down menu for the **Serial Number** and select: Panel 1

Note: A selection of **<Load Direction>** is not required, as it has no influence on the image view.

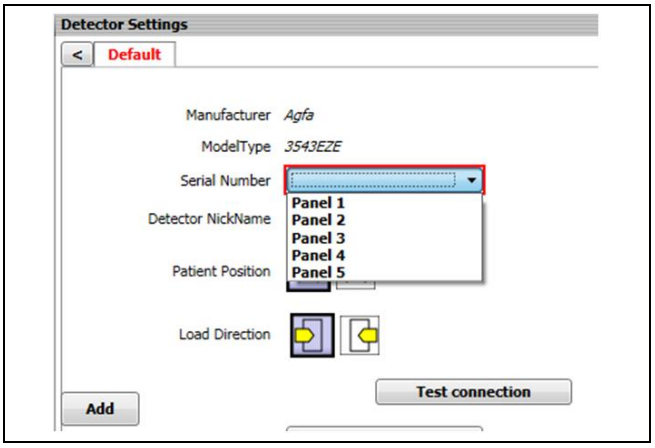

Figure 24: example

(3) Type in the **Detector Nickname**,
for example: Large, Small …

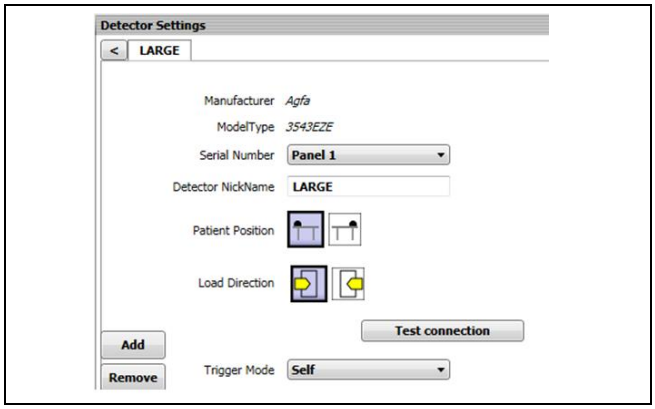

Figure 25

6.3.3 Configure the DR Recovery Procedure

If an exposure is no longer linked to a thumbnail, it will come in on NX as emergency exposure. The image processing applied to this kind of exposure is defined via Exposure Type.

To configure the DR Recovery Procedure at least one DR exposure must be set-up in the exam tree.

(1) In **Devices,** mark X-ray Device.

(2) Select **Age Group**.

(3) Select an **Exam Group**.

(4) Select an **Exposure Type**.

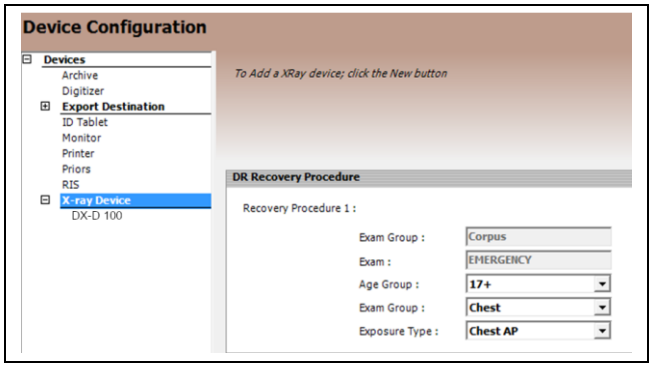

Figure 26

6.4 The default Exam Tree

IMPORTANT:

- The default factory exam tree for GenRad that is delivered on each new NX Workstation does not include the modality settings, for example the exposure settings and receptor type.
- It is the responsibility of each country/region to optimize the configuration of the default DX-D 100 Exam Tree according to local requirements and to re-use this configuration to avoid unnecessary repetition of work performed on site.

6.4.1 Importing the Exam Tree − local default or customized

To import either the local default exam tree or the customized exam tree, follow this procedure:

(1) Open the Configuration Tool.

(2) Go to: **Exam Tree Configuration**

(3) Select: **Add Exams** from **Import…**

(4) Go to the directory where either the local default exam tree or the customized exam tree is stored, for example: *C:\AGFA\Healthcare\NX\bin\Factory Settings*

(5) Open the prepared exam tree from that folder.

(6) Click **OK**.

(7) Select the exams to be included and click **Import**.

If it is not yet available in the current configuration, import the file Factory.Import.ExamTree.SystemDiagnosis.xml in the same way.

NOTE:

After the import, all exposures are visible in the exam tree, regardless of the device configuration. However, in the NX GUI the user will only see the relevant exposures.

Example:

If you import an exam tree with CR exposures, but no Digitizer is configured, the CR exposures are visible in the Configuration Tool. In contrast, no CR exposures will be visible in the NX GUI after activation.

6.5 DX-D 100 specific Exam Tree configuration

NOTE:

For the procedure of how to configure an exam tree on NX, refer to the Service Manual and Key User Manual:

- Chapter 4, Installation and Configuration Appendices of the NX Service Manual
- Chapter 6, *Configuring the Examination Tree* of the NX Key User Manual

6.5.1 Configure the exposure settings

It is possible to configure the Auto Rotate (180 °) function on exposure level to prevent that the customer has to rotate the image manually. This may appear for exposures that always have to be rotated by the user.

A target exposure index can also be fixed here, instead of using the dose monitoring tool.

(1) Go to: **Exam Tree Configuration**

(2) Select an exposure.

(3) Check/adapt the settings in *Body Part*, *Anatomic Region*, *View Position* and *Image laterality*.

(4) Select the Cassette orientation.

The Detector orientation is equal to the Cassette orientation.

(5) Fix a Target Exposure Index (optional).

(6) Fix the DAP Reference level (optional).

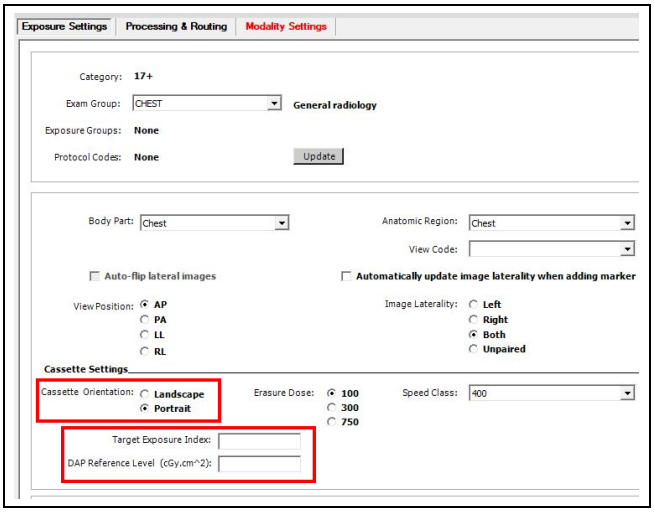

Figure 27

In case many exposures need to be configured with, for example, Cassette Orientation *Landscape*, a fast way to change the settings is to use the function **Find & Replace**.

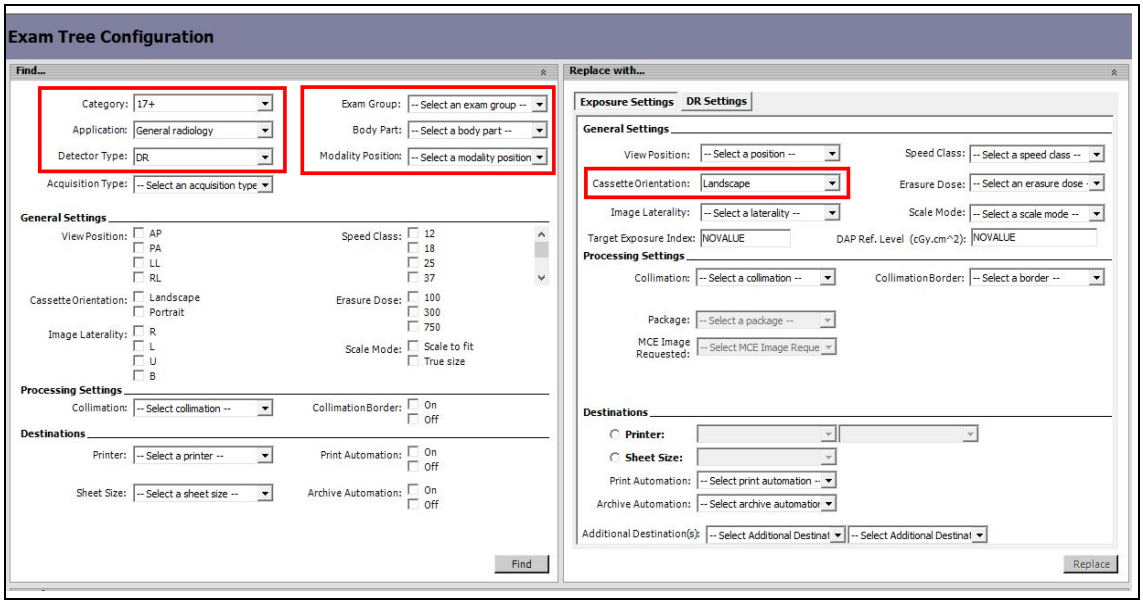

Figure 28

6.5.2 Configure modality settings

(1) Go to: **Exam Tree Configuration**

(2) Select an exposure or create a new one.

(3) In the **Modality Settings** pane go to chapter **General settings**.

The view with ViewName “1” appears. The fields for which a configuration activity is required are marked with a red rim.

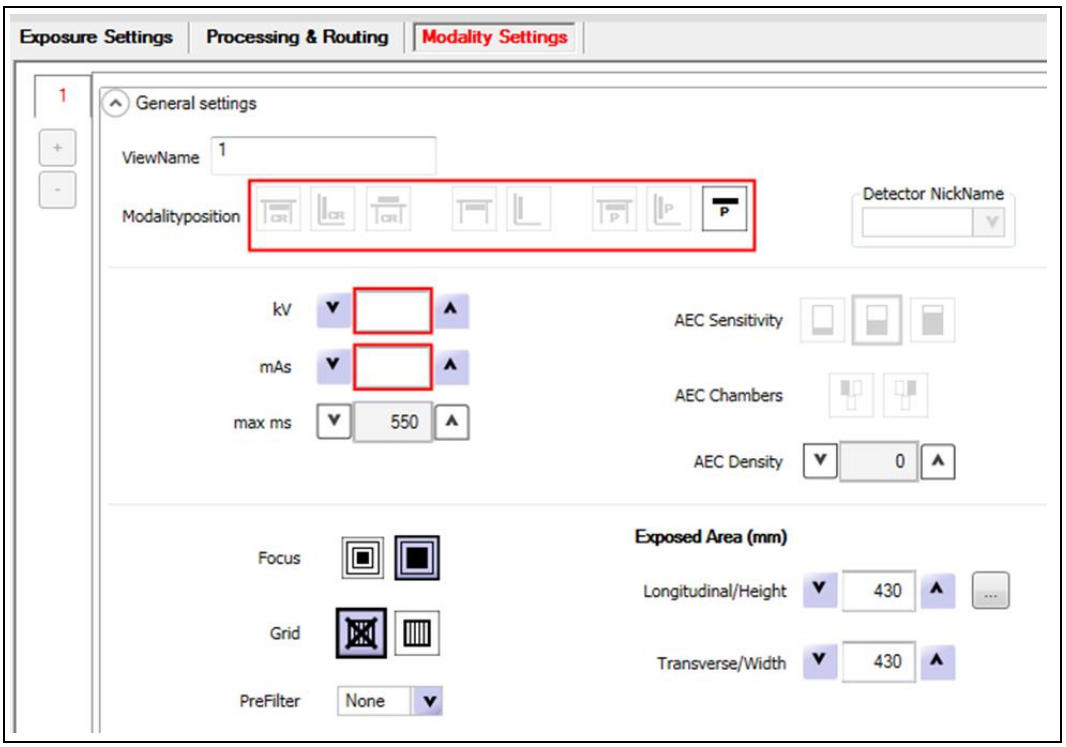

Figure 29: Example screenshot

(4) Select the correct modality position: Free DR portable

Figure 30: Example screenshot

(5) Select the **Detector Nickname**, if more than one portable Detector is configured.

Link the exposure to the Detector, which will be mainly used for this exposure.

Figure 31

(6) Type the kVp and mAs, select the max ms (= Detector integration time, see also *Note* below).

Possible ms for:

- DX-D 10 and DX-D 20: 550 or 1000 ms (user can change on the fly)
- DX-D 30C/DX-D 35C: 1000 or 3000 ms (user can change on the fly)
- DX-D 40/DX-D 45/DX-D 60: either 1000 or 3000 ms (time is defined during installation and user cannot change on the fly)
- XD /XD$^{+:}$ either 1000 or 3000 ms (user can change on the fly)
- DR 14s/DR 10s: 1000 or 3200 ms (user can change on the fly)
- DR 14e/DR 10e: either 1200 or 3000 ms (time is defined during installation and user cannot change on the fly)

There is no AEC available for DX-D 100.

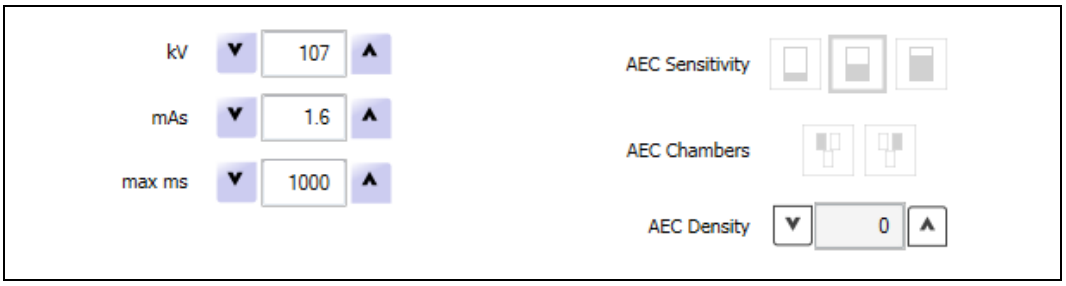

Figure 32: Example screenshot

NOTE:

The integration time is the length of time during which the Detector is activated to capture images.

(7) Select the appropriate Focus, Grid and, if necessary, the Pre-Filter.

Grid enabled: grid status visible in GUI
Grid disabled: grid status not visible in GUI

Pre-filter setting **<Manual>**: filter status visible in GUI
Pre-filter setting **<None>**: filter status not visible in GUI

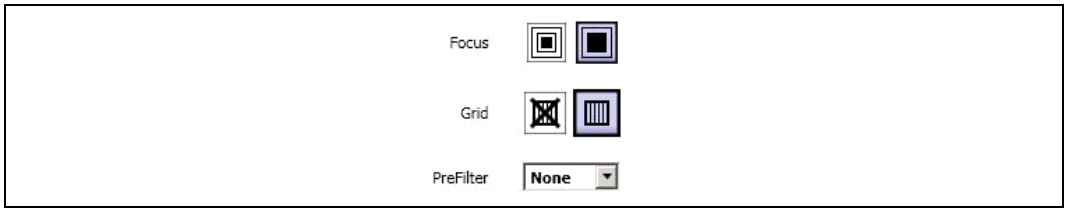

Figure 33

(8) Configure the **Exposed Area (mm)** (no automatic Collimation available, but needed for printing).

Use the drop-down menu to select the appropriate cassette format.

Alternatively, fill in the *Longitudinal/Height* in mm and the *Transverse/Width* in mm manually.

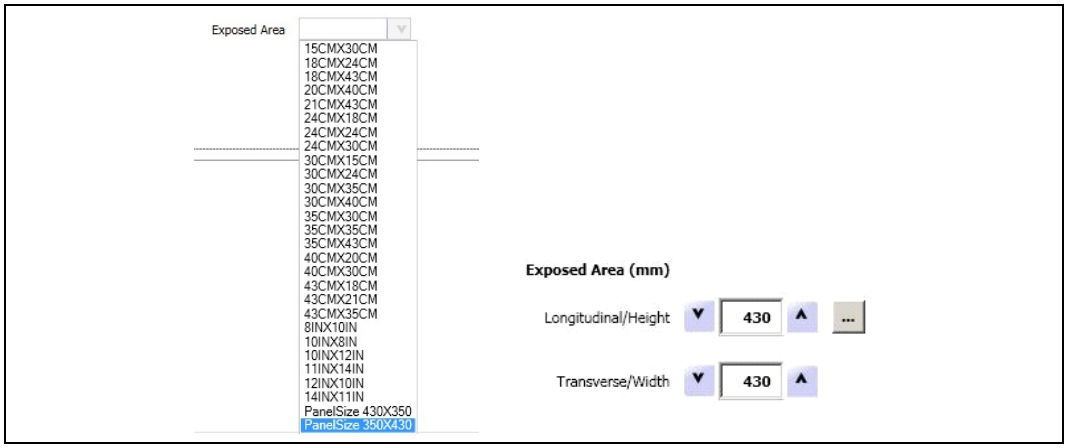

Figure 34

NOTE:

Dependencies for hardcopy printing:

The collimated area is used to determine the size of the cassette. According to the determined cassette size, the link to film size and the default printer is made.
Film orientation depends from the configured cassette settings, Cassette Orientation Landscape of Portrait.

(9) Repeat steps (2) to (8) for all exposures.

IMPORTANT:

With the tool *Edit Exposure Modality Settings* in the exam tree configuration, it is possible to adapt single or various exposures.

See Application Note - NX 2.0.8900 - NX 3.0.8900 Configuration Improvements on Agfa Medimg Library: Document ID: 47340342

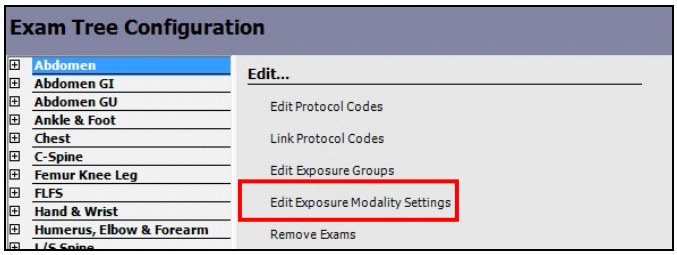

Figure 35

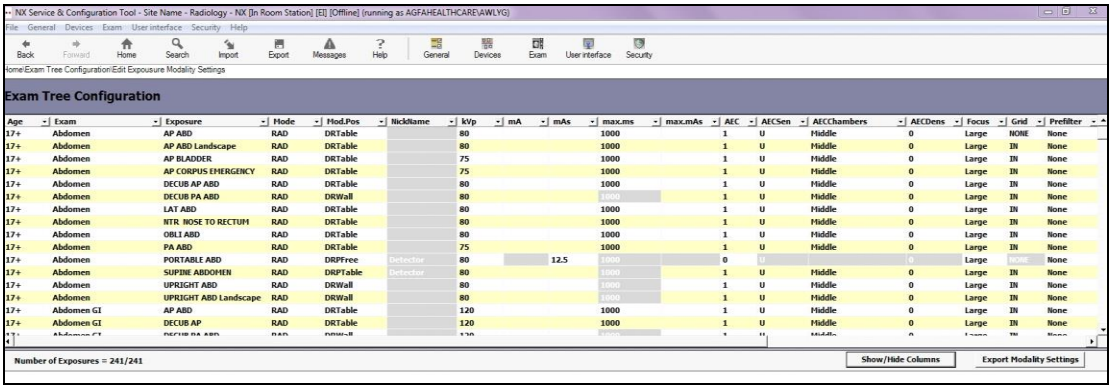

Figure 36

6.6 User Interface configuration

6.6.1 Compose exam

(1) Go to: **User Interface**

(2) In **Examination Settings** select **Configure Add Image Pane**.

(3) Open the tab **Compose Exam**.

(4) Place the exposure thumbnails for all exams and age groups at the preferred position.

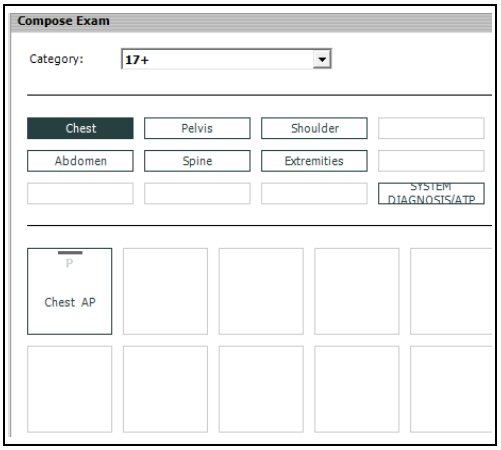

Figure 37

6.6.2 Arrange XRG parameters / User Interface configuration

(1) Go to: **User Interface Configuration → Examination Settings → Configure XRG Parameters**

(2) Open the **XRG Parameters** screen to set the displayed attributes.

(3) Select a value for **Position**.

(4) Translate the **Label** entry to local language, if necessary.

(5) In **Content** select the XRG Parameter to be displayed.

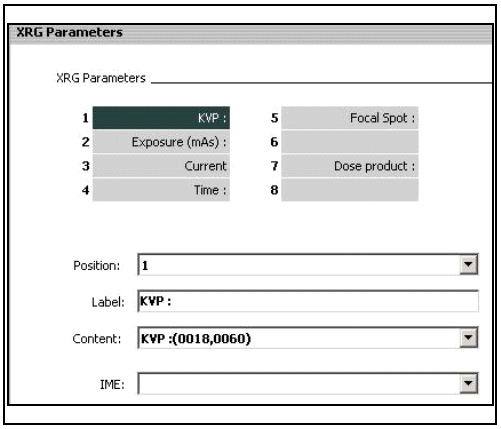

Figure 38: Example screenshot

6.6.3 Enable/disable touch mode

NOTE:

The *Enable/disable touch mode* functionality is not available in the NX Offline Config Tool. It can be enabled/disabled only on a live NX Workstation. On DX-D 100 systems, this function is always enabled by default.

(1) Go to: **User Interface Configuration → Editing Settings → General Settings → Enable/Disable touch mode**

(2) Enable/disable the *Enable touch mode* flag according to the customer preferences.

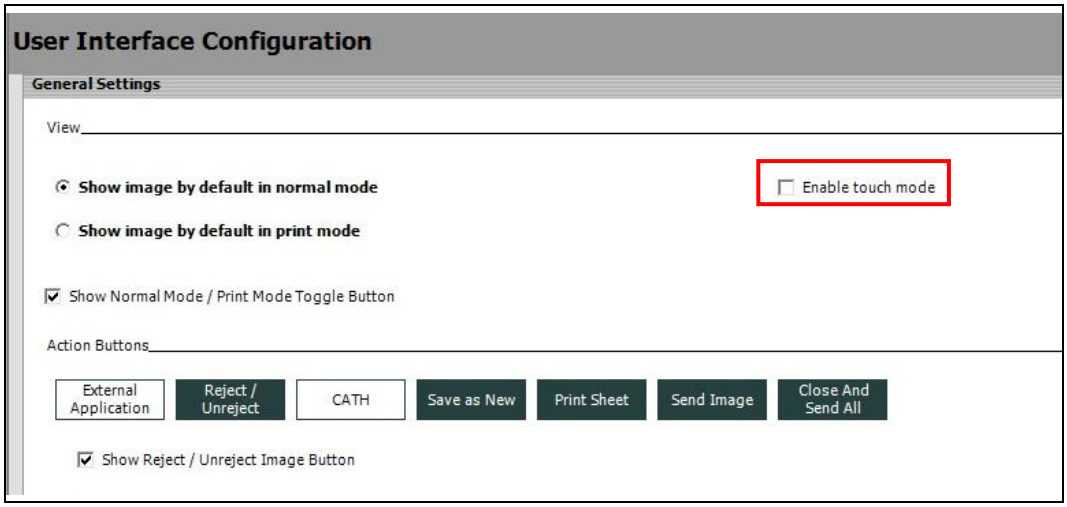

Figure 39

6.7 General configuration – Workflow management

6.7.1 Enable/disable Create DR Sequence button

(1) Go to: **General Configuration → Workflow Management → Identification**

(2) Enable/disable the **Create DR sequence button** according to the customer workflow.

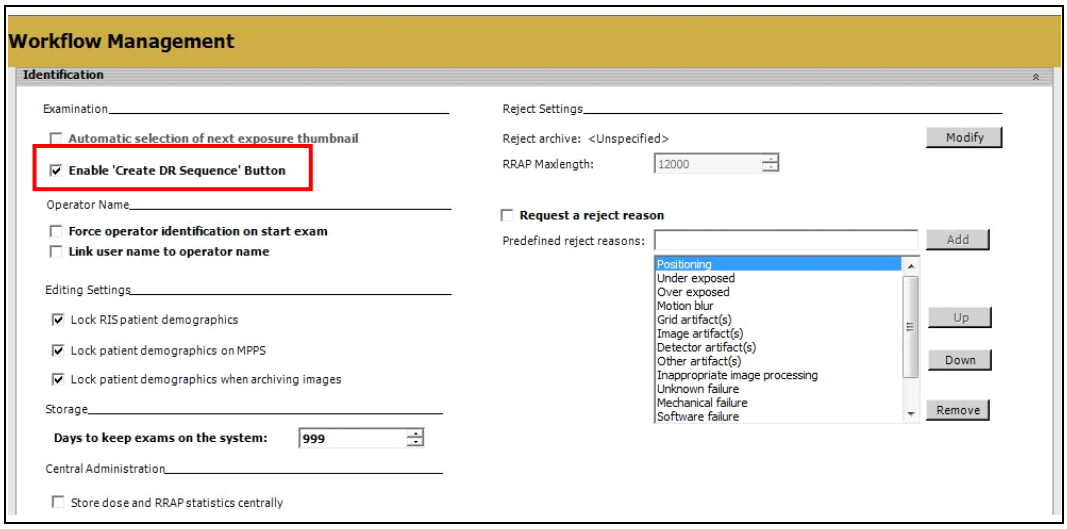

Figure 40

6.7.2 Enable/disable Automated DR FullScreen Sequence for Exposure Groups

(1) Go to: **Exam Tree Configuration**

(2) In **Edit**…, select **Edit Exposure Groups**.

(3) Enable **Automated DR FullScreen Sequence** where requested.

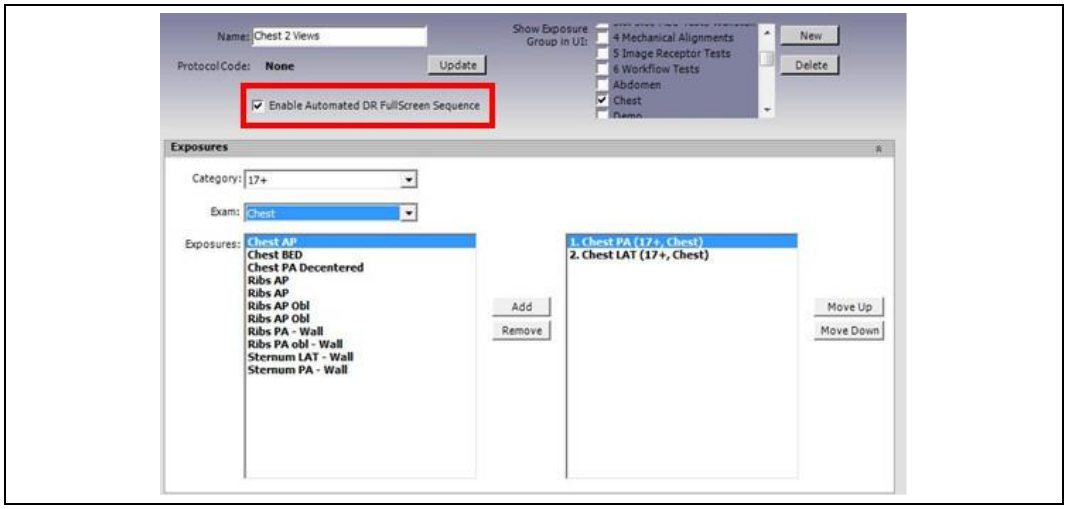

Figure 41

6.8 Activate the configuration

Apply the configuration settings. In the Configuration Tool menu select:

File → Activate Configuration

7 Customer training and hands-on assistance

7.1 Training prerequisites and preparation

For a successful training, the following assumptions should be met:

- DX-D 100 is fully installed, configured and functional.
- Date of training is defined.
- List of persons to be trained is available.
- Maximum number per training group is four participants.
- DX-D 100 Training and Instruction Protocol is prepared. See section 8. This section is attached as editable word-file to this document.
- No interruptions during training and hands-on assistance may occur.
- In case exposures will be performed during the training session:
  - Make sure that a suited room is available (X-ray room).
  - Make sure that the common X-ray safety regulations are followed.

7.2 Checklist for training - DX-D 100 workflow

DX-D 100 - Checklist for Customer Training "Workflow"		
Goal: The following list details the recommended training topics. After the training, the customer should understand the workflow of the DX-D 100 and know how to use the documentation.		
Topics:	**Done**	**Reference**
General Controls		
• Intended Use • Available User Manuals • System Overview • "Emergency Stop" button(s) • Safety directions	☐	*0188 DX-D X-Ray Mobile Unit User Manual*
Check next page →		

Topics:	Done	Reference

• Start up and Switch off Procedure DX-D 100
  ○ Startup Routine
  ○ X-ray tube warm-up procedure
• Use of protective plastic bags
• Cleaning and disinfection
	☐	

End		

7.3 Checklist for training - Mobile X-ray unit

DX-D 100 - Checklist for Customer Training "Mobile X-ray unit"		
Goal: Training participant knows the different controls of the DX-D 100 Mobile X-ray unit.		
Topics:	**Done**	**Reference**
General Controls		
Control Panel • Switch with on/off key or numeric keypad • Emergency switch off • Power line connection lamp • Collimator lamp button • Battery charge level	☐	*0188 DX-D X-Ray Mobile Unit User Manual*
X-ray Handswitch • Two stage (preparation and X-ray exposure) Advise the radiographer to verify the exposure settings for correctness before doing the exposure.	☐	
Infrared Remote Control (optional) • Exposure button • Collimator lamp button • Battery level indicator • Infrared window • Remote finder	☐	
Check next page →		

Topics:	Done	Reference
Motion Controls		
Parking Position of arm	☐	0188 DX-D X-Ray Mobile Unit User Manual
Displacement controls	☐	
Handlebar and Lockingbar	☐	
Velocity in Parking and non-Parking Position of telescopic arm	☐	
Removing “Manual clutch screws” in case of manual movement	☐	
Front bumper (sensors) and lateral bumper	☐	
Fine Positioning Controls for each driving wheel (four buttons on the hand grips)	☐	
Movement Controls of the column and telescopic arm	☐	
Collimator Controls		
Collimator lamp button	☐	
2 laser SID measuring tool (optional)	☐	
Integrated filtration wheel (optional)	☐	
Knobs for collimator blades	☐	
Meter	☐	
End		

7.4 Checklist for training - NX Workstation

Checklist for Customer Training - “NX Workstation”		
Goal: Training Participant knows how to operate the NX Workstation built into the DX-D 100.		
Topics:	**Done**	**Reference**
NX General		
Explanation of the NX User Manual	☐	NX User Manual
Intended use and limitations of the system	☐	
Check next page →		

Topics:	Done	Reference
Basic Workflow		
Opening a patient from the RIS	☐	NX Key User Manual
Manually entering patient data	☐	
Composing the examination	☐	
Selecting and Performing X-ray exposures • DR workflow • CR workflow not supported (Alternative workflow in case CR images are necessary)	☐	
Performing quality control	☐	
Editing options for example annotations	☐	
“Close and Send” Function	☐	
Worklist Window		
Different panes: • Search pane • Worklist pane • Closed Exams pane • Manual Worklist pane • Image Overview pane • Action Buttons	☐	NX User Manual
Browsing through the lists	☐	
Examination Window		
Different panes: • Patient pane • Image Detail pane • Image Overview pane • Action buttons	☐	NX User Manual
Check next page →		

Topics:	Done	Reference
Using Examination: • Image indicators as modality status, status indication of DR Detector and problem status • Tools for performing basic QC (R,L marker, Flip, Rotate) • Edit patient data • Edit image data • Finalizing the exam after the images have been received	☐	NX User Manual
Editing Window		
Advanced editing possibilities: • Adding annotations to an image and using measurement tools • Rotating or flipping an image, show / hide square marker • Zooming in or out on an image, applying shutters • Cropping • Use of window/level • Adjusting the MUSICA² image processing parameters and explaining the impact of taste adjustments on images	☐	NX User Manual NX Service Manual, chapter 5, "Software Options − MUSICA² Image Processing Software“
Printing images (including Multi Patient Print)	☐	NX User Manual
Action buttons: Reject, save as new, print sheet, send image, close and send all	☐	
Main Menu		
Different panes: • Functionality overview pane • Workspace area • Image Overview Pane • Action buttons (individually configurable)	☐	NX User Manual
Monitoring and Management • Queue Management • Delete Examination • Lock Examinations	☐	
Check next page →		

Topics:	Done	Reference
Main Menu (continued)		
Quality assurance tasks • Dose Consistency Reporting • Repeat Reject Program • Read and initialize cassettes (optional)	☐	NX User Manual
“Import” and “Export” Functions	☐	
Training for optional Application Packs		
"NX 3.0 Features License": • Full Screen Mode • Configurable UI button to call up 3rd party application • Forced entry of operator ID • Mandatory Patient fields • Multiple DICOM export destinations • Export of technical or clinical images to hard disk • Print entire study in one click	☐	NX User Manual
NX Full Leg / Full Spine stitching (optional)	☐	
Image Quality		
Highlight that the basic rules to create an X-ray exposure are still valid and important for the image quality (for example collimation of X-ray beam).	☐	Not applicable
Explain the usage of lead markers.	☐	
Explain the dependencies between X-ray dose, signal-to-noise ratio (SNR) and density.	☐	
Explain burning/clipping artifacts (exaggerated W/L settings).	☐	
Image Quality (continued)		
Highlight that the scaling factor of images is independent of real body part size.	☐	Not applicable
Explain the meaning and usage of the “Exposure Index” (EI) as dose indicator, range of over/under exposure, clipping provoked by too high exposure.	☐	
End		

7.5 Checklist for training - Soft console

DX-D 100 - Checklist for Customer Training "Soft console"		
Goal: Training participant knows how to operate the soft console of the DX-D 100 system.		
Topics:	**Done**	**Reference**
Display		
Display the soft console (three scenarios)	☐	0189 DX-D 100 Software Console User Manual
Operation Controls		

• Device status frame
  ○ Workstation drop-down list: DR Detector, Free exposure
  ○ Filter status – visible → filter required
  ○ Grid status – visible → grid required
  ○ Exposure ready
  ○ Preparation – green → ready for exposure
  ○ X-ray on
• Generator controls
  ○ Radiographic parameters (kV, mAs, mA, ms, Max ms)
  ○ Focal spot indicator (small, large)
  ○ X-ray Tube Protection → Tube Load (HU – Heating Unit)
• Error status frame
• DAP display frame
	☐	0189 DX-D 100 Software Console User Manual

End		

7.6 Checklist for training - Virtual keyboard

DX-D 100 - Checklist for Customer Training "Virtual Keyboard"		
Goal: Training participant knows how to open and work with the virtual keyboard.		
Topics:	**Done**	**Reference**
Using the virtual Keyboard		

• Behavior of virtual keyboard
  ○ Automatic opening
  ○ Floating virtual keyboard button
• Enter Button
• Close Button
	☐	*0187 DX-D Getting Started with DX-D 100*

End		

7.7 Checklist for training – Detector

7.7.1 XD 10, XD⁺10, XD 14, XD⁺14, XD 17, XD⁺17

DX-D 100 - Checklist for Customer Training Wireless Detector XD 10 / XD⁺10, XD 14 / XD⁺14, XD 17 / XD⁺17		
Topics:	**Done**	**Reference**
Operation Controls • XD Detector • DR Detector cradle • DR Detector dual battery charger • System control unit • System control unit lite • DR Detector cable • DR Detector switch	☐	*XD 10, XD⁺10 User Manual 0432* *XD 14, XD⁺14 User Manual, 0430* *XD 17, XD⁺17 User Manual, 0434* *Anti-scatter grids for DR Systems User Manual, 0037* *Disinfecting the DR Systems and DR Detectors, 0039*
Starting/stopping the XD Detector • Basic workflow DR Detector • Positioning the XD Detector • Offline image acquisition workflow • Automatic exposure detection • Attaching the handle unit with grid, without grid (XD 14/17, XD⁺14/17)	☐	
Managing network connections • Client mode configuration • Access point mode configuration	☐	

Battery and charger
• Status indicators
• Replacing a battery
• Charging a battery
  ○ In a cradle
  ○ Using power adapter
  ○ Using the DR Detector cable
• Dual battery charger
	☐	

• Cleaning and disinfection • Maintenance	☐	
• Information about grid specification and how to attach the grid (optional)	☐	
End		

7.7.2 DX-D 40 / DX-D 45 / DX-D 60

DX-D 100 - Checklist for Customer Training Wireless Detector DX-D 40C/G / DX-D 45C/G / DX-D 60		
Goal: Training participant knows how to work with the wireless Detector.		
Topics:	**Done**	**Reference**
Starting the DX-D 40C/G or DX-D 45C/G • Attachment of a fully charged battery pack • Switch on the Detector	☐	*0290 DX-D 40C, DX-D 40G User Manual* *0292 DX-D 45C, DX-D 45G User Manual* *DX-D 60C, DX-D 60G User Manual 0294* *Anti-scatter grids for DR Systems User Manual, 0037* *Disinfecting the DX-D Systems and DR Detectors webpage, 0039*
Stopping the DX-D 40C/G or DX-D 45C/G • Turn off Detector • Remove battery pack	☐	
Starting the DX-D 60 (US navy only) • Switch on the DX-D 60 (System Control Unit with cable connected)	☐	
Stopping the DX-D 60	☐	
Detector status information	☐	
Charging the battery and information about charge status	☐	
Information about grid specification and how to attach the grid (optional)	☐	
• Labels on the DR Detector • Positioning the DR Detector • Detector orientation • Charging the Detector (DX-D 40 / DX-D 45) • Use of protective plastic bag • Cleaning and Disinfection	☐	
End		

7.7.3 DR 14s / DR 10s

DX-D 100 - Checklist for Customer Training Wireless Detector DR 14s C/G and DR10s C		
Goal: Training participant knows how to work with the wireless Detector.		
Topics:	**Done**	**Reference**
Starting the DR 14s and DR10s • Attachment of a fully charged battery pack • Switch on the Detector	☐	*0350 DR 14s Detector User Manual*
Stopping the DR 14s and DR10s • Turn off Detector • Remove battery pack	☐	
Detector status information	☐	*0351 DR 10s Detector User Manual*
DR Detector sharing • Linking of Detector Additional necessary information for the customer: • In case of DR Detector sharing where the systems work in different sync mode (Exposync / Auto Trigger Mode): It is required to switch off / on the DR Detector after linking. • Before linking a DR Detector on another system, ensure that the last image has been transferred. Linking fails with error messages on NX (for example TRIMESS119) if there is still an image on the DR Detector. In this case return to the WiFi range of the previous DR Detector and wait until the image is transferred.	☐	Anti-scatter grids for DR Systems User Manual, 0037 *Disinfecting the DX-D Systems and DR Detectors webpage, 0039*
Automatic exposure detection	☐	
Charging the battery and information about charge status	☐	
DR 10s / DR 14s specific characteristics to be known by customer: • When moving the DR 10s / DR 14s DR Detector out of the WiFi range and moving back in the WiFi range, it may take up to one minute until the panel is reconnected and the thumbnail is ready for exposure	☐	
Information about grid specification and how to attach the grid (optional)	☐	

Stand by (sleep) mode and switch off automatically • Modes are activated after specific time (configurable). • Sleep mode can be deactivated with a short delay: After selecting an exposure on the NX Workstation. • Automatically switch off: DR Detector must be started again using the power button. Additional necessary information for the customer: The timers do not work in the following cases: • When in NX a thumbnail for DR 10s / DR14s is selected • When NX is not running • When the DR Detector is out of WiFi range • During DR Detector calibration • In case of a DR 10s / DR 14s related error	☐	
• Labels on the DR Detector • Positioning the DR Detector • Detector orientation • Charging the Detector • Use of protective plastic bag • Cleaning and disinfection	☐	
End		

7.7.4 DR 17e / DR 14e / DR 10e

DX-D 100 - Checklist for Customer Training Wireless Detector DR 17e, DR 14e and DR 10e		
Goal: Training participant knows how to work with the wireless Detector.		
Topics:	**Done**	**Reference**
Starting/stopping the DR 14e /DR 17e wired/wireless configuration) • Attachment of a fully charged battery pack • Basic Workflow DR Detector • Standby (sleep) mode and automatically switch off • Automatic exposure detection • Attaching the Handle Unit with/without Grid • Use of protective plastic bag • Cleaning and disinfection	☐	*0370 DR 14e, DR 17e User Manual* *Anti-scatter grids for DR Systems User Manual, 0037* *Disinfecting the DX-D Systems and DR Detectors webpage, 0039*
• DR Detector operation controls and status indicators	☐	
• Positioning the DR 14e / DR 17e	☐	
Battery and charger • Status indicators • Charging a battery	☐	
• DR 14e / DR 17e specific characteristics	☐	
• Charging the battery and information about charge status	☐	
• Detector Calibration GOS/CsI Detector	☐	
Information about grid specification and how to attach the grid (optional)	☐	
End		

7.7.5 DX-D 20 / DX-D 10

DX-D 100 - Checklist for Customer Training Detector DX-D20/DX-D10		
Site:	**Location:**	**Date:**
Goal: Training participant knows how to work with the Detector of the DX-D 100 system.		
Topics:	**Done**	**Reference**
Display		
Cleaning and Disinfection	☐	0129 DX-D 10G, DX-D 10C, DX-D 20G, DX-D 20C User manual
Calibration	☐	
Limitations for Patient Contact	☐	
Use of protective plastic bag	☐	
Information about grid specification and how to attach the grid (optional)	☐	
Display		
Labels on the DR Detector	☐	
Positioning the DR Detector	☐	
Detector orientation	☐	
Detector Cable Connector	☐	
Detector Cable Tethered	☐	
End		

7.7.6 DX-D 30C / DX-D 35C

DX-D 100 - Checklist for Customer Training Wireless Detector DX-D 30C/35C		
Goal: Training participant knows how to work with the wireless Detector.		
Topics:	**Done**	**Reference**
Starting the DX-D 30C/35C • Attachment of a fully charged battery pack • Switch on the Detector	☐	*0197 DX-D 30C, DX-D 35C User Manual* *Anti-scatter grids for DR Systems User Manual, 0037* *Disinfecting the DX-D Systems and DR Detectors webpage, 0039*
Stopping the DX-D 3C0/35C • Turn off Detector • Remove battery pack	☐	
Detector status information	☐	
Charging the battery and information about charge status	☐	
Information about grid specification and how to attach the grid (optional)	☐	
• Labels on the DR Detector • Positioning the DR Detector • Detector orientation • Charging the Detector • Use of protective plastic bag • Cleaning and disinfection	☐	
End		

7.7.7 DR Detector - calibration

DX-D 100 - Checklist for Customer Training DR Detector calibration		
Goal: The following list details the topics, which are recommended to be trained and explained to the training participant. After the training, the training participant should be able to calibrate the DR Detector.		
Topics:	**Done**	**Reference**
Calibrating the Detector		
Calibration frequency	☐	*DR Detector Calibration Key User Manual 0134*
Calibration workflow • Required material • Preconditions (for example warm-up of Detector, …) • Procedure	☐	
End		

7.8 Checklist - Cleaning and disinfection

DX-D 100 - Checklist for Customer Training Cleaning and disinfection		
Goal: The training participant knows how to clean and disinfect a DR Detector.		
Topics:	**Done**	**Reference**
Cleaning		
• Cleaning the exterior of the DX-D 100	☐	*DX-D 100 User Manual 0187*
• Cleaning the exterior of a Detector • Use of protective plastic bag	☐	*Disinfecting the DX-D Systems and DR Detectors, 0039*
Disinfecting		
• Approved disinfectants for: ○ DX-D 100 systems ○ DR Detectors	☐	*0039 Disinfecting the DX-D Systems and DR Detectors 0039*
• Safety directions for disinfection	☐	
End		

8 DX-D 100 Glossary

Term	Description
Black Border	For CR: Function of MUSICA image processing software: The black border masks non-relevant image areas, which are outside the manually collimated image area.
Collimation	1. Collimation at NX, performed by defining a new region of interest and consecutive re-processing of the image. 2. Collimation at X-ray device, made by a diaphragm, an X-ray tube head attachment consisting basically of a sheet of lead with a hole that determines the size and shape of the primary beam.
Cropping	For DR: Region of Interest/Collimated Area is detected with same algorithm as for Black Border CR images. Non-relevant image areas are not masked, but cropped.
CsI	Cesium Iodide scintillator
DAP	Dose Area Product (DAP), is a multiplication of the dose and the area exposed, often expressed in Gy x cm^2.
DAP-meter	Measurement tool to measure the DAP
DI	Deviation Index
EI	Exposure Index
FLFS	Full Leg / Full Spine
Grid	Also called anti-scatter-grid. A device constructed of alternating strips of lead and a radio-transparent medium (such as aluminum or plastic composites) which are oriented in such a way that most of the primary radiation will pass through the grid between the strips while most of the scattered radiation will intersect the lead strips and be absorbed.
Grid ratio	The ratio of the height of the lead grid strips to the distance between the strips.
GOS	Gadolinium Oxysulfite scintillator
KHU	Kilo Heat Unit, refers to the anode heat storage capacity
SID	Source Image Distance
TEI	Target Exposure Index
XRDI	X-ray Device Interface

9 AGFA – DX-D 100 Training and Instruction Protocol

After filling out this form, hand over a copy of the form to the Agfa project manager.

Site Information	
[To be adapted locally: for example name of site, name of contact person, site address *Remove this blue text bloc from final version*]	
DX-D 100 System Description	
X-ray System	**CR System**
[To be adapted locally: for example Mobile X-ray Unit, Generator, Detector, Grid, *Remove this blue text bloc from final version*]	[To be adapted locally: for example NX Workstation with SW Version, Soft Console *Remove this blue text bloc from final version*]
Objective of Training	
DX-D 100 can be operated successfully.	
Key Aspects	
[To be adapted locally, for example: DX-D 100 workflow Handling instruction of the X-ray System Moving the Mobile X-ray Unit Calibration of the DR Detector Batteries Handling of the NX Workstation: ○ Explanation of the NX Workstation user interface ○ Training of the functionalities of the NX Workstation Basic behavior in case of failure *Remove this blue text bloc from final version*]	
Notes	
[To be adapted locally: *Remove this blue text bloc from final version*]	

Participants List

Date	Name, Title	Signature

Instruction carried out by: _____

Date: _____

Signature: _____

10 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:	• 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.

11 Conventions

Highlighting of tasks		
Task number	**Task Description**	**Remark**
(1)	Connect the cable.	Examples for working steps to be performed in the listed sequence.
(2)	Switch the machine on.	

Highlighting of buttons, functions and names within a task	
(1) Press **F9** or double-click the **Refresh** button.	The **bold** typeface is used for menu topics, keyboard keys, icons, device buttons, commands etc.
(2) If the **Install client or server?** prompt appears, type **server**.	The **Courier New bold** typeface is used for system messages and prompts.