

Radiology Solutions Services

Document ID: 54016824

DX-D 400Applicable for all DX-D 400 system versions
Type 5420**This document has the following file attached:**

Maintenance Checklist, attached in section 9.

**DOCUMENT CONTROL NOTE:**

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► Manufacturer

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WARNING:

Improper operation or service activities may cause damage or injuries.

- (1) Read the *Generic Safety Direction* 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 the DX-D 400.

It does *not* contain:

- Specific service information for other target readers, for example Clinical Application Specialists or Service Managers
- Service Bulletins



NOTE:

This Service Manual is applicable for all DX-D 400 versions. It replaces all previous version-specific manuals.

0.2 Changes compared to previous revision

The following modifications have been implemented:

- Updated table in section 10.1 System version overview.
- Maintenance Checklist attached in chapter 9.

0.3 Referenced documents

Document	Reference
DX-D 400 - List of Service Documents	Document ID 54018232
Generic Safety Directions	Document ID 11849633
User Manuals	Refer to the Agfa Medimg Library
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 400.

1.2 Components of the system

The DX-D 400 System is available in three basic configurations.

The components depend on the configuration (see Figure 1 to Figure 3 next pages).

Configuration*	Table	Bucky in Table and Wallstand	Tubehead Display	Collimator	Control	Image Processing
DX-D 400 analog manual	Fixed or elevating	CR	Analog	Manual or automatic	Hard console, optional with touch screen	Wet film, NX Workstation or other CR workstation
DX-D 400 analog manual (D)			Digital			
DX-D 400 digital manual (D)		DR		Manual	Soft console	NX Workstation

* Meaning of the configuration names:

Analog: CR (Computed Radiography - requires Digitizer with cassettes)

Digital: DR (Direct Radiography - has two DR detectors built-in)

Manual: Not motorized – all movements of Table and tube are done manually

(D): Digital Tubehead Display

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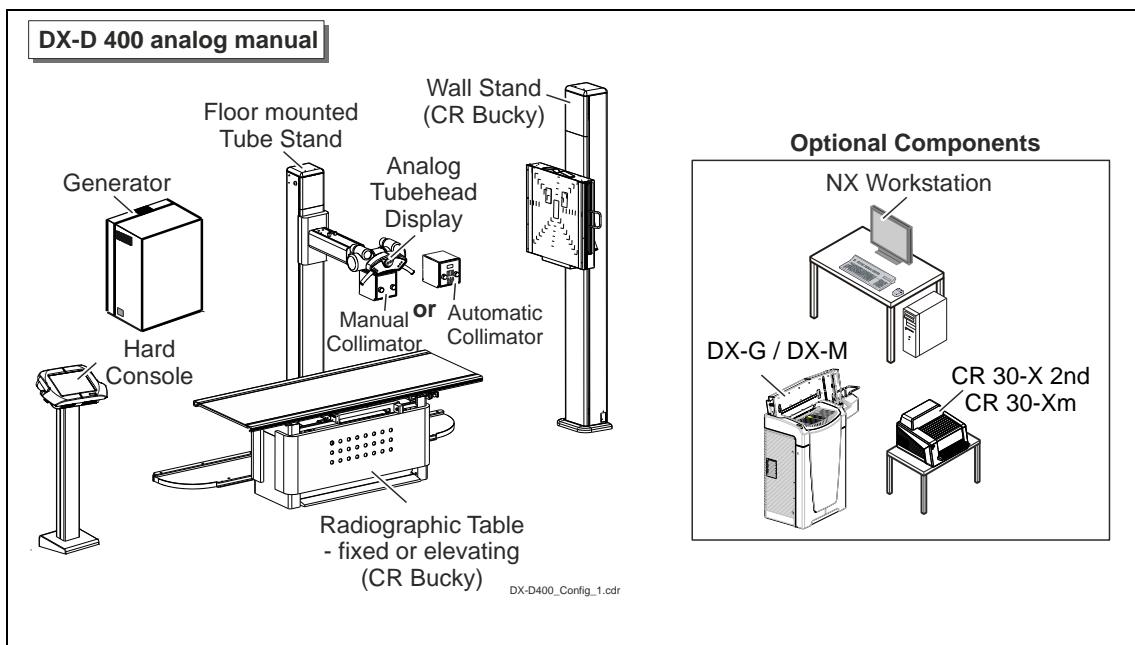


Figure 1

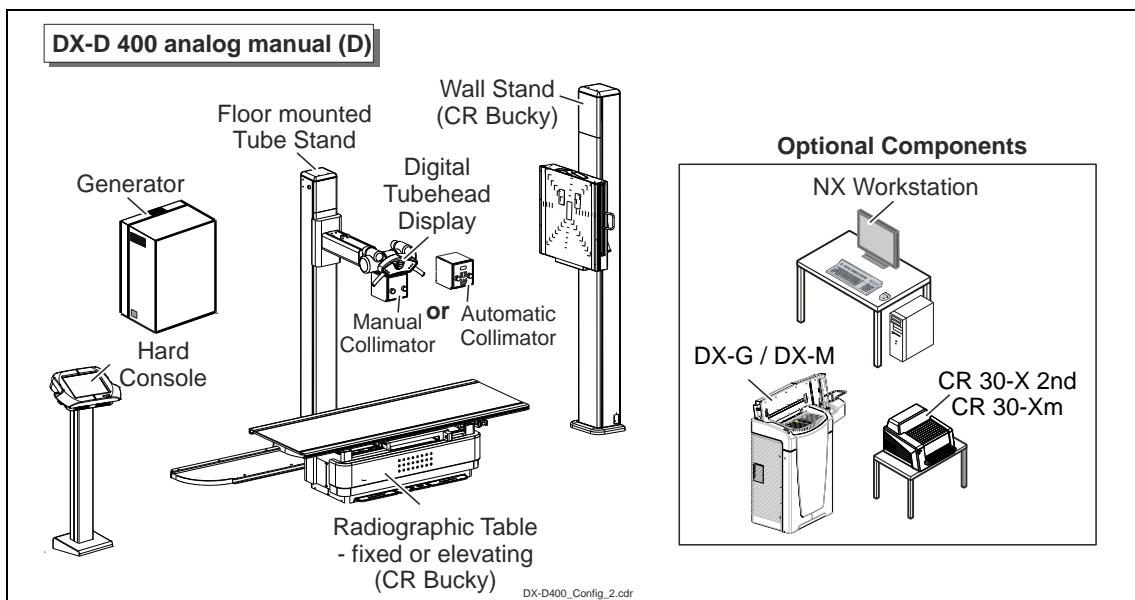


Figure 2

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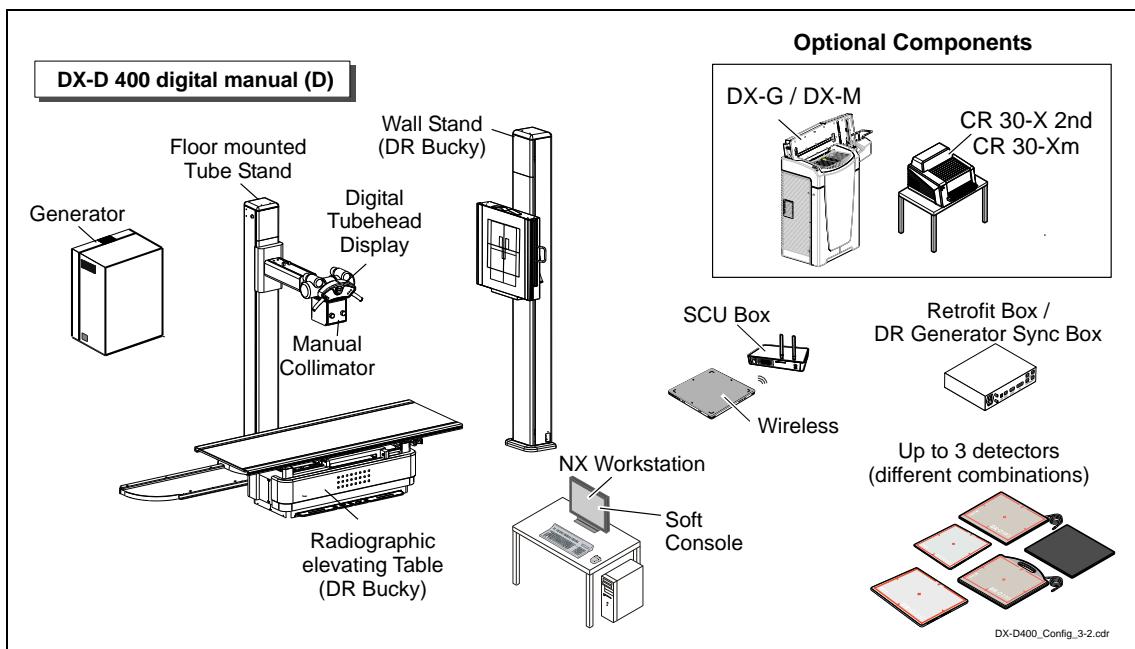


Figure 3

**NOTE:**

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

- *DX-D 400 - System Application Manual*, Document ID [32140582](#)
- Corresponding *Service Documentation* of the components

For a complete overview of component Service Documentation, refer to the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).

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1.3 Detectors

1.3.1 DR detector introduction in system version

System version	Detector introduction*	Field upgrades: Adding/replacing detectors
V1 to V2	Fixed Varian/Varex	n.a.
V3	DX-D 10 or DX-D 30/35	Mixed use of these two detector brands is <i>not</i> allowed.
V4	DX-D 40/45	DX-D 40/45 detectors can be added to or can replace DX-D 30/35 detectors.
V5	DR 10s/14s	DR 10s/14s detectors can be added to any installed detector or replace DX-D 30/35 detectors.
V6	XD 10/14/17	<ul style="list-style-type: none"> • XD 10/14/17 detectors can be added to any installed detector or replace wireless detectors. • XD 10/14/17 detectors only to be used wireless.

For detector combinations with the respective Bucky refer to next section.

1.3.2 Detector combinations with Table/Wallstand

The table below contains the detectors and Table/Wallstand combinations.

A maximum of four detectors can be used.

For free DR exposure, any portable/wireless DR detector can be added.



NOTE:

With DX-D 400 V6 the wireless detectors XD 10/14/17 have been introduced.

For installed base, these wireless detectors can be added to the system or they can replace DX-D 40/45 wireless detectors.

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DR portable/wireless detector combinations with Fixed Detectors		
Table	Wallstand	Free exposure
DX-D Fixed Detector	DX-D Fixed Detector	DX-D 10C/G
DX-D 10C/G / (DX-D 30C) / DX-D 40C/G / DR 14sC/G / XD 14/17	DX-D Fixed Detector	DX-D 30C DX-D 35C* DX-D 40C/G DX-D 45C/G* DR 14sC/G DR 10sC* XD 10/14/17

DR portable/wireless detector combinations		
Table	Wallstand	Free exposure
DX-D 10C/G / (DX-D 30C) / DX-D 40C/G / DR 14sC/G / XD 14/17	DX-D 10C/G / (DX-D 30C) / DX-D 40C/G / DR 14sC/G / XD 14/17	DX-D 10C/G DX-D 30C DX-D 35C* DX-D 40C/G DX-D 45C/G* DR 14sC/G DR 10sC* XD 10/14/17
DX-D 10C/G / (DX-D 30C) / DX-D 40C/G / DR 14sC/G (shared) / XD 14/17		

C = Cesium Iodide (CsI); G = Gadolinium Oxid Sulfite (GOS)

* DX-D 35C or DX-D 45C/G or DR 10sC detectors can only be used in free position. Small detectors are not intended to be used inside the Table or Wallstand as they cannot be clamped in the Bucky.

1.3.3 Compatibility of wireless DR detectors with Access Points

The *DR wireless networking Service Manual* contains a compatibility table in section *Product Description*, Document ID [58221971](#).

This compatibility table lists for each DR detector the released Access Points.

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2 Safety directions



IMPORTANT:

For each service intervention follow the instructions in the *Generic Safety Directions*, 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 400 - List of Service Documents*, Document ID [54018232](#).

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 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 the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).

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2.4 Safety devices

The system is equipped with the following safety devices:

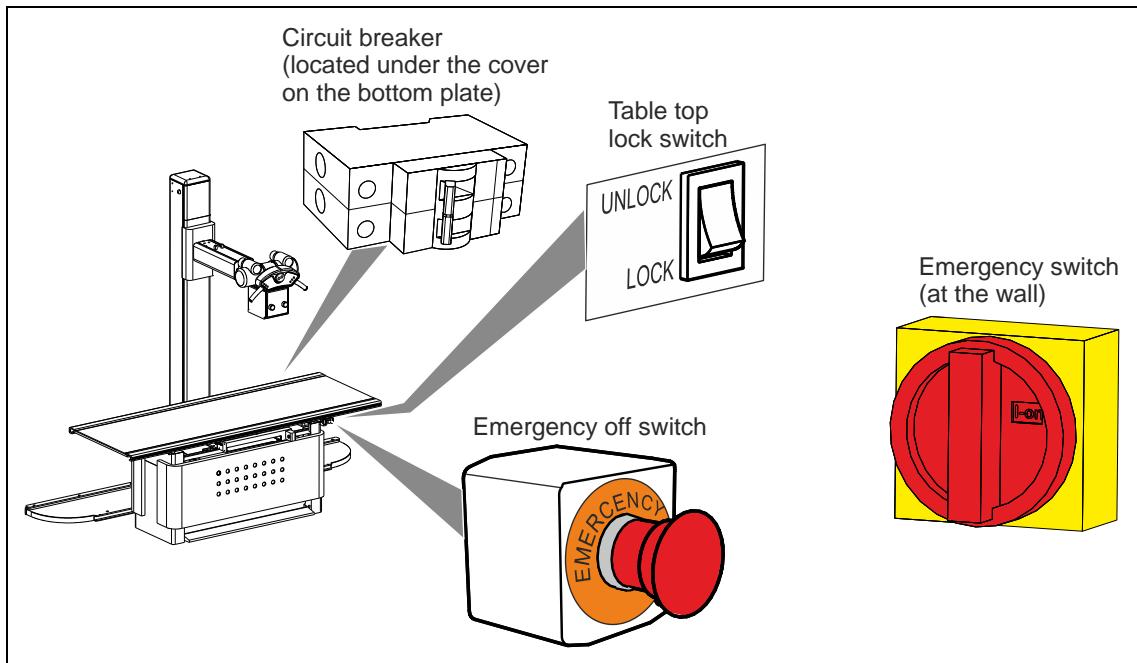


Figure 4

2.5 Emergency off switch

Immediately press the emergency off switch if a system malfunction causes an emergency situation that involves the patient, operating personnel or any X-ray system component.

- The Table and the Wallstand are OFF when the emergency off switch is pressed or when the touch screen console is OFF. Refer to Figure 4.
- The Table and the Wallstand are ON whenever the touch screen console of the X-ray generator is ON and the Table emergency off switch is *not* pressed.

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2.6 Emergency switch

The emergency switch cuts off the power for the entire system and disconnects it from the circuit.

- Use the emergency switch in case of danger to patients, operators, third parties or one of the units.
- Use the emergency switch if a dangerous situation cannot be eliminated by pressing the emergency off switch.
- Do not use the emergency switch to switch OFF the unit to avoid damaging software.

The emergency switch is located on the wall of the examination room at a well accessible place. Refer to Figure 4.

2.7 Circuit breaker

The Table includes a protective circuit breaker. This breaker should remain in ON position to allow Table operation. Refer to Figure 4.

2.8 Table-top lock switch

The Table-top lock switch is located next to the Emergency Stop Button.

This security switch disables Table-top horizontal movement avoiding any unexpected Table-top motion. Refer to Figure 4.

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3 Pre-Installation

**NOTE:**

For the pre-installation instructions of the components, refer to the corresponding Service Documentation of the components.

For a complete overview of component Service Documentation, refer to the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).

For the installation preparation refer to the following document:

#	Document	Reference
1	DX-D 400 - Project Management Guide	Document ID 31874235
2	X-Ray Generator - Service Manual - DX-D 400, chapter "Introduction"	Document ID 41655926
3	DX-D 400 - System Application Manual, chapter "Preparation Activities" Target Reader: Clinical Application Specialist	Document ID 32140582

**NOTE:**

With the Retrofit Box v2.0, all cables needed to connect the detectors (DX-D 10, Fixed, DX-D 30/35, DX-D 40) are provided with the Retrofit Box.

The cable A604531 (connection to fixed detectors) is *not* included in case the Retrofit Box is ordered via spare part number.

With the DR Generator Sync Box, only an USB cable and an Ethernet cable are provided. The detector cables are included in the link package (for new installations).

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3.1 Items to be organized locally before installation



IMPORTANT:

Have all tools and mounting material available before installation.

Refer to the following documents for details:

#	Document	Reference
1	DX-D 400 - Project Management Guide, chapter "Order Hardware, Software and Tools"	Document ID 31874235
2	X-Ray Generator - Service Manual - DX-D 400, chapter "Installation"	Document ID 41655926



TOOLS:

Portable storage medium (checked to be virus-free, for example USB flash drive)

HARDWARE:

Service PC

with the following software installed:

- Notepad++ for editing text files

3.2 Technical data



NOTE:

For the technical specifications of the DX-D 400, refer to the *User Manual* and to the *Datasheet*.

For component-specific technical data, refer to the corresponding *User Manuals* of the components.

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4 Installation and configuration



NOTE:

- For the installation and configuration instructions of the components, refer to the corresponding *Service Documentation* of the components.
For a complete overview of component Service Documentation, refer to the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).
- For required installation time and tools refer to the *DX-D 400 Project Management Guide*, Document ID [31874235](#)



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 Scope of delivery and accessories

The scope of delivery depends on the individual order. Refer to the packing list.

4.1.1 Checking shipment completeness

- (1) Check shipment completeness by comparing it with the packing list.
- (2) In case of missing parts, escalate to the next support level.
- (3) Save a detector packaging to be prepared for a detector return.

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4.2 System installation sequence



NOTE:

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

#	Step	Reference
(1)	Unpack all components	<i>DX-D 400 - X-Ray System - Service Manual</i> , Document ID 31833723 , chapter <i>System Installation Guide</i>
		<i>X-Ray Generator - Service Manual - DX-D 400</i> , Document ID 41655926 , chapter <i>Installation</i> , chapter <i>Unpacking, power line connection and cabinet installation</i>
(2)	Install Table and Wallstand.	See section 4.4
(3)	Install DX-D 400 Generator.	<i>X-Ray Generator - Service Manual - DX-D 400</i> , Document ID 41655926
	! IMPORTANT: Add a wire jumper between TB1-10 (GND) and TB1-7 (Relay 1) on AEC adaptation board (A3263--XX).	Refer to section 7.1 AEC terminates all exposures with error E95 within this document
(4)	Install the DR Generator Sync Box, if it is available in the system. For DX-D 10/20/30/35/40/45 detectors only: <ul style="list-style-type: none"> • Add the required add-on board(s) to the DR Generator Sync Box. 	See section 4.5 <i>DR Generator Sync Box - Service Manual</i> , Document ID 48350901
(5)	In case of USB connection: <ul style="list-style-type: none"> • Install the Retrofit Box Control (RFBC) software for “USB”. • Connect the DR Generator Sync Box via USB to NX. 	RFBC installation for USB, see section 4.5.2.
(6)	In case of Ethernet connection (for example when using XD 10 / XD 14 / XD 17): <ul style="list-style-type: none"> • Install the RFBC software for “Ethernet”. • Connect the DR Generator Sync Box via Ethernet and with a Network Switch to NX. 	RFBC installation for Ethernet, see section 4.5.2.
(7)	Perform first installation verification.	See section 4.6
(8)	Configure generator.	See section 4.7

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#	Step	Reference
(9)	Perform final check before “Power on”.	See section 4.8
(10)	Calibrate generator (X-ray tube).	X-Ray Generator - Service Manual - DX-D 400, Document ID 41655926 , chapter <i>Calibration</i>
(11)	For analog systems with DR Generator Sync Box: • Determine prep delay.	See section 4.9
(12)	For a system with one or more DR detectors: Install detectors. In detail this means: • Install network interface in NX, if applicable. • Install detector and related hardware and software. • Perform basic NX operating system setup. • Load license and install NX. • Configure X-ray modality, detector and DR Generator Sync Box. Note: ALL detectors must be installed in sync mode.	<i>DX-D 10 / DX-D 20 / DX-D Fixed Detector - Service Manual</i> , Document ID 41222172 , chapter <i>Installation and configuration</i> <i>DX-D 30C / DX-D 35C Detector - Service Manual</i> , Document ID 41477269 , chapter <i>Installation and configuration</i> <i>DX-D 40 / DX-D 45 / DX-D 60 - Service Manual</i> , Document ID 45016244 , chapter “ <i>Installation and configuration</i> ” <i>XD 10 / XD 14 / XD 17 - Service Manual</i> , Document ID 74858636 , chapter <i>Installation and configuration</i>
(13)	Connect cables.	Wiring diagrams, see section 13
(14)	For a system with an Agfa CR system, without DR detectors: Install Digitizer and NX and configure the X-ray modality.	Install Digitizer and NX according to the Digitizer installation instructions (part of delivery). NOTE: For X-ray modality configuration refer to one of the Detector Service Manuals. For reference see previous step. Only configure the X-ray modality. Do not configure a DR detector. Instead, configure a Digitizer as described in the Digitizer installation instructions.
(15)	Configure the softconsole.	See section 4.10
(16)	Load and adapt NX default exam tree.	<i>DX-D 400 - System Application Manual</i> , Document ID 32140582 , chapter <i>Configuration</i>

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#	Step	Reference
(17)	For a system with one or more DR detectors: Calibrate detector(s).	<i>DX-D 10 / DX-D 20 / DX-D Fixed Detector - Service Manual</i> , Document ID 41222172 , chapter <i>Calibration</i>
		<i>DX-D 30C / DX-D 35C Detector - Service Manual</i> , Document ID 41477269 , chapter <i>Calibration</i>
		<i>DX-D 40 / DX-D 45 / DX-D 60 - Service Manual</i> , Document ID 45016244 , chapter <i>Calibration</i>
		<i>DR 10s / DR 14s - Service Manual</i> , Document ID 53659727 , chapter <i>Calibration</i>
		<i>XD 10 / XD 14 / XD 17 - Service Manual</i> , Document ID 74858636 , chapter <i>Calibration</i>
(18)	Perform Automatic Exposure Control (AEC) calibration.	See section 5.1
(19)	Perform adjustments: <ul style="list-style-type: none"> • Alignment of X-ray beam • Source Image Distance (SID) indicator test • Field size indicator test • Collimator lamp brightness test 	<i>DX-D 400 - X-Ray System - Service Manual</i> , Document ID 31833723 , chapter <i>7 Adjustments</i>
(20)	For systems with digital display: Configure and calibrate tube stand.	<i>DX-D 400 - X-Ray System - Service Manual</i> , Document ID 31833723 , chapter <i>8 Configuration of tube stand</i> and <i>9 Calibration of tube stand</i>
(21)	Perform Service Quality Test and if applicable acceptance tests.	See section 6
(22)	Create backup of NX configuration data.	<i>NX/MUSICA Acquisition Workstation - Service Manual</i> , Document ID 74737949 , chapter <i>Backup/restore principles</i>
(23)	Train the customer.	<i>DX-D 400 - System Application Manual</i> , Document ID 32140582

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4.3 Recommended IP addresses

The configured IP address of the Access Point (AP), DR Generator Sync Box and IP address of the Network Interface Card (NIC) in NX depend on the detector used:

Detector	Recommended IP address			
	Network interface in NX		Access Point	DR Generator Sync Box
	IP address	Related subnet mask		
DX-D 30/35	192.168.100.20	255.255.255.0	192.168.100.200	192.168.100.30
DX-D 40/45	169.254.0.50	255.255.0.0	SCU: 169.254.2.100	169.254.0.30
XD 10/14/17	169.254.0.50	255.255.0.0	SCU or AP: 169.254.2.100	169.254.0.30
DR 10s/14s	192.168.100.20	255.255.255.0	192.168.100.200	192.168.100.30

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4.4 Table and Wallstand Installation

- (1) For Table and Wallstand installation, follow the instructions in *DX-D 400 - X-Ray System - Service Manual*, chapter 3, *System Installation Guide*, Document ID [31833723](#).
- (2) When finished, return to the overview on page 19 for the next step.

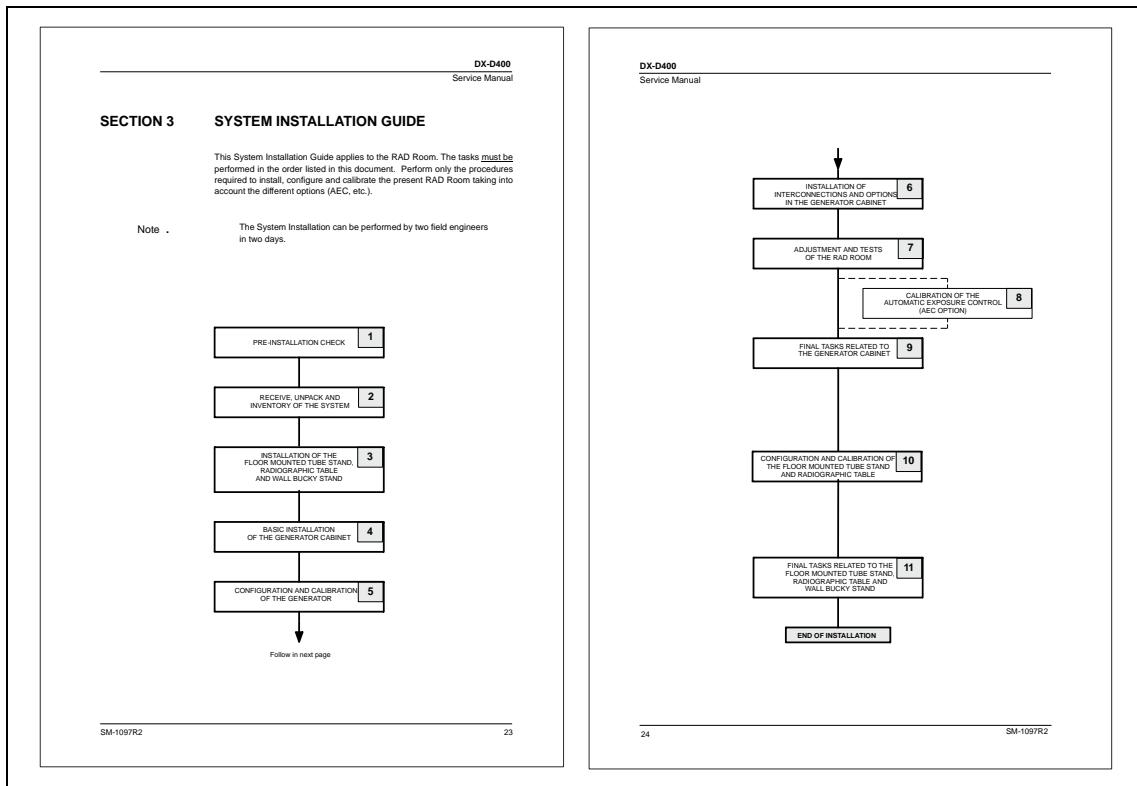


Figure 5: System Installation Guide

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4.5 DR Generator Sync Box installation

For installation details refer to *DR Generator Sync Box - Service Manual*, Document ID [48350901](#).

As from DX-D 400 V5, a DR Generator Sync Box with Ethernet connection to the NX is required for DR 10s/14s detector installations.

In case a DR Generator Sync Box replaces an installed DX-D Retrofit Box, refer to the replacement description in section 11.4.

4.5.1 Hardware installation of the DR Generator Sync Box

- (1) Mount add-on boards depending on the used DR detector types.
- (2) Connect the DR Generator Sync Box:

Analog systems with USB connection (refer to section 13.2 Wiring diagrams - analog systems):

- Connect to NX via USB.
- Connect analog systems to the PC Interface Box.
- Connect the exposure switch to the DR Generator Sync Box.
- Connect the detector cables.

Digital systems with USB connection (refer to section 13.3 Wiring diagrams – digital system):

- Connect to NX via USB.
- Connect digital systems to the generator. Exposure switch remains connected to the PC Interface Box.
- Connect the detector cables.

Analog with Ethernet connection (refer to section 13.2 Wiring diagrams - analog systems):

- Connect to NX with Ethernet cable, using a Network switch.
- Connect analog systems to the PC Interface Box.
- Connect the exposure switch to the DR Generator Sync Box.
- Connect the detector cables.

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Digital systems with Ethernet connection (refer to section 13.3 Wiring diagrams – digital system):

- Connect to NX with Ethernet cable, using a Network switch.
- Connect digital systems to the generator. Exposure switch remains connected to the PC Interface Box.
- Connect the detector cables.

4.5.2 RFBC/RFBF software installation for the DR Generator Sync Box

The Retrofit Box Controller software (RFBC) and RFB Firmware (RFBF) versions depend on installed XRD1 version (refer to section 10).

RFBC should be installed on all DX-D 400 systems. It is required (at least with temporary Ethernet connection) for the upgrade of the firmware and for prep delay.

RFBF as from version 4 can only be installed on a DR Generator Sync Box with Ethernet connection.

DR Generator Sync Box with USB connection:

- Install applicable RFBC software with **USB** option.
- Install RFBF software version **3.x** with **USB** option.

DR Generator Sync Box with Ethernet connection:

- Install applicable RFBC software with **Ethernet** option. If the RFBC software is already installed (with USB settings), just install the software again on top, using the Ethernet settings.
- Install the applicable RFBF software (as from version 4) with **Ethernet** option. For released versions refer to section 10.

4.5.3 DR Generator Sync Box configuration on NX

In case of physical connection of the detector with the DR Generator Sync Box it must be configured in the **NX configuration tool > Devices > X-Ray Device Configuration > Retrofitbox settings**. Refer to the detector service manuals for detailed descriptions:

- *DX-D 10 / DX-D 20 / DX-D Fixed Detector – Service Manual*, Document ID [41222172](#)
- *DX-D 30C / DX-D 35C Detector - Service Manual*, Document ID [41477269](#)
- *DX-D 40 / DX-D 45 / DX-D 60 - Service Manual*, Document ID [45016244](#)
- *DR 10s / DR 14s - Service Manual*, Document ID [53659727](#)
- *XD 10 / XD 14 / XD 17 - Service Manual*, Document ID [74858636](#)

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4.5.3.1 Configuration – analog systems in retrofit mode (prep delay)

- (1) Configure the DR Generator Sync Box in retrofit mode in the NX Configuration tool.

4.5.3.2 Configuration – digital systems in router mode

- (1) Configure the DR Generator Sync Box as a router in the NX Configuration tool.

4.6 Performing a first Installation verification

Perform the following checks to verify installation:

- (1) In case of an elevating Table: Check Table movement up/down.
- (2) Check movement / magnetic stops of column and X-ray tube.
- (3) Check Bucky movement in Table and Wallstand (in / out).
- (4) Check collimator light.
- (5) When finished, return to the overview on page 20 for the next step.

4.7 Configuring the generator

Purpose The generator has dip switches, which need to be set properly.

In addition, the generator workstations (that is modality positions) need to be configured according to installed grids (if any) and the AEC.

Details are described in the *X-Ray Generator - Service Manual - DX-D 400*, Document ID [41655926](#):

- (1) Check jumper and dip switch settings according to chapter *Databook*.
- (2) Configure the generator workstations according to customer preferences and the available options. Refer to chapter *Configuration*.



IMPORTANT:

In case of a digital system, which means the DR Generator Sync Box is configured as a router: All detectors connected to the DR Generator Sync Box communicate with the generator via the same connection. Therefore, all DR workstations must be set to **Bucky 1**.

In this case, Bucky 1 is the DR Generator Sync Box.

- (3) When finished, return to the overview on page 20 for the next step.

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4.8 Final check before power on

Perform the following checks before first power on:

- (1) Check whether all jumpers and dipswitches at the generator are properly set. Refer to the *Databook* in the *X-Ray Generator - Service Manual - DX-D 400*, Document ID [41655926](#).
- (2) Check whether all cables are mounted properly.
- (3) When finished, return to the overview on page 20 for the next step.

4.9 Determining prep delay (analog systems)

- Purpose** In case a DR Generator Sync Box is part of delivery at analog DX-D 400 systems, the delay time until the tube is ready has to be determined, to allow proper synchronization between exposure and image capture.
Note that this step is not required for digital systems.
There the DR Generator Sync Box is configured as router.

There are two ways of determining the prep delay:

Possibility 1: Use 2 seconds as prep delay, when configuring the DR detector. In case 2 seconds are too short (that is no exposure executed within 2 seconds after pressing the exposure button), use 3 seconds.

Possibility 2: Set generator to service mode, set exposure parameters manually in the generator “manual calibration” service menu, and determine prep delay by using DX-D Retrofit Box Service Tool/DR Generator Sync Box Service Tool.

Note that it is required to go via generator service menu. The softconsole cannot be started separately without starting the NX.

For further prep delay instructions, refer also to the *DR Retrofit - Service Manual*. For the latest published version of the DR Retrofit manual refer to the Agfa Medimg Library. See short instructions below.

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Short instructions for possibility 2:

- (1) Stop NX.

In case of DR Generator Sync Box installed with *USB connection*:

- (2) Either establish a temporary Ethernet connection or use a Service PC for prep delay. Details are described in the *DR Generator Sync Box - Service Manual*, Document ID [48350901](#).

- In case of temporary Ethernet connection: Disconnect the USB cable.
- Start the DR Generator Sync Box Service Tool.

In case of DR Generator Sync Box installed with *Ethernet connection*:

- (2) Start the DR Generator Sync Box Service Tool.

In case of **DX-D Retrofit Box** (V1/V2) installed:

- (2) Start the DX-D Retrofit Box Service Tool.

For all:

- (3) Shut down the X-ray system at the main switch.
- (4) Set the DIP switch at the generator to “Service Mode” (see Figure 7).
- (5) Start the generator service tool “TechServ”.
When an error is shown continue by clicking the **RESET ERROR** button.
- (6) Switch on the X-ray system.
- (7) Click **Manual Calibration**.
- (8) Click **User Mode**.
- (9) Adapt exposure settings.
- (10) Determine prep delay according to Figure 6.
- (11) Close the generator TechServ software.
- (12) Switch off the X-ray system.
- (13) Set the DIP switch at the generator to “Normal Mode” (refer to Figure 7).
- (14) Switch on the X-ray system.
- (15) If applicable, connect the USB cable again and remove the temporary Ethernet connection. Details are described in the *DR Generator Sync Box - Service Manual*, Document ID [48350901](#).
- (16) When finished, return to the overview on page 20 for the next step.

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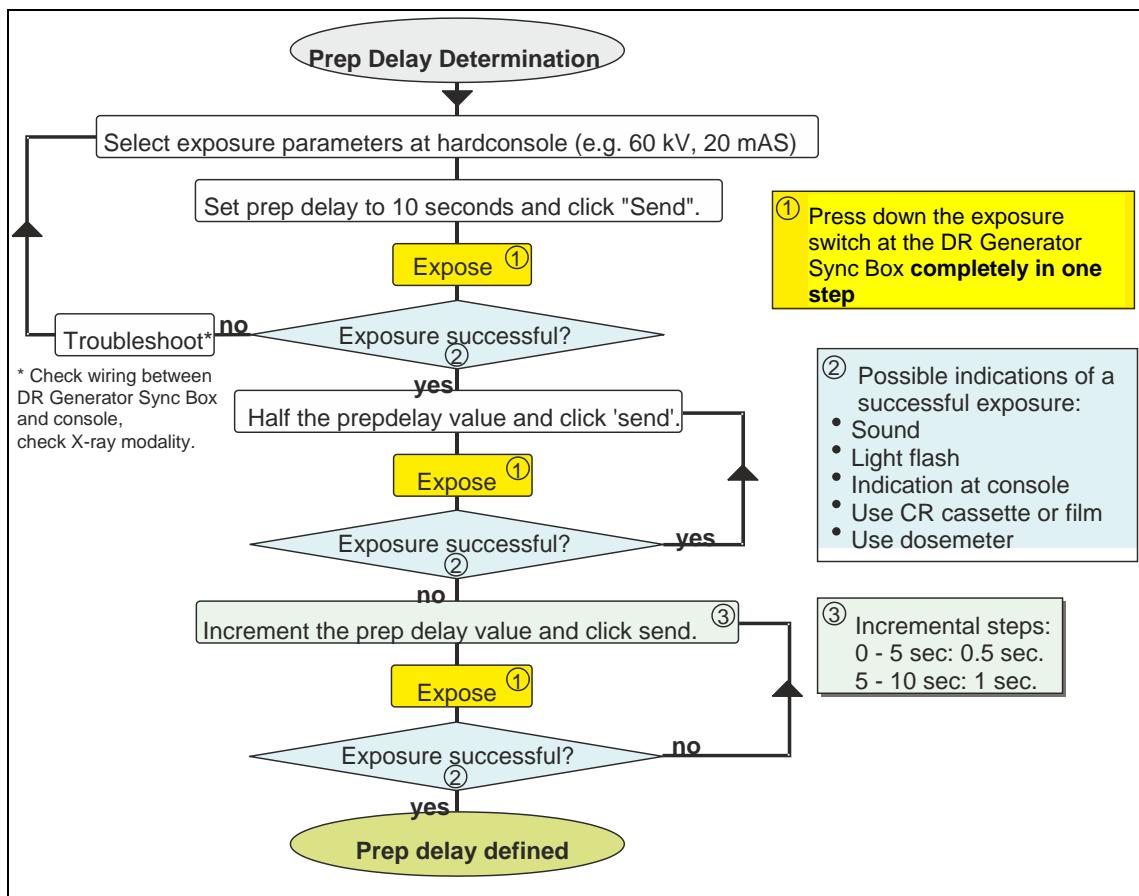


Figure 6

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4.10 Configuring the softconsole

Purpose The workstations that are displayed in the softconsole can be customized. This is done via adaptation of the **siteconfig.xml** file.

- (1) Open the following file via XML notepad++:
C:\Agfa\Healthcare\XRDI\Components\SDL\Configuration\SiteConfig.xml
- (2) Configure the parameters listed in Table 1. Do *not* adapt other parameters.
- (3) Use Table 2 as a starting point for configuration. Adapt this to the configuration on site if required.
- (4) Remove unused workstations, by deleting all lines from <WS> to </WS> (including <WS> and </WS>).
- (5) When finished, return to the overview on page 20 for the next step.

Parameter	Comment
<Number>	Generator Workspace number that will be used for that detector. Possible values: [1..8]
<WorkspaceName>	It is the joining of the <DetType> and <DetPos> fields. Possible Values: [DRTable, DRWall, DRPTable, DRPWall, DRPFree, CRTTable, CRWall, CRFree]
<DetPos>	Place where the detector is. Possible Values: [Table, Wall, Free]
<DetType>	Type of detector used for this Modality. Possible Values: [DR, DRP, CR] <ul style="list-style-type: none"> • DR = Digital Radiography - used with fixed detectors • DRP = Digital Radiography Portable - used with portable / wireless detectors (for example DX-D 10C/G, DX-30C, DX-D 35C, DX-D 40/45C/G, DR 10sC, DR 14sC/G, XD 10/14/17) • CR = Computed Radiography cassettes (= Digitizer phosphor plates or film)

Table 1

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	WS1	WS2	WS3	WS4	WS5	WS6
<Number>	1	2	3	4	5	6
<Tube>	1	1	1	1	1	1
<WorkspaceName>	DRPTable	DRPWall	CRTTable	CRWall	DRPFree	CRFree
<DetPos>	Table	Wall	Table	Wall	Free	Free
<DetType>	DRP	DRP	CR	CR	DRP	CR

Table 2: Default siteconfig.xml parameter setting for DX-D 400

**IMPORTANT:**

- Typographic errors might result in functionality problems.
- Up to 7 Modalities can be configured; each of them wrapped with the <WS> tags.
- The Workstation number is related to the generator configuration. Therefore, check the correct mapping with the generator TechService tool.
- See also the example in section 4.11.

Modality position Icon	DetType	DetPos	WorkspaceName
	DR	Table	DRTable
	DR	Wall	DRWall
	DRP	Table	DRPTable
	DRP	Wall	DRPWall
	DRP	Free	DRPFree
	CR	Table	CRTTable
	CR	Wall	CRWall
	CR	Free	CRFree

Table 3: Displayed modality position icon in the Agfa soft console per configuration option.

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4.11 Siteconfig.xml example configuration

The following is an example configuration of the **siteconfig.xml**:

```
<?xml version="1.0" encoding="utf-8"?>
<Workstations>
    <WS>
        <Number>1</Number>
        <Tube>1</Tube>
        <Position>16</Position>
        <WorkspaceName>DRPTable</WorkspaceName>
        <DetPos>Table</DetPos>
        <DetType>DRP</DetType>
        <DetParamLimits>True</DetParamLimits>
        <DetField>MAXMS</DetField>
        <DetTypedList>1000,3000</DetTypedList>
        <Detmin>0</Detmin>
        <Detmax>0</Detmax>
        <RemovableGrid>1</RemovableGrid>
    </WS>
    <WS>
        <Number>2</Number>
        <Tube>1</Tube>
        <Position>0</Position>
        <WorkspaceName>DRPWall</WorkspaceName>
        <DetPos>Wall</DetPos>
        <DetType>DRP</DetType>
        <DetParamLimits>True</DetParamLimits>
        <DetField>MAXMS</DetField>
        <DetTypedList>550,1000</DetTypedList>
        <Detmin>0</Detmin>
        <Detmax>0</Detmax>
        <RemovableGrid>1</RemovableGrid>
    </WS>
    <WS>
        <Number>3</Number>
        <Tube>1</Tube>
        <Position>32</Position>
        <WorkspaceName>CRTTable</WorkspaceName>
        <DetPos>Table</DetPos>
        <DetType>CR</DetType>
        <DetParamLimits>True</DetParamLimits>
        <DetField>MAXMS</DetField>
        <DetTypedList>550,1000</DetTypedList>
        <Detmin>0</Detmin>
        <Detmax>0</Detmax>
        <RemovableGrid>0</RemovableGrid>
    </WS>
```

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```
<WS>
  <Number>4</Number>
  <Tube>1</Tube>
  <Position>32</Position>
  <WorkspaceName>CRWall</WorkspaceName>
  <DetPos>Wall</DetPos>
  <DetType>CR</DetType>
  <DetParamLimits>True</DetParamLimits>
  <DetField>MAXMS</DetField>
  <DetTypedList>1000,3000</DetTypedList>
  <Detmin>0</Detmin>
  <Detmax>0</Detmax>
  <RemovableGrid>0</RemovableGrid>
</WS>
<WS>
  <Number>5</Number>
  <Tube>1</Tube>
  <Position>32</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>0</RemovableGrid>
</WS>
<WS>
  <Number>6</Number>
  <Tube>1</Tube>
  <Position>32</Position>
  <WorkspaceName>CRFree</WorkspaceName>
  <DetPos>Free</DetPos>
  <DetType>CR</DetType>
  <DetParamLimits>True</DetParamLimits>
  <DetField>MAXMS</DetField>
  <DetTypedList>550,1000</DetTypedList>
  <Detmin>0</Detmin>
  <Detmax>0</Detmax>
  <RemovableGrid>0</RemovableGrid>
</WS>
</Workstations>
```

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4.12 Handing over the system to the Clinical Application Specialist

- (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)
 - [Image Recovery 3266](#)
 - [MUSICA Acquisition Workstation Reporting a Problem 3270](#)

Refer to NOTE below/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 400 - System Application Manual*, Document ID [32140582](#).



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.

Image Recovery 3266

This document instructs the user on one page, how to proceed in case an image of a wireless DR detector does not arrive on NX as expected.

The document comprises four pages: One page per specific detector behavior:

- DR 10s, DR 14s
- DR 10e, DR 14e, DR 17e
- DX-D 30, DX-D 35, DX-D 40, DX-D 45
- XD 10/14/17

Purpose of the document:

- Image loss gets reduced as customer is informed how to recover images.
- No damaged detector switch on / off buttons.

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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



NOTE:

For the calibration instructions of the components, refer to the corresponding Service Documentation of the components.

For a complete overview of component Service Documentation, refer to the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).

5.1 AEC calibration

5.1.1 AEC calibration procedure

Purpose The AEC cut-off dose is not calibrated yet in production. It has to be adapted to the actual X-ray system.

The calibration is performed via an iterative procedure:

- The patient is simulated via 25 mm Al filter.
- A first exposure is made with specific settings.
- The dose is measured at a central point and compared with a recommended value, which depends on the type of detector (CsI or GOS).
- In case the customer wants a different cut-off dose, a reference table (see section 5.1.2) can be used to map the measured dose on the Bucky with the desired cut-off dose. This reference table is regarding the X-ray dose attenuation by the Bucky. The reference table is not required, if the dose meter is mounted below the central AEC chamber, together with the DR detector (DR detector also should be in due to backscatter radiation).
- If the measured dose is too high, the AEC gain is adjusted this way that the AEC cuts off the X-ray tube earlier and vice versa.
- The exposure is repeated and the AEC is adjusted again if required, until the measured dose corresponds to the AEC cut-off dose in the reference table.

Note that the balancing of the three AEC cells is done in production and does not have to be repeated.

After AEC calibration the generator has to be adjusted to AEC KV tracking curve 2. This adjusts the AEC to other kVs used for the exposure.



REQUIRED TOOLS:

- Calibrated dose meter; tape to fix the dose meter at the Wallstand
See also Application Note *Selecting the right Dosimeter and recalibrating Measurement Devices*, Document ID [32306219](#).
- Anti-scatter grid (either 130 or 215 l/inch – 130 l/inch recommended)
- 25 mm Al filter

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Exposure conditions (80 kV and always with grid):

- Select at NX soft console: 80 kV / large focus / central AEC chamber / middle sensitivity / density = 0.
- Use SID = 100 cm for Table / SID = 150 cm for Wallstand.
- Use anti-scatter grid (130 l/inch recommended).
- Open collimation fully and mount the 25 mm Al filter.

5.1.1.1 AEC calibration in case of a removable grid**AEC calibration for the Table:**

- (1) Insert grid.
- (2) Select a flatfield thumbnail from system diagnosis on the NX Workstation.
- (3) Make the first exposure.
- (4) Measure the dose on top of the Bucky and compare it with the Agfa recommended value or the cut-off dose requested by the customer. Refer to tables in section 5.1.2.
Agfa recommended values:
 - For CsI detector: AEC cut-off dose of 2.5 microgray
 - For GOS detector: AEC cut-off dose of 3.2 microgray
- (5) Adapt the cut-off dose via the potentiometer at the AEC.
- (6) Repeat the procedure, until the required dose is reached.

AEC calibration for the Wallstand:

Same proceeding like for the Table.

Difference: SID is 150 cm

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5.1.1.2 AEC calibration in case of a non-removable grid

AEC calibration for the Table:

- (1) Mount the dose meter together with the DR detector in the Bucky.
- (2) Select a flatfield thumbnail from system diagnosis on the NX Workstation.
- (3) Make the first exposure.
- (4) Measure the dose and compare it with the Agfa recommended value or the cut-off dose requested by the customer. Refer to tables in section 5.1.2
Agfa recommended values:
 - For CsI detector: AEC cut-off dose of 2.5 microgray
 - For GOS detector: AEC cut-off dose of 3.2 microgray
- (5) Adapt the cut-off dose via the potentiometer at the AEC.
- (6) Repeat the procedure, until the required dose is reached.

AEC calibration for the Wallstand:

Same procedure as for the Table.

Difference: SID is 150 cm

5.1.1.3 Adapting the AEC kV tracking curve at the generator

For details to the following instructions refer to

X-Ray Generator - Service Manual - DX-D 400, Document ID [41655926](#), chapter
“Extended memory setting”.

- (1) Set the DIP switch at the generator to “Service Mode” (see Figure 7).
- (2) Start the generator service tool “TechServ”.
When an error is shown continue by clicking the **RESET ERROR** button.
- (3) Adapt the extended memory location E08 to **2**.
This way the correction curve “2” is used for AEC 1 in the Table.
- (4) Adapt the extended memory location E10 to **2**.
This way the correction curve “2” is used for AEC 2 in the Wallstand.
- (5) Close the generator TechServ” software.
- (6) Set the DIP switch at the generator to “Normal mode” (refer to Figure 7).

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5.1.2 Reference tables for AEC cut-off doses

5.1.2.1 Table with grid

Recommended for CsI detector: AEC cut-off dose of 2.5 microgray
Recommended for GOS detector: AEC cut-off dose of 3.2 microgray

AEC cut-off dose	Dose on the Bucky	AEC cut-off dose	Dose on the Bucky
1	3.24	4.1	13.08
1.1	3.56	4.2	13.39
1.2	3.88	4.3	13.71
1.3	4.19	4.4	14.03
1.4	4.51	4.5	14.35
1.5	4.83	4.6	14.66
1.6	5.15	4.7	14.98
1.7	5.46	4.8	15.30
1.8	5.78	4.9	15.62
1.9	6.10	5	15.93
2	6.41	5.1	16.25
2.1	6.73	5.2	16.57
2.2	7.05	5.3	16.88
2.3	7.37	5.4	17.20
2.4	7.68	5.5	17.52
2.5	8.00	5.6	17.84
2.6	8.32	5.7	18.15
2.7	8.64	5.8	18.47
2.8	8.95	5.9	18.79
2.9	9.27	6	19.11
3	9.59	6.1	19.42
3.1	9.90	6.2	19.74
3.2	10.22	6.3	20.06
3.3	10.54	6.4	20.37
3.4	10.86	6.5	20.69
3.5	11.17	6.6	21.01
3.6	11.49	6.7	21.33
3.7	11.81	6.8	21.64
3.8	12.13	6.9	21.96
3.9	12.44	7	22.28
4	12.76		

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5.1.2.2 Wallstand with grid

Recommended for CsI detector: AEC cut-off dose of 2.5 microgray

Recommended for GOS detector: AEC cut-off dose of 3.2 microgray

AEC Cut-off Dose	Dose on the Bucky
1	2.77
1.1	3.03
1.2	3.28
1.3	3.54
1.4	3.80
1.5	4.06
1.6	4.31
1.7	4.57
1.8	4.83
1.9	5.09
2	5.35
2.1	5.60
2.2	5.86
2.3	6.12
2.4	6.38
2.5	6.63
2.6	6.89
2.7	7.15
2.8	7.41
2.9	7.67
3	7.92
3.1	8.18
3.2	8.44
3.3	8.70
3.4	8.95
3.5	9.21
3.6	9.47
3.7	9.73
3.8	9.98
3.9	10.24
4	10.50

AEC Cut-off Dose	Dose on the Bucky
4.1	10.76
4.2	11.02
4.3	11.27
4.4	11.53
4.5	11.79
4.6	12.05
4.7	12.30
4.8	12.56
4.9	12.82
5	13.08
5.1	13.33
5.2	13.59
5.3	13.85
5.4	14.11
5.5	14.37
5.6	14.62
5.7	14.88
5.8	15.14
5.9	15.40
6	15.65
6.1	15.91
6.2	16.17
6.3	16.43
6.4	16.69
6.5	16.94
6.6	17.20
6.7	17.46
6.8	17.72
6.9	17.97
7	18.23

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6 Service Quality Test / Acceptance Test



NOTE:

The Service Quality Test (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 the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).

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7 Troubleshooting



NOTE:

- For the repair instructions of the components, refer to the corresponding *Service Documentation* of the components.
- For a complete overview of component Service Documentation, refer to the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).
- For the escalation procedure refer to the *Field Service ABCs*, Document ID [25722561](#).

7.1 AEC terminates all exposures with error E95

Symptom The AEC terminates all exposures with error E95.
Cut-off dose calibration is not possible either.

Cause Invalid cell selection signal for the Claymount Pre-amplifier.

Solution (1) Place a wire jumper between TB1-10 (GND) and TB1-7 (Relay1) on AEC adaptation board (A3263--XX).

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8 Repair



NOTE:

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

For a complete overview of component Service Documentation, refer to the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).

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9 Maintenance

For preventive maintenance of the DX-D 400 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 400 - Maintenance Checklist, Document ID [78204716](#).



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 released software versions with their features and limitations are described in the related Service Bulletins. 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 Application License File (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 *XRD1 - Service Manual*, Document ID [72453884](#).

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

* 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 400 System Version*		
System Component		V 3.0	V 3.1	V 3.1.12
Release date:		08-2013	01-2014	01-2014
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 7.3
	Canon Detector Software	CDI 3.1	CDI 3.2	CDI 3.2
	Vieworks Detector Software	n.a.	n.a.	n.a.
	Trixell Detector Software	n.a.	n.a.	n.a.
	Agfa Softconsole	ASC 1.0	ASC 1.1	ASC 1.1
	X-Ray Device Interface	XRDI 15	XRDI 15	XRDI 15
	Sedecal Generator Software	SDL 1.0	SDL 1.1	SDL 1.1
	RFB controller software	n.a.	n.a.	n.a.
Varian Detector/NX	CR/DR Service Toolbox *	v 1.1	v 2.0	v 2.0
Generator	Sedecal TechServ	6.14	6.14	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b62	V7R1b65	V7R1b65
	Generator firmware LV DRAC (U17 EPROM)	V10R3.8	V10R3.10.0	V10R3.10.0
	Generator firmware HT controller (U5 Controller)	V5R8.6	V5R8.6	V5R8.9
Detector	DX-D 40 v1 firmware **	n.a.	n.a.	n.a.
	DX-D 40 v2 firmware **	n.a.	n.a.	n.a.
	DX-D 45 firmware **	n.a.	n.a.	n.a.
	XD 10/14/17 firmware	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	n.a.	n.a.	n.a.
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	V 2.0.0400	V 2.0.0400	V 2.0.0400
	DR Generator Sync Box firmware	n.a.	n.a.	n.a.
Reference Bulletin:		SB 04 40035975	SB 09 42399059	SB 12 43878185

Blue box: These software versions are controlled by the 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 is related to VDI version.

* 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 400 System Version*				
System Component		V 3.1.20	V 3.1.30	V 3.1.50
	Release date:	03-2014	06-2014	01-2015
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
	Canon Detector Software	CDI 3.2	CDI 3.2	CDI 3.2
	Vieworks Detector Software	n.a.	n.a.	n.a.
	Trixell Detector Software	n.a.	n.a.	n.a.
	Agfa Softconsole	ASC 1.1	ASC 1.1	ASC 1.1
	X-Ray Device Interface	XRDI 15	XRDI 15 SU1	XRDI 15 SU1
	Sedecal Generator Software	SDL 1.1	SDL 1.1	SDL 1.1
	RFB controller software	n.a.	n.a.	n.a.
Varian Detector/NX	CR/DR Service Toolbox *	v 2.0	v 3.0	v 3.0
Generator	Sedecal TechServ	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b65	V7R1b65	V7R1b78
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0	V10R3.10.0	V10R3.10.0
	Generator firmware HT controller (U5 Controller)	V5R8.9	V5R8.9	V5R8.9
Detector	DX-D 40 v1 firmware **	n.a.	n.a.	n.a.
	DX-D 40 v2 firmware **	n.a.	n.a.	n.a.
	DX-D 45 firmware **	n.a.	n.a.	n.a.
	XD 10/14/17 firmware	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	n.a.	n.a.	n.a.
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	V 2.0.0400	V 2.0.0400	V 2.0.0400
	DR Generator Sync Box firmware	n.a.	n.a.	n.a.
Reference Bulletin:		SB 14 44768826	SB 15 45356109	SB 25 47922582

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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 is related to VDI version.

* 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 400 System Version*				
System Component		V 3.1.60	V 3.1.70	V 3.2
	Release date:	12-2014	12-2014	04-2015
NX and related installers (controlled by ALF)	Workstation Software	NX 8800 SU1	NX 8900	NX 8900 SU1
	Varian Detector Software	VRN 7.3	VRN 7.3	VRN 7.3
	Canon Detector Software	CDI 3.2	CDI 3.2	CDI 3.2
	Vieworks Detector Software	n.a.	n.a.	n.a.
	Trixell Detector Software	n.a.	n.a.	n.a.
	Agfa Softconsole	ASC 1.2	ASC 2.0	ASC 2.0
	X-Ray Device Interface	XRDI 15 SU1	XRDI 16	XRDI 16
	Sedecal Generator Software	SDL 1.1	SDL 2.0	SDL 2.0
	RFB controller software	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
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0	V10R3.10.0	V10R3.10.0
	Generator firmware HT controller (U5 Controller)	V5R8.9	V5R8.9	V5R8.9
Detector	DX-D 40 v1 firmware **	n.a.	n.a.	n.a.
	DX-D 40 v2 firmware **	n.a.	n.a.	n.a.
	DX-D 45 firmware **	n.a.	n.a.	n.a.
	XD 10/14/17 firmware	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	n.a.	n.a.	n.a.
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	V 2.0.0400	V 2.0.0400	V 2.0.0400
	DR Generator Sync Box firmware	n.a.	n.a.	n.a.
Reference Bulletin:		SB 23 47559196	SB 24 47941869	SB 28 49267803

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

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

* 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 400 System Version*			
System Component		V 4.0	V 4.1.0	V 4.1.20	V 4.1.50
Release date:		06-2015	08-2015	10-2015	03-2016
NX and related installers (controlled by ALF)	Workstation Software	NX 8900 SU1	NX 8900 SU1	NX 8900 SU1	NX 8900 SU2
	Varian Detector Software	VRN 7.3	VRN 7.3	VRN 7.3	VRN 7.3
	Canon Detector Software	CDI 3.3	CDI 3.3	CDI 3.3	CDI 3.3
	Viewworks Detector Software	VDI 2.0	VDI 2.0	VDI 2.0	VDI 2.0
	Trixell Detector Software	n.a.	n.a.	n.a.	n.a.
	Agfa Softconsole	ASC 2.0	ASC 2.0	ASC 4.0	ASC 4.0
	X-Ray Device Interface	XRDI 16.0	XRDI 16.0	XRDI 17.1	XRDI 17.1
	Sedecal Generator Software	SDL 2.0	SDL 2.0	SDL 2.0	SDL 2.0
	RFB controller software***	n.a.	RFBC 1.0.1400	RFBC 1.0.1400	RFBC 1.0.1400
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0	v 3.0	v 3.0
Generator	Sedecal TechServ	6.15	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78	V7R1b78	V7R1b78
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0	V10R3.10.0	V10R3.10.0	V10R3.10.0
	Generator firmware HT controller (U5 Controller)	V5R8.9	V5R8.9	V5R8.9	V5R8.9
Detector	DX-D 40 v1 firmware **	v 1.15 (ex-factory)	v 1.15	v 1.15	v 1.15
	DX-D 40 v2 firmware **	n.a.	n.a.	n.a.	n.a.
	DX-D 45 firmware **	n.a.	v 1.0.3.32(ex-factory)	v 1.0.3.32	v 1.0.3.32
	XD 10/14/17 firmware	n.a	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	v 1.15 (ex-factory)	v 1.15	v 1.15	v 1.15
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	V 2.0.0400	n.a.	n.a.	n.a.
	DR Generator Sync Box firmware***	n.a.	RFBF 3.0.1800	RFBF 3.0.1800	RFBF 3.0.1800
Reference Bulletin:		SB 29 49407863	SB 32 50795166	SB 33 51614111	SB 36 53321837

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** RFBC and RFBF versions depend on XRDI version.

* 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 400 System Version*		
System Component		V 4.1.60	V 4.1.97	V 5.0
	Release date:	03-2016	08-2016	08-2016
NX and related installers (controlled by ALF)	Workstation Software	NX 8900 SU2	NX 8950	NX 8950
	Varian Detector Software	VRN 7.3	VRN 7.3	VRN 7.3
	Canon Detector Software	CDI 3.3	CDI 3.4	CDI 3.4
	Vieworks Detector Software	VDI 3.0	VDI 3.1	VDI 3.1
	Trixell Detector Software	n.a.	n.a.	TRI 2.1
	Agfa Softconsole	ASC 4.0	ASC 4.1	ASC 4.1
	X-Ray Device Interface	XRDI 17.1	XRDI 18.0	XRDI 18.0
	Sedecal Generator Software	SDL 2.0	SDL 2.0	SDL 2.0
	RFB controller software***	RFBC 1.0.1400	RFBC 1.0.1400	RFBC 1.0.1400
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
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0	V10R3.10.0	V10R3.10.2 (only ex-factory)
	Generator firmware HT controller (U5 Controller)	V5R8.9	V5R8.9	V5R8.10 (only ex-factory)
Detector	DX-D 40 v1 firmware **	v 1.18	v 1.20	v 1.20
	DX-D 40 v2 firmware **	n.a.	n.a.	n.a.
	DX-D 45 firmware **	v 1.0.3.33	v 1.0.3.37	v 1.0.3.37
	XD 10/14/17 firmware	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	v 1.15	v 1.15	v 1.15
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	n.a.	n.a.	n.a.
	DR Generator Sync Box firmware***	RFBF 3.0.1800	RFBF 3.0.1800	RFBF 3.0.1800 ¹⁾
Reference Bulletin		SB 38 53450382	SB 41 54614368	SB 40 54322506

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** RFBC and RFBF versions depend on XRDI version.

¹⁾ DR Generator Sync Box with *Ethernet* connection required for DR 10s/14s (Trixell) detectors.

* 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 400 System Version*			
System Component		V 5.0.40	V 5.0.75	V 5.0.100	V 5.0.110
Release date:		10-2016	11-2016	12-2016	02-2017
NX and related installers (controlled by ALF)	Workstation Software	NX 8950	NX 8950	NX 9000	NX 9000
	Varian Detector Software	VRN 7.3	VRN 7.3	VRN 7.3	VRN 7.3
	Canon Detector Software	CDI 3.5	CDI 3.5	CDI 3.5	CDI 3.5
	Viewworks Detector Software	VDI 3.1	VDI 3.1	VDI 3.1	VDI 3.2
	Trixell Detector Software	TRI 2.1	TRI 2.2	TRI 2.2	TRI 2.2
	Agfa Softconsole	ASC 4.1	ASC 4.1	ASC 4.1	ASC 4.1
	X-Ray Device Interface	XRDI 18.0	XRDI 18.0	XRDI 18.1	XRDI 18.1
	Sedecal Generator Software	SDL 2.1	SDL 2.1	SDL 2.1	SDL 2.1
	RFB controller software***	RFBC 1.0.1400	RFBC 1.0.1400	RFBC 1.0.1400	RFBC 1.0.1400
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0	v 3.0	v 3.0
Generator	Sedecal TechServ	6.15	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78	V7R1b78	V7R1b78
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.2 ¹⁾	V10R3.10.2 ¹⁾	V10R3.10.2 ¹⁾	V10R3.10.2 ¹⁾
	Generator firmware HT controller (U5 Controller)	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾
Detector	DX-D 40 v1 firmware **	v 1.20	v 1.20	v 1.20	v 1.21
	DX-D 40 v2 firmware **	n.a.	n.a.	n.a.	v 2.02 (ex-factory)
	DX-D 45 firmware **	v 1.0.3.37	v 1.0.3.37	v 1.0.3.37	v 1.0.3.37
	XD 10/14/17 firmware	n.a	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	v 1.15	v 1.15	v 1.15	v 1.15
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	n.a.	n.a.	n.a.	n.a.
	DR Generator Sync Box firmware***	RFBF 3.1.2100	RFBF 3.1.2100	RFBF 3.1.2100	RFBF 3.1.2100
Reference Bulletin:		SB 50 56575888	SB 52 56971734	SB 56 57615722	SB 58 58090729

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** RFBC and RFBF versions depend on XRDI version.

¹⁾ V10R3.10.x and 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 400 System Version*			
System Component		V 5.0.115	V 5.0.120	V 5.0.190	V 5.0.200
Release date:		02-2017	03-2017	03-2017	06-2017
NX and related installers (controlled by ALF)	Workstation Software	NX 9000	NX 9000	NX 9000 SU1	NX 9000 SU1
	Varian Detector Software	VRN 7.3	VRN 7.4	VRN 7.4	VRN 7.4
	Canon Detector Software	CDI 3.6	CDI 3.6	CDI 3.6	CDI 3.6
	Vieworks Detector Software	VDI 3.2	VDI 3.2	VDI 3.2	VDI 3.2
	Trixell Detector Software	TRI 2.2	TRI 2.2	TRI 2.2	TRI 2.3
	Agfa Softconsole	ASC 4.1	ASC 4.1	ASC 4.1	ASC 4.1
	X-Ray Device Interface	XRDI 18.1	XRDI 18.1	XRDI 18.1	XRDI 18.1
	Sedecal Generator Software	SDL 2.1	SDL 2.1	SDL 2.1	SDL 2.1
RFB controller software***		RFBC 1.0.1400	RFBC 1.0.1400	RFBC 1.0.1400	RFBC 1.0.1400
Varian Detector/NX	CR/DR Service Toolbox *	v 3.0	v 3.0	v 3.0	v 3.0
Generator	Sedecal TechServ	6.15	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78	V7R1b78	V7R1b78
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾
	Generator firmware HT controller (U5 Controller)	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾
Detector	DX-D 40 v1 firmware **	v 1.21	v 1.21	v 1.21	v 1.21
	DX-D 40 v2 firmware **	v 2.02	v 2.02	v 2.02	v 2.02
	DX-D 45 firmware **	v 1.0.3.37	v 1.0.3.37	v 1.0.3.37	v 1.0.3.37
	XD 10/14/17 firmware	n.a	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	v 1.15	v 1.15	v 1.15	v 1.15
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	n.a.	n.a.	n.a.	n.a.
	DR Generator Sync Box firmware***	RFBF 3.1.2100	RFBF 3.1.2200	RFBF 3.1.2200	RFBF 3.1.2200
Reference Bulletin:		SB 61 58375978	SB 62 58555121	NX 9000 SB04 58565153	SB 66 59890146

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** RFBC and RFBF versions depend on XRDI version.

¹⁾ V10R3.10.x and 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 400 System Version*			
System Component		V 5.0.260/270	V 5.0.300	V 5.0.340	V 5.0.350
Release date:		09-2017	12-2017	-	05-2018
NX and related installers (controlled by ALF)	Workstation Software	NX 9000 SU1	NX 20.00	NX 20.00	NX 20.00
	Varian Detector Software	VRN 7.4	VRN 7.4	VRN 7.4	VRN 7.4
	Canon Detector Software	CDI 3.6	CDI 3.6	CDI 3.6	CDI 3.6
	Vieworks Detector Software	VDI 3.2	VDI 3.2	VDI 3.2	VDI 3.2
	Trixell Detector Software	TRI 2.3	TRI 2.3	TRI 2.4³⁾	TRI 2.5
	Agfa Softconsole	ASC 4.1	ASC 5.0	ASC 5.0	ASC 5.0
	X-Ray Device Interface	XRDI 18.1	XRDI 19.0	XRDI 19.0	XRDI 19.0
	Sedecal Generator Software	SDL 2.1	SDL 2.1	SDL 2.1	SDL 2.1
RFB controller software		RFBC 1.0.1400	RFBC 2.0.1000²⁾	RFBC 2.0.1000 ²⁾	RFBC 2.0.1000 ²⁾
Varian Detector/NX	CR/DR Service Toolbox *	v 3.2	v 3.2	v 3.2	v 3.2
Generator	Sedecal TechServ	6.15	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78	V7R1b78	V7R1b78
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾
	Generator firmware HT controller (U5 Controller)	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾
Detector	DX-D 40 v1 firmware **	v 1.21	v 1.21	v 1.21	v 1.21
	DX-D 40 v2 firmware **	v 2.02	v 2.02	v 2.02	v 2.02
	DX-D 45 firmware **	v 1.0.3.37	v 1.0.3.37	v 1.0.3.37	v 1.0.3.37
	XD 10/14/17 firmware	n.a	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	v 1.15	v 1.15	v 1.15	v 1.15
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	n.a.	n.a.	n.a.	n.a.
	DR Generator Sync Box firmware	RFBF 3.1.2200	RFBF 4.0.1200²⁾	RFBF 4.0.1200 ²⁾	RFBF 4.0.1200 ²⁾
Reference Bulletin:		SB 68 60798120	SB 75 62284257	-	SB 76 63329901

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** RFBC and RFBF versions depend on XRDI version.

¹⁾ V10R3.10.x and V5R8.10 only ex-factory.

²⁾ From RFBF 4.0 onwards: Can only be installed on a DR Generator Sync Box using Ethernet connection. RFBF 3.x. must be used for USB connection. For RFBC, select USB/Ethernet according to the existing connection.

³⁾ TRI 2.4 not released for field upgrades, replaced by TRI 2.5.

* 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 400 System Version*			
System Component		V 5.0.370	V 5.0.390	V 5.0.430	V 5.0.460
Release date:		04-2018	05-2018	06-2018	09-2018
NX and related installers (controlled by ALF)	Workstation Software	NX 20.00	NX 20.00	NX 20.00 SU1	NX 21.00
	Varian Detector Software	VRN 7.4	VRN 7.5	VRN 7.5	VRN 7.5
	Canon Detector Software	CDI 3.6	CDI 3.6	CDI 3.6	CDI 3.6
	Vieworks Detector Software	VDI 3.3	VDI 3.3	VDI 3.3	VDI 3.3
	Trixell Detector Software	TRI 2.5	TRI 2.5	TRI 2.5	TRI 2.5
	Agfa Softconsole	ASC 5.0	ASC 5.0	ASC 5.0	ASC 6.0
	X-Ray Device Interface	XRDI 19.0	XRDI 19.0	XRDI 19.0	XRDI 20.0
	Sedecal Generator Software	SDL 2.1	SDL 2.1	SDL 2.1	SDL 2.1
	RFB controller software ***	RFBC 2.0.1000	RFBC 2.0.1000	RFBC 2.0.1000	RFBC 3.0.0300
Varian Detector/NX	CR/DR Service Toolbox *	v 3.2	v 3.2	v 3.2	v 3.2
Generator	Sedecal TechServ	6.15	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78	V7R1b78	V7R1b78
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾
	Generator firmware HT controller (U5 Controller)	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾
Detector	DX-D 40 v1 firmware **	V 1.22	V 1.22	V 1.22	V 1.22
	DX-D 40 v2 firmware **	V 2.05	V 2.05	V 2.05	V 2.05
	DX-D 45 firmware **	V 1.0.3.41	V 1.0.3.41	V 1.0.3.41	V 1.0.3.41
	XD 10/14/17 firmware	n.a	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	v 1.22	v 1.22	v 1.22	v 1.22
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	n.a.	n.a.	n.a.	n.a.
	DR Generator Sync Box firmware***	RFBF 4.0.1200	RFBF 4.0.1200	RFBF 3.1.2300 RFBF 4.0.1300	RFBF 5.0.0200
Reference Bulletin:		SB 79 64506507	SB 72 64509391	SB 83 65621400	SB 86 66088171

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** From RFBF 4.0 onwards with Ethernet connection only. RFBF 3.x. for USB connection. For RFBC, select USB/Ethernet according to the existing connection.

¹⁾ V10R3.10.x and 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 400 System Version*			
System Component		V 5.0.480	V 5.0.500	V 5.0.510	V 5.0.530
Release date:		11-2018	12-2018	02-2019	07-2019
NX and related installers (controlled by ALF)	Workstation Software	NX 21.00	NX 21.00 SU1²⁾	NX 21.00 SU1	NX 22.00
	Varian Detector Software	VRN 8.0	VRN 8.0	VRN 8.0	VRN 8.0
	Canon Detector Software	CDI 3.6	CDI 3.6	CDI 3.6	CDI 3.6
	Vieworks Detector Software	VDI 3.3	VDI 3.3	VDI 3.3	VDI 3.4
	Trixell Detector Software	TRI 2.5	TRI 2.5	TRI 3.0	TRI 3.0
	Agfa Softconsole	ASC 6.0	ASC 6.1	ASC 6.1	ASC 6.1
	X-Ray Device Interface	XRDI 20.0	XRDI 20.1	XRDI 20.1	XRDI 20.1
	Sedecal Generator Software	SDL 2.1	SDL 2.1	SDL 2.1	SDL 2.1
	RFB controller software***	RFBC 3.0.0300	RFBC 3.0.0300	RFBC 3.0.0300	RFBC 3.0.0300
Varian Detector/NX	CR/DR Service Toolbox *	v 3.3	v 3.3	v 3.3	v 3.3
Generator	Sedecal TechServ	6.15	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78	V7R1b78	V7R1b78
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾
	Generator firmware HT controller (U5 Controller)	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾
Detector	DX-D 40 v1 firmware **	v 1.22	v 1.22	v 1.22	v 1.26
	DX-D 40 v2 firmware **	v 2.05	v 2.05	v 2.05	v 2.08
	DX-D 45 firmware **	v 1.0.3.41	v 1.0.3.41	v 1.0.3.41	v 1.0.3.44
	XD 10/14/17 firmware	n.a	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	v 1.22	v 1.22	v 1.22	v 1.22
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	n.a.	n.a.	n.a.	n.a.
	DR Generator Sync Box firmware***	RFBF 5.0.0200	RFBF 5.0.0200	RFBF 5.0.0200	RFBF 5.0.0200
Reference Bulletin:		SB 85 67260954 SB 87 67008000	SB 89 67202984	SB 90 67779579	SB 93 69508402 SB 94 69522488

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** From RFBF 4.0 onwards with Ethernet connection only. RFBF 3.x. for USB connection. For RFBC, select USB/Ethernet according to the existing connection.

¹⁾ V10R3.10.x and V5R8.10 only ex-factory.

²⁾ For field upgrades 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 400 System Version*			
System Component		V 5.0.550	V 5.1.030	V 5.1.035	V 5.1.075
Release date:		09-2019	02-2020	03-2020	08-2020
NX and related installers (controlled by ALF)	Workstation Software	NX 22.00	NX22.00	NX.22.00 SU1	NX 22.00 SU1
	Varian Detector Software	VRN 8.0	VRN 8.0	VRN 8.0	VRN 8.0
	Canon Detector Software	CDI 3.6	CDI 3.6	CDI 3.6	CDI 3.6
	Viewworks Detector Software	VDI 3.4	VDI 3.4	VDI 3.4	VDI 3.4
	Trixell Detector Software	TRI 4.0	TRI 4.0	TRI 4.0	TRI 4.0
	Agfa Softconsole	ASC 8.0	ASC 8.0	ASC 8.0	ASC 9.0
	X-Ray Device Interface	XRDI 21.0	XRDI 21.0	XRDI 21.0	XRDI 22.0
	Sedecal Generator Software	SDL 2.1	SDL 2.1	SDL 2.1	SDL 2.1
	RFB controller software***	RFBC 4.0.0600	RFBC 4.0.0600	RFBC 4.0.0600	RFBC 4.5.0100
Varian Detector/NX	CR/DR Service Toolbox *	v 3.3	v 3.3	v 3.3	v 3.3
Generator	Sedecal TechServ	6.15	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R1b78	V7R1b78	V7R1b78	V7R1b78
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾
	Generator firmware HT controller (U5 Controller)	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾
Detector	DX-D 40 v1 firmware **	v 1.26	v 1.27	v 1.27	v 1.27
	DX-D 40 v2 firmware **	v 2.08	v 2.09	v 2.09	v 2.09
	DX-D 45 firmware **	v 1.0.3.44	v 1.0.3.44	v 1.0.3.44	v 1.0.3.44
	XD 10/14/17 firmware	n.a	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	v 1.22	v 1.22	v 1.22	v 1.22
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	n.a.	n.a.	n.a.	n.a.
	DR Generator Sync Box firmware***	RFBF 6.0.0700	RFBF 6.0.0700	RFBF 6.0.0700	RFBF 6.0.0700
Reference Bulletin:		SB 96 70116273	SB 99 71984107	SB 101 72204200	SB 104 73887081

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** From RFBF 4.0 onwards with Ethernet connection only. RFBF 3.x. for USB connection. For RFBC, select USB/Ethernet according to the existing connection.

¹⁾ V10R3.10.x and 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 400 System Version*			
System Component		V 5.1.090	V 5.1.130	V 5.1.150	V 5.1.157
Release date:		11-2020	02-2021	05-2021	08-2021
NX and related installers (controlled by ALF)	Workstation Software	NX 22.00 SU1	NX.22.00 SU1	NX 23.00	NX 23.00 SU1
	Varian Detector Software	VRN 8.0	VRN 8.0	VRN 8.0	VRN 8.0
	Canon Detector Software	CDI 3.6	CDI 3.6	CDI 3.6	CDI 3.6
	Vieworks Detector Software	VDI 3.4	VDI 3.4	VDI 3.4	VDI 3.4
	Trixell Detector Software	TRI 4.0	TRI 4.0	TRI 4.0	TRI 4.0
	Agfa Softconsole	ASC 9.0	ASC 9.0	ASC 10.1	ASC 10.1
	X-Ray Device Interface	XRDI 22.0	XRDI 22.1	XRDI 23.1	XRDI 23.1
	Sedecal Generator Software	SDL 2.1	SDL 2.1	SDL 2.1	SDL 2.1
	RFB controller software***	RFBC 4.5.0100	RFBC 4.5.0100	RFBC 4.8.0100	RFBC 4.8.0100
Varian Detector/NX	CR/DR Service Toolbox *	v 3.3	v 3.4 ²⁾	v 3.4	v 3.4
Generator	Sedecal TechServ	6.15	6.15	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R2B94	V7R2B94	V7R2B94	V7R2B94
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾
	Generator firmware HT controller (U5 Controller)	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾	V5R8.10 ¹⁾
Detector	DX-D 40 v1 firmware **	v 1.27	v 1.27	v 1.27	v 1.27
	DX-D 40 v2 firmware **	v 2.09	v 2.09	v 2.09	v 2.09
	DX-D 45 firmware **	v 1.0.3.44	v 1.0.3.44	v 1.0.3.44	v 1.0.3.44
	XD 10/14/17 firmware	n.a	n.a	n.a	n.a
SCU Box	large (FXRS-03A) firmware **	v 1.22	v 1.22	v 1.22	v 1.22
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	n.a.	n.a.	n.a.	n.a.
	DR Generator Sync Box firmware***	RFBF 6.0.0700	RFBF 6.0.0700	RFBF 6.0.0700	RFBF 6.0.0700
Reference Bulletin:		SB 107 75001119	Toolbox SB 18 75567189 ²⁾ SB 110 75864620	SB 117 76568981	SB 119 77527378

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** From RFBF 4.0 onwards with Ethernet connection only. RFBF 3.x. for USB connection. For RFBC, select USB/Ethernet according to the existing connection.

¹⁾ V10R3.10.x and V5R8.10 only ex-factory.

²⁾ 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 400 System Version*			
System Component	V 6.0.000	V 6.0.015	Next version
Release date:	09-2021	04-2022	
NX and related installers (controlled by ALF)	Workstation Software	NX 23.00 SU1	NX 23.00 SU1
	Varian Detector Software	VRN 8.0	VRN 8.0
	Canon Detector Software	CDI 3.6	CDI 3.6
	Vieworks Detector Software	VDI 4.0	VDI 4.1
	Trixell Detector Software	TRI 4.0	TRI 4.2
	Agfa Softconsole	ASC 10.1	ASC 10.1
	X-Ray Device Interface	XRDI 23.1	XRDI 23.1
	Sedecal Generator Software	SDL 2.1	SDL 2.1
RFB controller software***	RFBC 4.8.0100	RFBC 4.8.0100	
Varian Detector/NX	CR/DR Service Toolbox *	v 3.4	v 3.4
Generator	Sedecal TechServ	6.15	6.15
	Generator firmware ATP Console (U24 EPROM)	V7R2B94	V7R2B94
	Generator firmware LV DRAC (U17 EPROM)	V10R3.10.0 ¹⁾	V10R3.10.0 ¹⁾
	Generator firmware HT controller (U5 Controller)	V5R8.10 ¹⁾	V5R8.10 ¹⁾
Detector	DX-D 40 v1 firmware **	v 1.27	v 1.27
	DX-D 40 v2 firmware **	v 2.09	v 2.09
	DX-D 45 firmware **	v 1.0.3.44	v 1.0.4.8
	XD 10/14/17 firmware	v1.0.0.8	v 1.0.6.0
SCU Box	large (FXRS-03A) firmware **	v 1.22	v 1.22
Retrofit Box DR Generator Sync Box	DX-D Retrofit Box - Service Tool	n.a.	n.a.
	DR Generator Sync Box firmware***	RFBF 6.0.0700	RFBF 6.0.0700
Reference Bulletin:		SB 116 76759287 SB 120 77531153	SB 123 79515334 SB 124 79519236

Blue box: These software versions are controlled by the 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 is related to VDI version.

*** From RFBF 4.0 onwards with Ethernet connection only. RFBF 3.x. for USB connection. For RFBC, select USB/Ethernet according to the existing connection.

¹⁾ V10R3.10.x and 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

This section contains the upgrade scenarios for the DX-D 400 configurations and upgrade descriptions.

Software Upgrades	section
Upgrading to a higher system version	11.2
Upgrading or updating Generator software and firmware	11.3

Hardware Upgrades	section
Replacing DX-D Retrofit Box with DR Generator Sync Box	11.4
DX-D 40/45 detectors for installed base	11.5
Adding DX-D 40/45 detectors to existing DX-D 400 systems	11.5.1
Replacing DX-D 30/35 with a DX-D 40/45 detector	11.5.2
DR 10s/14s detectors for installed base	11.6
Adding DR 10s/14s detectors to DX-D 30/35 detectors	11.6.2
Adding DR 10s/14s detectors to DX-D 40/45 detectors	11.6.3
Replacing DX-D 30/35 with a DR 10s/14s detector	11.6.4
XD 10/14/17 detectors for installed base	11.7
Possible Detector Upgrade scenarios	11.7.1
Adding XD 10/14/17 to installed wireless detector	11.7.2
Replacing DX-D 40/45 with XD 10/14/17	11.7.3
Prerequisites for all XD 10/XD 14/XD 17 detector installations	11.7.4
Replacing Access Points	11.8



NOTE:

For the upgrade procedures of the components, refer to the corresponding *Service Documentation* of the components.

For a complete overview of component Service Documentation, refer to the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).

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11.1 Upgrade scenarios for the different configurations

Configuration 1: CR without generator integration (using Hard Console)

This can be upgraded to configuration 2.



NOTE:

In case of installations with Hard Console & DR:

Those are DX-D 400 systems configuration 1 + OEM DX-D Image package solution.
If further actions are required, they have to be handled via OEM DX-D Image Package.

Configuration 2: Analog - no fixed detectors supported. CR/DR with generator integration (using Sedecal Generator Software SDL & Agfa Softconsole ASC)

The DR Generator Sync Box is configured in retrofit mode (prep delay).

In DX-D 400 V5 systems this configuration supports portable DX-D 10 & wireless DX-D 30/35 detectors & wireless DX-D 40/45 detectors & wireless DR 10s/14s detectors.

DX-D 40/45 & DR 10s/14s detectors are used in synchronized mode.

Configuration 3: Digital - fixed detectors supported. CR/DR with integration & generator synchronization (SDL & ASC).

The DR Generator Sync Box is configured in routing mode.

In DX-D 400 V5 systems this configuration supports fixed detectors in combination with portable DX-D 10 & wireless DX-D 30/35 detectors & wireless DX-D 40/45 detectors & wireless DR 10s/14s detectors.

DX-D 40/45 & DR 10s/14s detectors are used in synchronized mode.

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11.2 Upgrading to a higher system version

This section contains a generic description how to upgrade to a higher DX-D 400 system version.

11.2.1 Prerequisites for software upgrades

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

SOFTWARE:

- If NX software or related component installers like XRDI, ASC and so on are affected:
 - Create ALF on 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.

11.2.2 Updating or upgrading NX Software and related component installers

The following steps are required only, if a higher NX software version or related NX component installer like XRDI, ASC and so on needs to be installed:

- (1) Perform a software update or upgrade of NX. For instructions refer to the *NX/MUSICA Acquisition Workstation - Service Manual*, Document ID [74737949](#), chapter *Upgrade / update procedure*.
- (2) Install the CR/DR service toolbox if a higher version is part of the system release.

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11.3 Upgrading or updating Generator software and firmware

The following steps are required, if a higher Generator software and / or firmware (on EPROM) needs to be installed.

11.3.1 Preparatory tasks for EPROM exchange

- (1) Stop NX.
- (2) Turn off the system at the main switch.
- (3) Remove the generator cover.
- (4) Set the DIP switch 3024SW2-3 on ATP Console Board from "Normal Mode" to "Service Mode".

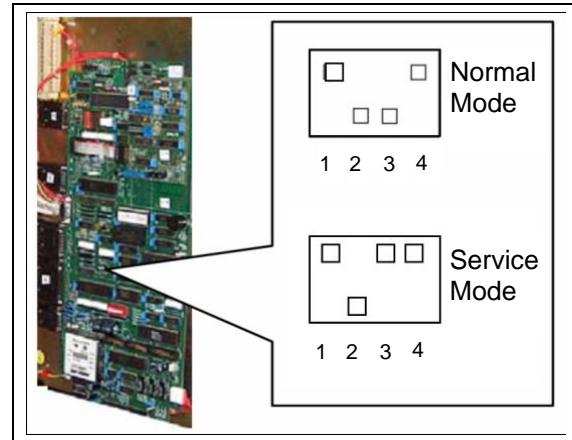


Figure 7: "Normal Mode" and "Service Mode"

- (5) Switch on the generator and start NX.
- (6) Start generator TechServ software.
When an error is shown continue by clicking the **RESET ERROR** button.
- (7) Click **Configuration**.
- (8) Note down the configuration for all workstations: WS1 – WS8.
- (9) Leave the configuration menu.
- (10) Click **Manual Calibration**.
- (11) Select WS 1 and click **OK**.
- (12) Note down the calibration settings.
- (13) Use the arrow buttons to increase or decrease the mA value. Observe when the Focus field changes from LARGE to SMALL or vice versa.
Record the lowest mA version for the LARGE focus so the mA just before the focus switches to SMALL.
- (14) Leave the calibration menu.

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- (15) Repeat the previous 4 steps for each configured workstation.
- (16) Switch off the generator.

11.3.2 EPROM replacement

- (1) Replace the LV DRAC EPROM (U17), if applicable.



Figure 8

- (2) Replace the ATP Console EPROM (U24), if applicable.

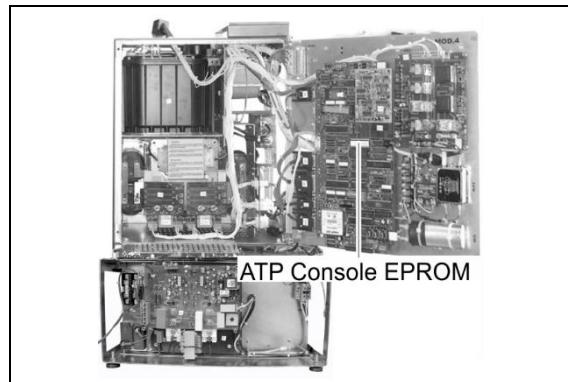


Figure 9

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11.3.3 Configuration of the generator software (parameter settings)

- (1) Switch on the System.
- (2) Start generator software TechServ.
When an error is shown continue by clicking the **RESET ERROR** button.
- (3) Click **Configuration**.
- (4) Check the software version.
- (5) Re-configure the DR workstations as noted down before.
In case of Fail Safe upgrade, configure the workstations as shown below.

If the DX-D Retrofit Box/DR Generator Sync Box is configured for **retrofit mode**:

Function	WS1	WS2	WS3	WS4	WS5	WS6
Tube	1	1	1	1	1	1
WM	Bucky1	Bucky2	Bucky1	Bucky2	Direct	Direct
AEC IC	1	2	1	2	0	0
WS Lock	1	2	4	5	0	3

If the DX-D Retrofit Box/DR Generator Sync Box is configured for **router mode**:

Function	WS1	WS2	WS3	WS4	WS5	WS6
Tube	1	1	1	1	1	1
WM	Bucky1	Bucky1	Bucky1	Bucky1	Direct	Direct
AEC IC	1	2	1	2	0	0
WS Lock	1	2	4	5	0	3

- (6) Leave the configuration menu.
- (7) Click **Manual Calibration**.
- (8) Select WS 1 and click **OK**.
- (9) Compare the calibration settings with the ones from before the upgrade.
In case the settings are not identical, change the settings by clicking on the up/down arrows next to each parameter. When all parameters are adjusted correctly, confirm the values by clicking **Toggle** and subsequently clicking **Confirm**.
- (10) Leave the calibration menu.

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- (11) Repeat the previous 4 steps for each configured workstation.
- (12) Switch off the generator.
- (13) Set the DIP Switch 3024SW2-3 on ATP Console Board from “Service Mode” to “Normal Mode”.
- (14) Mount the generator cover.

11.3.4 Verification

- (1) Verify the component (for example NX, Generator), update or upgrade as defined in the component instructions.
- (2) Perform a DR workflow for Wallstand and Table as defined in the DX-D 400 Service Quality Test.

11.4 Replacing DX-D Retrofit Box with DR Generator Sync Box

In this scenario a DR Generator Sync Box replaces an installed DX-D Retrofit Box. All cables and the Retrofit Box add-on boards can be reused from uninstalled DX-D Retrofit Box.

11.4.1 Removal of installed DX-D Retrofit Box

- (1) Uninstall the Retrofit Box Service Tool software.
- (2) Switch off the system.
- (3) Disconnect all cables.
In case of multiple detectors, it is recommended to mark how they were connected.
- (4) Remove the DX-D Retrofit Box.
- (5) Uninstall all required add-on boards. They will be reused for the DR Generator Sync Box, which has one VarCan ad on board pre-installed.

For software and hardware installations of the DR Generator Sync Box, refer to section 4.5.

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11.5 DX-D 40/45 detectors for installed base

For required software and hardware, refer to:

- *SB 29 - Release of DX-D 400 version 4.0 with DX-D 40 Detector,*
Document ID: [49407863](#)
- *SB 32 - DX-D 400 V4.1 with DX-D 45 and Generator Sync Box,*
Document ID: [50795166](#)

11.5.1 Adding DX-D 40/45 detectors to existing DX-D 400 systems

In this scenario the DX-D 40/45 detectors can be added to DX-D 30/35 detectors.

Or the DX-D 40 detector can replace the DX-D 30, but still a DX-D 35 detector is available. If no DX-D 35 is available refer to section 11.5.2.

Or the DX-D 45 detector can replace the DX-D 35, but still a DX-D 30 detector is available. If no DX-D 30 is available refer to section 11.5.2.

In this scenario an additional add-on board for Retrofit Box/DR Generator Sync Box and an additional NIC is required.

- (1) Install the DX-D 40/45 detectors in synchronized mode.
 - For the wiring diagram analog systems refer to Figure 10
 - For the wiring diagram digital systems (2 fixed detectors) refer to Figure 11.For installation details see *DX-D 40 / DX-D 45 / DX-D 60 - Service Manual*, Document ID [45016244](#) and *DR Detector - basic configuration guide*, Document ID [68310512](#).
- (2) Configure the NX.



NOTE:

The VDI software is already installed in case of adding a DX-D 45 detector to a DX-D 40 set up.

- (3) After detector installation perform the DX-D 40/45 detector relevant part of the Service Quality Test.

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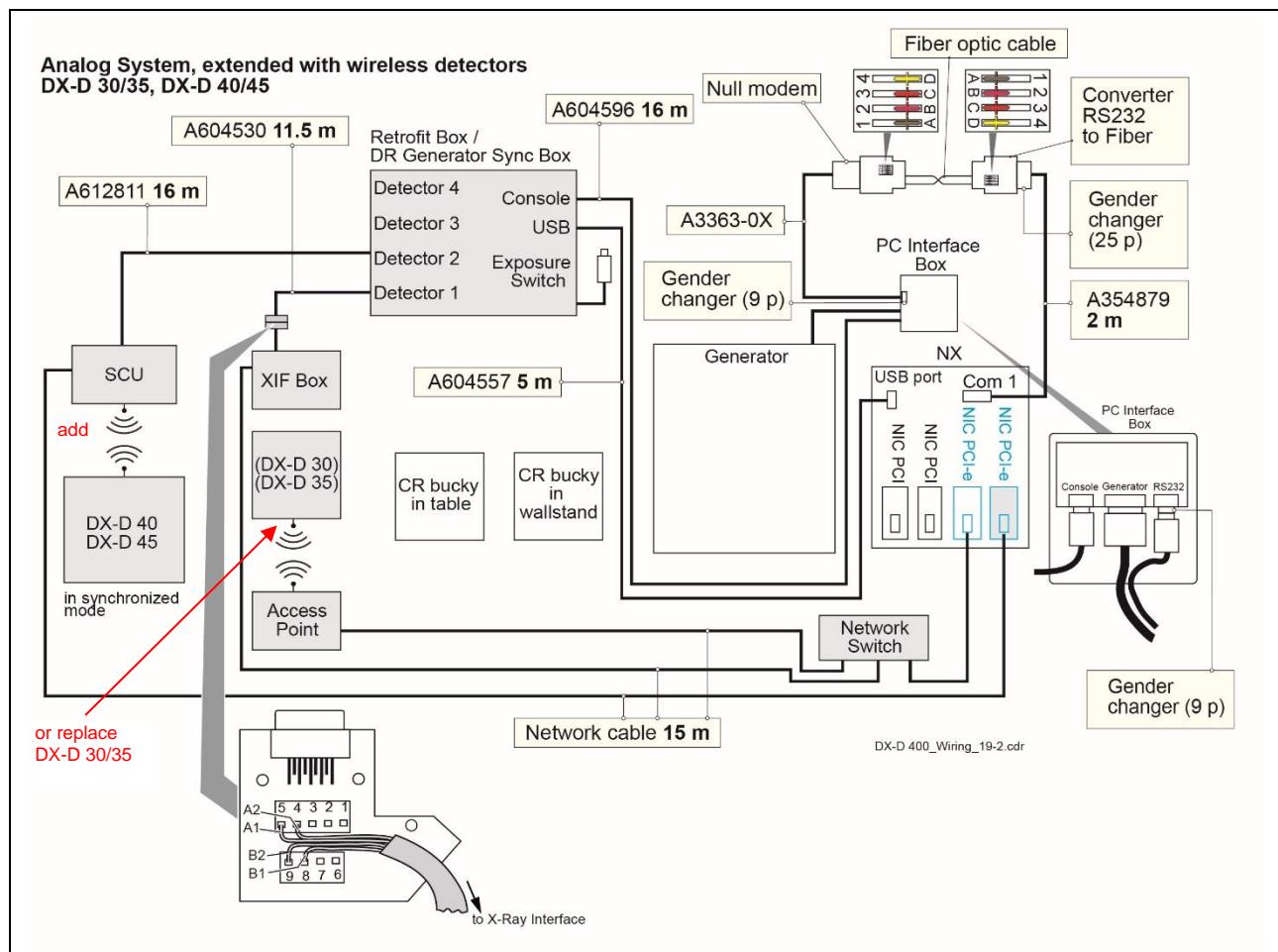


Figure 10: Analog system – DX-D 40/45 detector with HW sync added to installed DX-D 30/35 detectors

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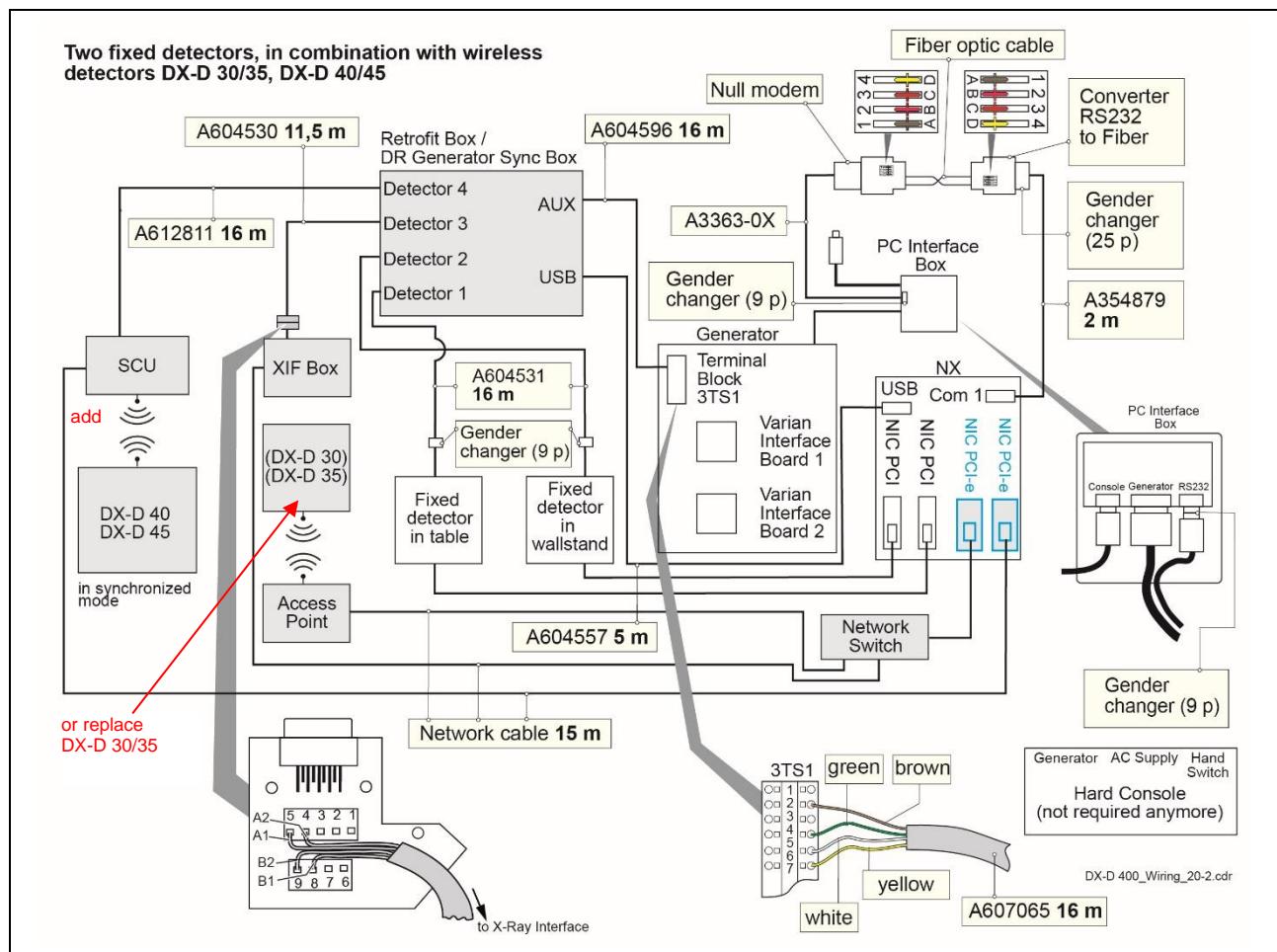


Figure 11: Digital system – DX-D 40/45 detector with HW sync added to installed DX-D 30/35 detectors

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11.5.2 Replacing DX-D 30/35 with a DX-D 40/45 detector with HW sync

In this scenario the DX-D 40 detector replaces the DX-D 30 or the DX-D 45 detector replaces the DX-D 35. In both cases no other wireless detectors are available!

In case of replacing a DX-D 30/35 with a DX-D 40/45 detector, the available Retrofit Box add-on board and the NIC (both from DX-D 30 or DX-D 35) can be reused.

- (1) It is recommended to uninstall the software for DX-D 30/35 and remove the hardware (for example Network Switch, Access Point, X-Ray Interface Box and the respective cables).
- (2) Install the DX-D 40/45 detectors in synchronized mode.
 - o For the wiring diagram analog systems refer to Figure 12
 - o For the wiring diagram digital systems (2 fixed detectors) refer to Figure 13.For installation details see *DX-D 40 / DX-D 45 / DX-D 60 - Service Manual*, Document ID [45016244](#) and *DR Detector - basic configuration guide*, Document ID [68310512](#).
- (3) Configure the NX.
Details see *DX-D 40 / DX-D 45 / DX-D 60 - Service Manual*, Document ID [45016244](#).
- (4) After detector installation perform the DX-D 40/45 detector relevant part of the Service Quality Test.

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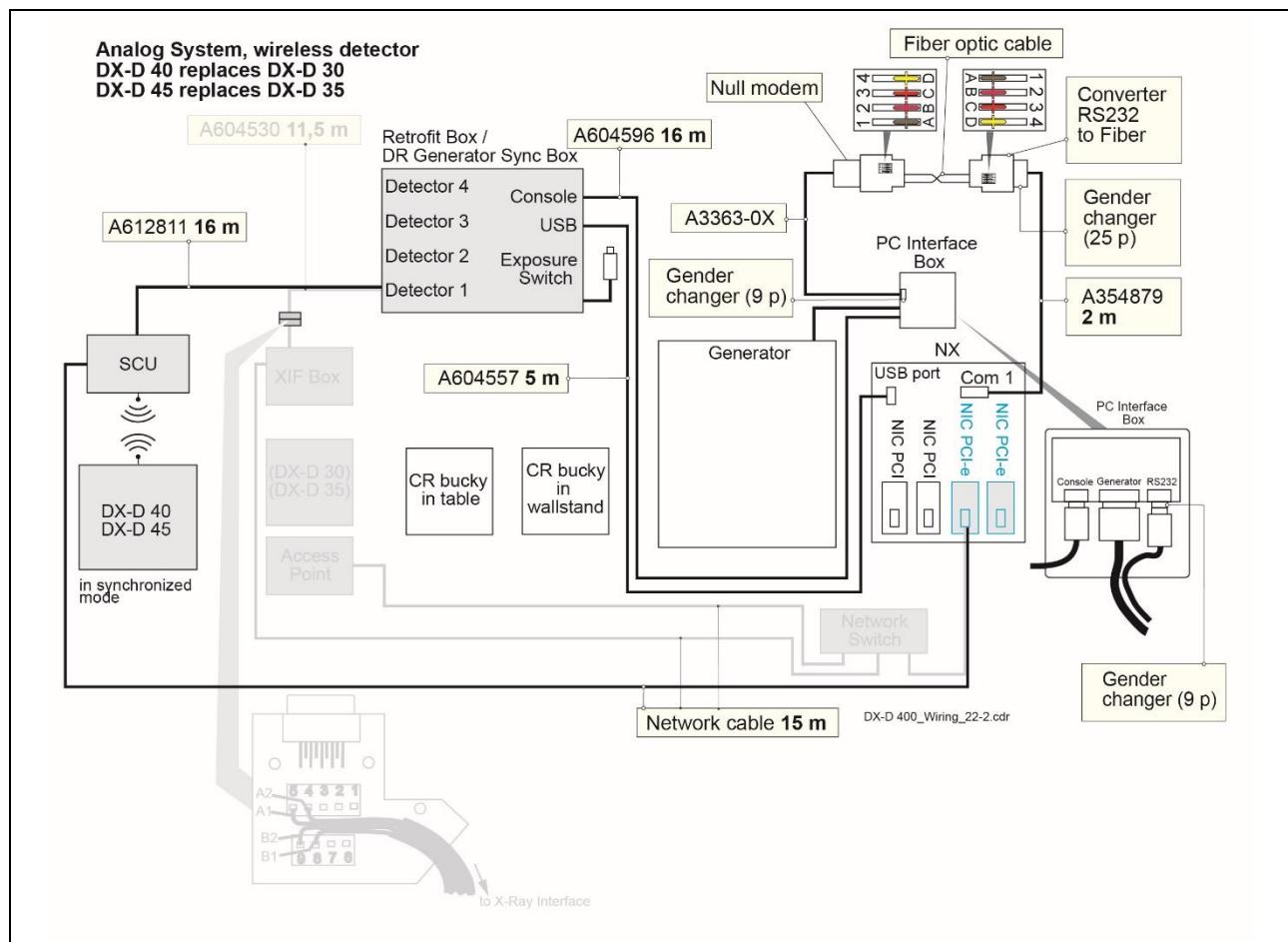


Figure 12: Analog system – DX-D 40/45 detector replaces DX-D 30/35

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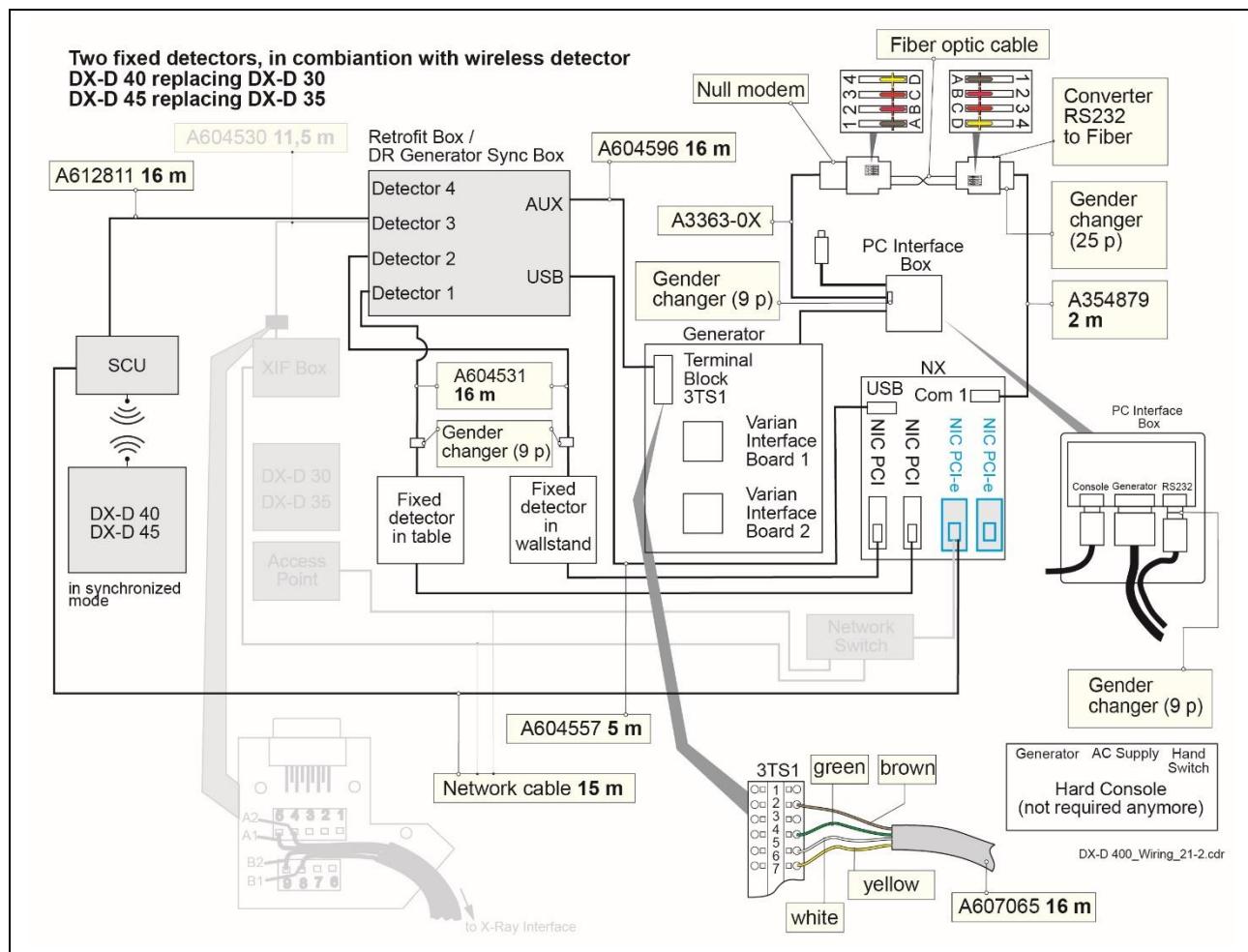


Figure 13: Digital system – DX-D 40/45 detector replaces DX-D 30/35

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11.6 DR 10s/14s detectors for installed base

As from DX-D 400 V5, the DR 10s and DR 14s wireless detectors can be added to the installed base. Or they can replace installed DX-D 30/35 detectors.

This requires the installation of Trixell Detector Software TRI 2.1 (or later).

It also requires an update of the Canon Detector Software CDI to version 3.4 (or later) for installations with DX-D 30/35 detectors.

For installations with DR 10s/14s detectors, a DR Generator Sync Box with Ethernet connection is required and the DR Generator Sync Box RFBF and RFBC software for "Ethernet" connection must be installed. For replacing a DX-D Retrofit Box refer to section 11.4.

11.6.1 Prerequisites for all DR 10s/14s detector installations

 NOTE:

If DR 10s/14s should be used together with DX-D 40/45 detectors, the installation of an Infrared (IR) data communication unit is required. For use with DX-D 30/35 detectors, the already available IR data communication unit can be reused.

In case of a Windows 10 NX PC: Only a "new" IR data communication unit (Serial no. starts with "TA") is compatible with Windows 10. For details refer to NX 3.0.21.00 / NX 4.0.21.00 - SB07 - Windows 10 upgrade program, Document ID [68621246](#).

 NOTE:

Additional hardware required is listed in the specific upgrade sections.

Detector Hardware:

Part	Spare Part Number	ABC Code
DR 14s Pixium 3543 EZ-C (one battery included)	TR+DR14S_CSI	5ZSDE
DR 14s Pixium 3543 EZ-G (one battery included)	TR+DR14S_GOS	5ZSEG
DR 10s 2430 EZ-C (one battery included)	TR+DR10S_CSI	5711E
Battery Charger	TR+63102146	5714L
Battery Pixium EZ (one battery)	TR+62821231	5713J

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In case the DX-D Retrofit Box V1.0/2.0 has to be replaced:

Part	ABC Code
DR Generator Sync Box	51S8E

Software:

- ELMS license for TRI 2.1 (or later) needs to be activated.
- Software as listed in section 10.

11.6.2 Adding DR 10s/14s detectors to DX-D 30/35 detectors

In this scenario the DR 10s/14s detectors are added to an installation with DX-D 30/35 detectors (no other wireless detectors). For the replacement of DX-D 30/35 detectors refer to section 11.6.4 .

The already installed NIC PCIe, Access Point and Network switch and IR data communication unit (from DX-D 30/35) will be reused.

Additionally required hardware:

- Ethernet cable(s) organize locally if additional cables are required

Upgrade instructions (DX-D 30/35 & DR 10s/14s):

- (1) If a DX-D Retrofit Box is present, replace it with a DR Generator Sync Box. For details refer to section 11.4.
 - (2) Install the DR Generator Sync Box RFBF and RFBC software for “Ethernet” connection, see section 4.5.2.
 - (3) Update Canon detector software to CDI 3.4 (or later). Follow the installation instruction as described in the *DX-D 30C / DX-D 35C Detector - Service Manual*, Document ID [41477269](#).
 - (4) If applicable update software as listed in section 10.
 - (5) Remove the USB connection between DR Generator Sync Box and NX.
- The already installed NIC PCIe, Network switch and Access Point will be used for both DX-D 30/35 and DR 10s/14s detectors.

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**IMPORTANT:**

- Make sure the IP address are set correctly on the network card (see section 4.3):
 - **192.168.100.20** (DR 10s/14s and/or DX-D 30/35)
 - For specific Access Point settings (for example Service Set Identifier (SSID) and password) refer to the *DR wireless networking - Service Manual*, Document ID [58221971](#).
 - In case of detector sharing of DR 10s/14s detectors observe the description in the *DR wireless networking - Service Manual*, Document ID [58221971](#).
- (6) Install Trixell detector software TRI 2.1 (or later).
- (7) Install the DR 10s/14s detectors in synchronized mode.
 - Wiring diagram for analog systems, refer to Figure 14.
 - Wiring diagram for digital systems (2 fixed detectors), refer to Figure 15.For installation details see *DR 10s / DR 14s - Service Manual*, Document ID [53659727](#) and *DR Detector - basic configuration guide*, Document ID [68310512](#).
- (8) Configure the NX.
Details see *DR 10s / DR 14s - Service Manual*, Document ID [53659727](#).
- (9) After detector installation, perform the DR 10s/14s detector relevant part of the *Service Quality Test Tool*, Document ID [55022710](#).

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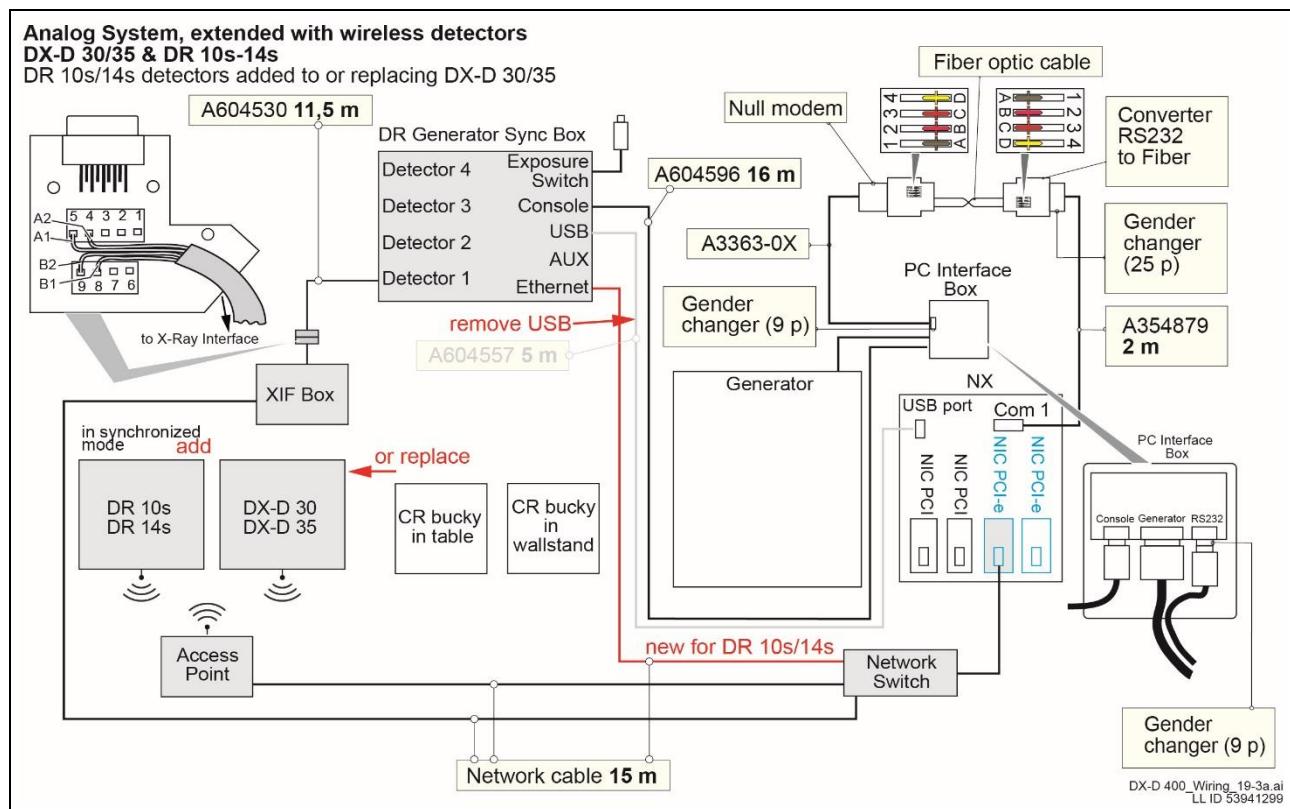


Figure 14: Analog system – DR 10s/14s detector added to installed DX-D 30/35 detectors

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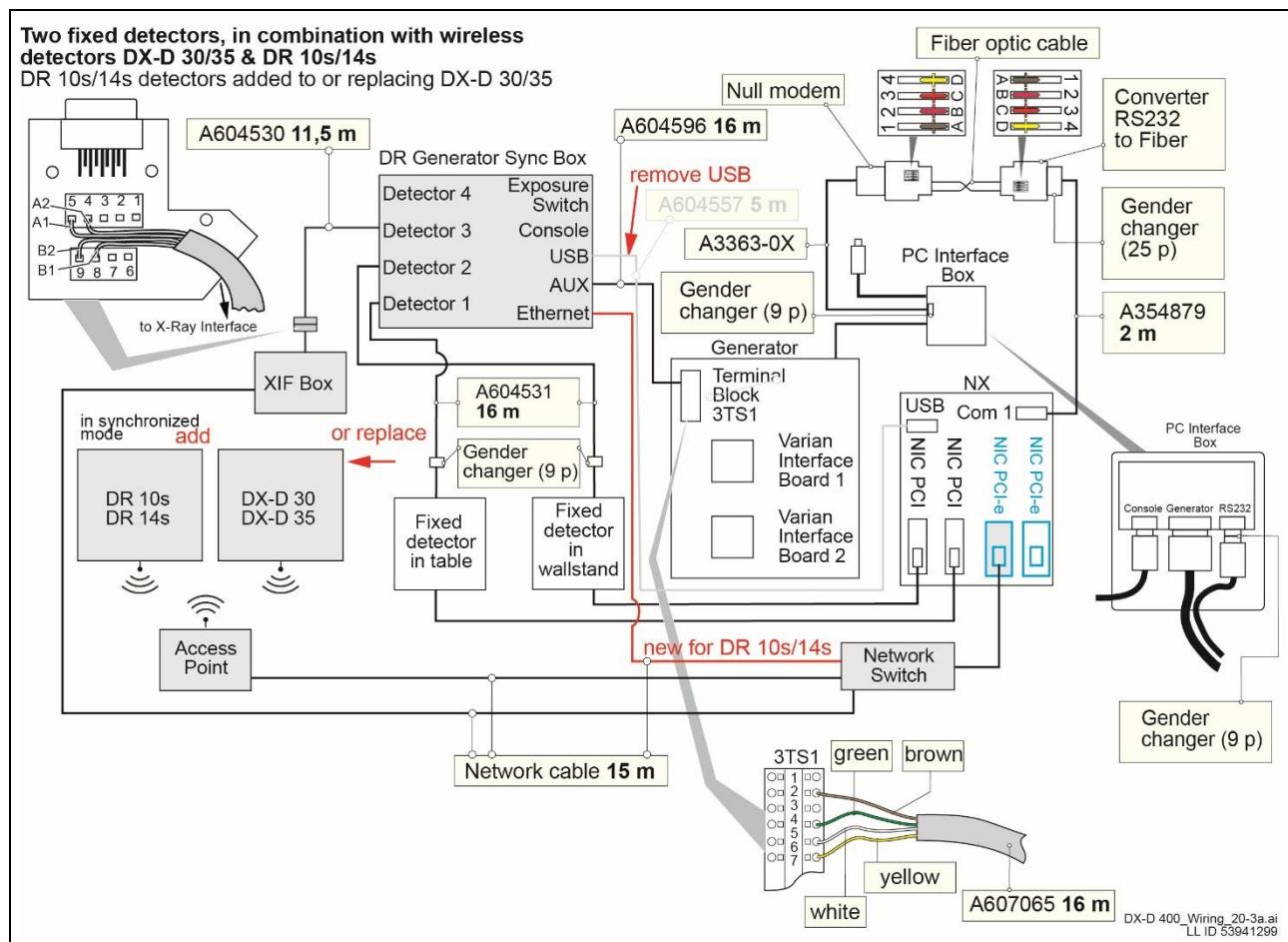


Figure 15: Digital system – DR 10s/14s detector added to installed DX-D 30/35 detectors

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11.6.3 Adding DR 10s/14s detectors to DX-D 40/45 detectors with HW sync

In this scenario the DR 10s/14s detectors are added to an installation with DX-D 40/45 detectors (no other wireless detectors).



NOTE:

In case of DX-D 40/45 detectors it is not allowed to configure more than one IP address on one NIC (as the Vieworks software does not support configuring multiple IP address on one network card).

- It is recommended to use a separate NIC for the DX-D 40/45 detectors.
- Or alternatively if no additional NIC can be installed (for example no free slot): Make sure that all devices connected to one Network Interface Card are in the same subnet configuration, and that only one IP address is configured on the NIC.

Additional required hardware:

- Wireless component package *
- Contents of the package:
- Access Point with Firmware *
 - Power Injector
 - Ethernet Gigabit Switch
 - Infrared Link ACTiSYS ACT-IR224UN (IR data communication unit)
 - Ethernet Cable (2x 2m / 2x 15m)
 - Ethernet Board Intel Gigabit CT Desktop Adapter (Intel Gigabit CT Desktop Adapter PCIe)
 - Power Cable for XF Interface US/Australia/China
- Ethernet cable(s) organize locally if additional cables are required



*NOTE:

The introduction of a new Access Point/Wireless component package is announced with a Service Bulletin.

For more information about the latest released Access Point/Wireless component package refer to the Agfa Medimg Library.

Refer also to section 11.8 Replacing Access Points.

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Upgrade instructions (DX-D 40/45 & DR 10s/14s):

- (1) If a DX-D Retrofit Box is present, replace it with a DR Generator Sync Box. For details refer to section 11.4.
- (2) Install the DR Generator Sync Box RFBF and RFBC software for "Ethernet" connection, see section 4.5.2.
- (3) If applicable update software as listed in section 10.
- (4) Remove the USB connection between DR Generator Sync Box and NX.

**IMPORTANT:**

- Make sure the IP address are set correctly on the network cards (see section 4.3):
 - **192.168.100.20** for DR 10s/14s
 - **169.254.0.50** for DX-D 40/45
 - For specific Access Point settings, for example SSID and password, refer to the *DR wireless networking - Service Manual*, Document ID [58221971](#).
 - In case of detector sharing of DR 10s/14s detectors observe the description in the *DR wireless networking - Service Manual*, Document ID [58221971](#).
-
- (5) Install Trixell detector software TRI 2.1 (or later).
 - (6) Install the DR 10s/14s detectors in synchronized mode.
 - Install NIC PCI-e, Network Switch and Access Point.
 - Connect cables.
 - Wiring diagram for analog systems, refer to Figure 16.
 - Wiring diagram for digital systems (2 fixed detectors), refer to Figure 17.
- For installation details see *DR 10s / DR 14s - Service Manual*, Document ID [53659727](#) and *DR Detector - basic configuration guide*, Document ID [68310512](#)
- (7) Configure the NX.
Details see *DR 10s / DR 14s - Service Manual*, Document ID [53659727](#).
 - (8) After detector installation, perform the DR 10s/14s detector relevant part of the *Service Quality Test Tool*, Document ID [55022710](#).

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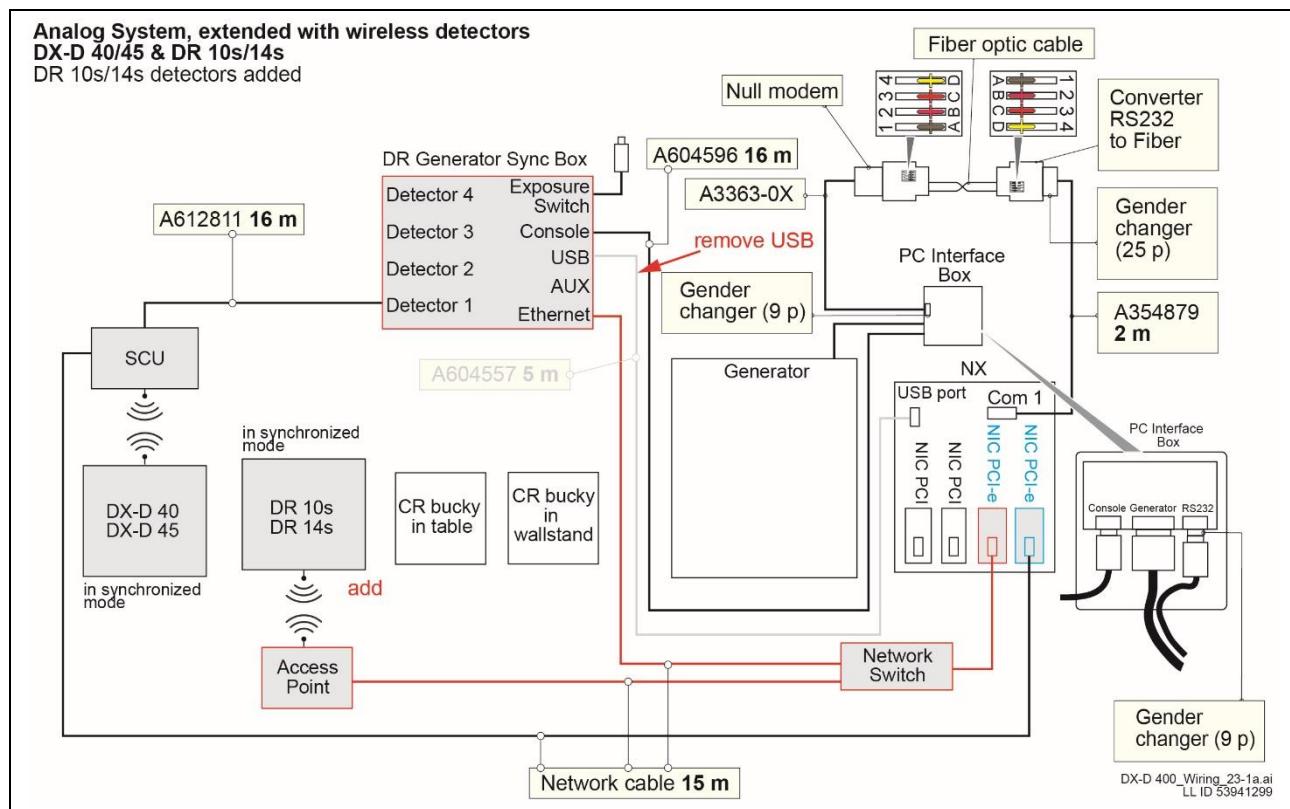


Figure 16: Analog system – DR 10s/14s detectors added to installed DX-D 40/45 detectors

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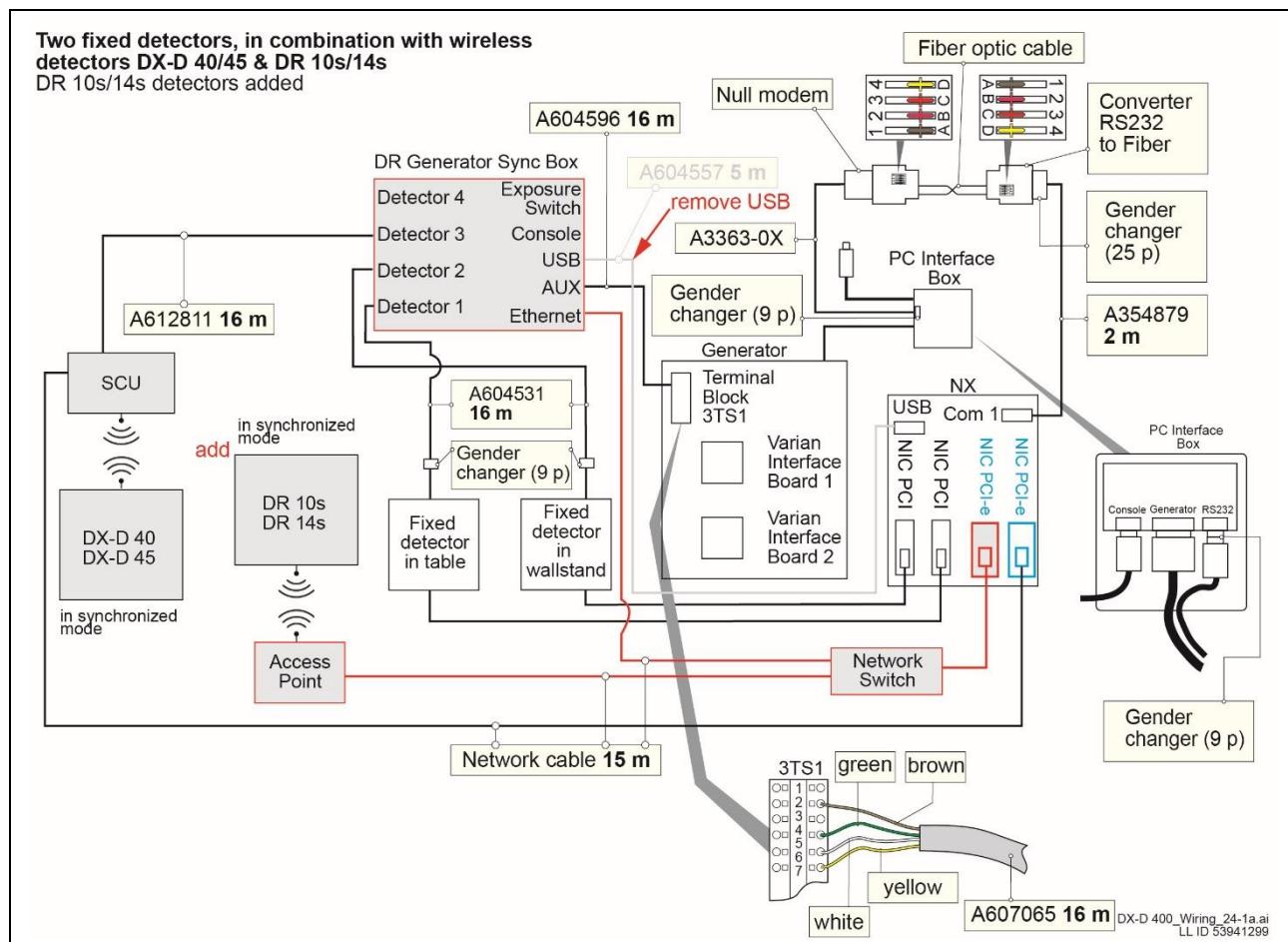


Figure 17: Digital system – DR 10s/14s detector added to installed DX-D 40/45 detectors

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11.6.4 Replacing DX-D 30/35 with a DR 10s/14s detector

In this scenario the DR 14s detector replaces the DX-D 30 or the DR 10s detector replaces the DX-D 35. DX-D 40/45 wireless detectors can be installed additionally.



NOTE:

In case of additional DX-D 40/45 detectors it is not advised to configure more than one IP address on one NIC (as the Vieworks software does not support configuring multiple IP address on one network card).

- It is recommended to use a separate NIC for the DX-D 40/45 detectors.
 - Or alternatively if no additional NIC can be installed (for example no free slot): Make sure that all devices connected to one NIC are in the same subnet configuration, and that only one IP address is configured on the NIC.
- (1) It is recommended to uninstall the software for DX-D 30/35 and remove the hardware (for example X-Ray Interface Box and respective cables), see light gray indicated items in Figure 18 or Figure 19.
The already installed NIC PCIe, Access Point, Network switch and IR data communication unit (from DX-D 30/35) can be reused.
- (2) If a DX-D Retrofit Box is present, replace it with a DR Generator Sync Box. For details refer to section 11.4.
- (3) Install the DR Generator Sync Box RFBF and RFBC software for “Ethernet” connection, see section 4.5.2.
- (4) If applicable update software as listed in section 10.
- (5) If present, remove the USB connection between DR Generator Sync Box and NX.



IMPORTANT:

- Make sure the IP address are set correctly on the network cards (see section 4.3):
 - **192.168.100.20** for DR 10s/14s
 - **169.254.0.50** for DX-D 40/45
- For specific Access Point settings, for example SSID and password, refer to the *DR wireless networking - Service Manual*, Document ID [58221971](#).
- In case of detector sharing of DR 10s/14s detectors observe the description in the *DR wireless networking - Service Manual*, Document ID [58221971](#).

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- (6) Install Trixell detector software TRI 2.1 (or later).
- (7) Install the DR 10s/14s detectors in synchronized mode.
 - Wiring diagram for analog systems, refer to Figure 18.
 - Wiring diagram for digital systems (2 fixed detectors), refer to Figure 19.

For installation details see *DR 10s / DR 14s - Service Manual*, Document ID [53659727](#) and *DR Detector - basic configuration guide*, Document ID [68310512](#).
- (8) Configure the NX.
Details see *DR 10s / DR 14s - Service Manual*, Document ID [53659727](#).
- (9) After detector installation, perform the DR 10s/14s detector relevant part of the *Service Quality Test Tool*, Document ID [55022710](#).

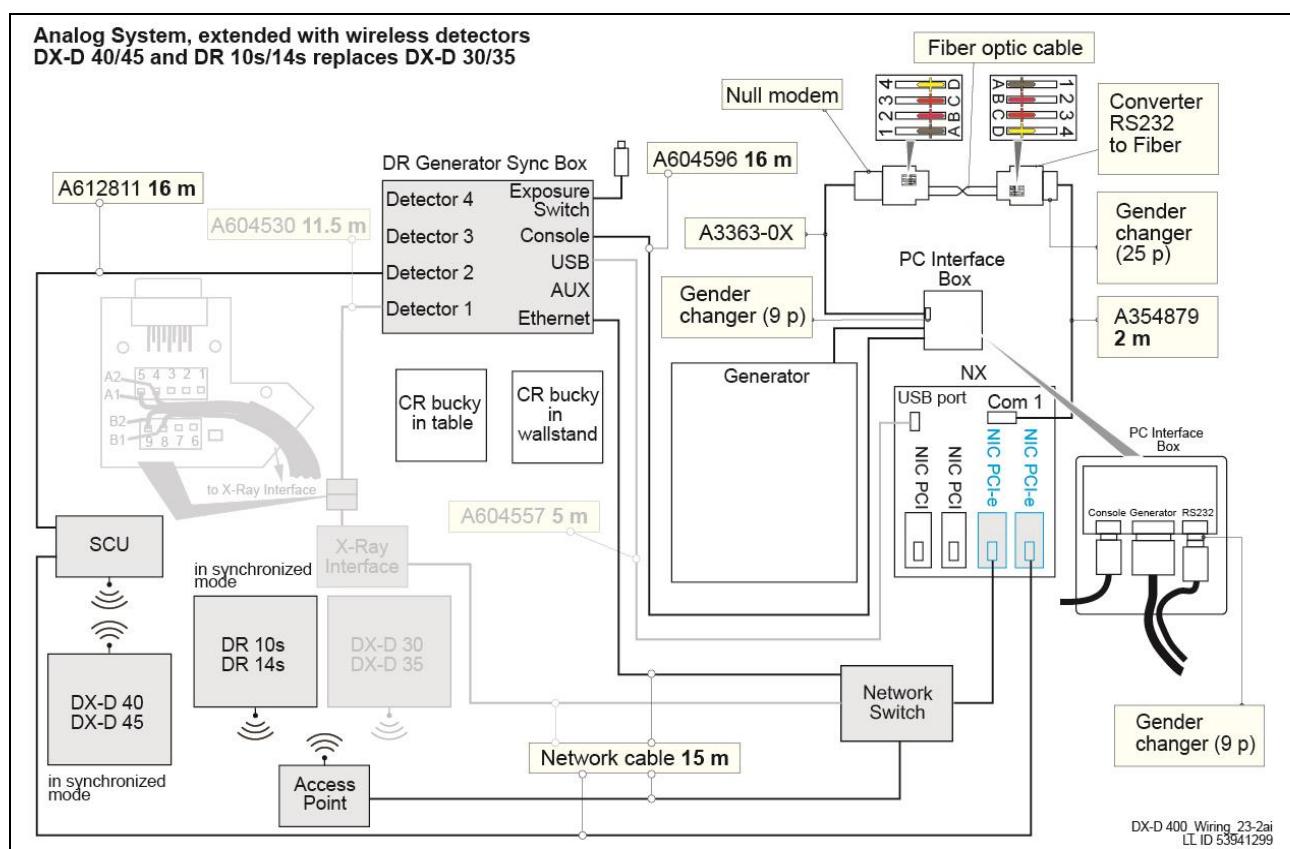


Figure 18: Analog system – DX-D 40/45 & DR 10s/14s detector (replaces DX-D 30/35)

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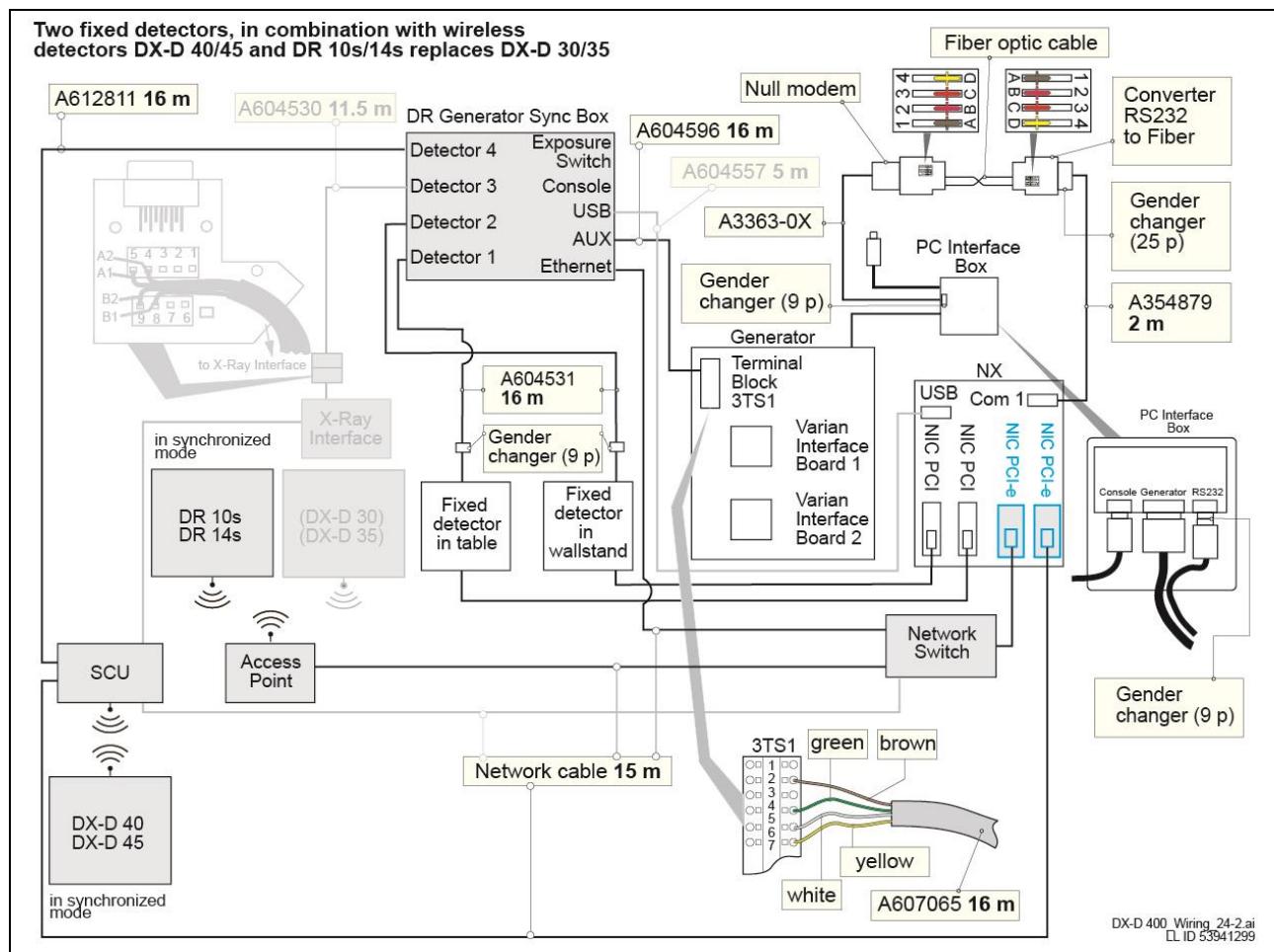


Figure 19: Digital system – DX-D 40/45 & DR 10s/14s detector (replaces DX-D 30/35)

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11.7 XD 10/14/17 detectors for installed base

Basic rules:

- The XD 10/14/17 wireless detectors can be added to work together with already installed wireless detectors (Multi Detector Type Support).
- The XD 10/14/17 wireless detectors can be used to replace already installed DX-D 40/45 detectors.
- There is a new, simple way for detector sharing by pressing the AP mode button for three seconds when changing the room. For details refer to [XD 10 / XD 14 / XD 17 - Service Manual, Document ID 74858636](#).
- The XD 10/14/17 wireless detectors work in Software sync mode only and Viewworks Detector Software VDI 4.0 (or later) is required, for details refer to [XD 10 / XD 14 / XD 17 Service Manual, Document ID 74858636](#).
 - DX-D 40/45 detectors with VDI < 4.0 always used the HW sync configuration.
Since VDI 4.0, DX-D 40/45 can be configured for HW or SW sync.
- HW and SW sync can be used simultaneously in a DX-D 400.
- In every case when XD 10/14/17 are used:
 - Existing sync cable (from SCU to DR Generator Sync Box) can remain in the system.
 - An already installed SCU Box as Access Point can be reused.
 - For compatibility wireless Detector/Access Point refer to [DR wireless networking - Service Manual, Document ID 58221971](#).

11.7.1 Possible Detector Upgrade scenarios

Detector Upgrades	section
Adding XD 10/14/17 to installed wireless detector	11.7.2
Replacing DX-D 40/45 with XD 10/14/17	11.7.3

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11.7.2 Adding XD 10/14/17 to installed wireless detector

- (1) If applicable update software as listed in section 10.



IMPORTANT:

Observe the basic rules for NIC/detector and for mixed use of different wireless detector brands, which are described in:

- *DR Detector - basic configuration guide*, Document ID [68310512](#)
- *DR wireless networking - Service Manual*, Document ID [58221971](#)



IMPORTANT:

The IP address of the Access Point, the NIC in the NX PC and the detectors always has to be set according to the requirements of the XD 10/14/17 detectors:

Removal/exchange of items:

The already installed NIC PCIe, Network Switch, Access Point (if compatible* with XD detectors) can be reused.

- (2) Only if required: Exchange the installed Access Point with one that is compatible* to XD 10/14/17 detectors. For exchange refer to section 11.8 Replacing Access Points.

* For compatibility of wireless detector and Access Point refer to DR wireless networking - Service Manual, Document ID [58221971](#).

- For specific Access Point settings (for example SSID and password) refer to the *DR wireless networking - Service Manual*, Document ID [58221971](#).
- In case of detector sharing of XD 10/14/17 detectors, observe the description in the *DR wireless networking - Service Manual*, Document ID [58221971](#).

- (3) Install Vieworks detector software VDI 4.0 (or later).

- (4) Install the detectors as described in the *XD 10 / XD 14 / XD 17 - Service Manual*, Document ID [74858636](#).

- (5) Configure the NX.

Details see *XD 10 / XD 14 / XD 17 - Service Manual*, Document ID [74858636](#).

- (6) After detector installation perform the XD 10/14/17 detector relevant part of the Service Quality Test.

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11.7.3 Replacing DX-D 40/45 with XD 10/14/17

In this scenario the XD 10/14/17 detector replaces the DX-D 40/45.

Removal of items:

In case of replacing DX-D 40/45 detectors:

The already installed SCU Box as Access Point can be reused for XD 10/14/17.

- (1) Remove DX-D 40/45 detectors.
- (2) It is recommended to remove the HW sync cable between SCU Box and Generator (it does not harm if it remains).
- (3) Remove DX-D 40/45 in the NX Configuration Tool.

 **IMPORTANT:**

- Make sure the IP address are set correctly on the network cards (see also section 4.3):
- If the XD 10/14/17 detector will be used at different systems (mixed use): Configure the detector on all systems in the same way (for example use the same IP address for the NIC and detector).
- For Access Point configuration refer to the *DR wireless networking - Service Manual*, Document ID [58221971](#).
- (4) Export configuration file.
- (5) If applicable, update software as listed in section 10.
- (6) Install Vieworks Detector Software VDI 4.0 (or later – see section 10).
- (7) Configure the DR detector. For details refer to the *XD 10 / XD 14 / XD 17 - Service Manual*, Document ID [74858636](#).
- (8) Import the previously saved configuration file in the NX configuration tool.
- (9) Remove DX-D 40/45 or DR 10e/14e/17e detector(s).

 **NOTE:**

When changing the nickname of the detector, the entire exam tree needs to be adapted as well.

- (10) Activate the configuration. Refer to the *XD 10 / XD 14 / XD 17 - Service Manual*, Document ID [74858636](#).
- (11) Calibrate the DR detector as described in the *XD 10 / XD 14 / XD 17 - Service Manual*, section *Calibration*, Document ID [74858636](#)..
The successful calibration is also a verification of the installation.
- (12) After detector installation perform the XD 10/14/17 detector relevant part of the Service Quality Test.

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11.7.4 Prerequisites for all XD 10/XD 14/XD 17 detector installations

**NOTE:**

For more information about the new detectors and required parts, refer to:

DX-D 400 - SB120 - XD_Detector_released, Document ID [77531153](#)

11.8 Replacing Access Points

The replacement of Access Points with later versions and the content of the wireless components package is described in the following Service Bulletins:

Access Point	Service Bulletin	Reference
Cisco AIR-AP1142	Ex-factory introduced with DX-D 30/35 wireless detectors	n.a.
Cisco AIR-SAP-1602E-x-K9	DX-D 400 - SB011 - Introduction of improved Wireless Access Point Equipment	Document ID 42434777
Huawei AP5130DN	DX-D 400 - SB069 - Access Point Huawei AP5130DN introduced	Document ID 62019736
Aruba IAP-207	DX-D 400 - SB080 - Introduction of Access Point Aruba IAP-207	Document ID 64693020
Aruba AP-303	DX-D 400 - SB100 - Introduction of Aruba AP-303 Access Point	Document ID 72029482

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12 Spare parts

A spare parts list is not integrated in this Service Manual.

Refer to the following documents:

#	Document	Reference
1	DX-D 400 - X-Ray System - Spare Parts List	Document ID 41587553
2	DX-D Fixed Detector - Spare Parts List	Document ID 27857353
3	DX-D 10 / DX-D 20 - Spare Parts List	Document ID 31372837
4	DX-D 30C / DX-D 35C - Spare Parts List	Document ID 33752091
5	DX-D 40 / DX-D 45 / DX-D 60 - Spare Parts List	Document ID 46149764
6	DR 10s / DR 14s / Pixium 4343 - Spare Parts List	Document ID 52514650
7	XD 10 / XD 14 / XD 17 - Spare Parts List	Document ID 75457035
8	DX-D Retrofit System - Spare Parts List	Document ID 48812684
9	DR Generator Sync Box - Spare Parts List	Document ID 48455664
10	XRDI - Spare Parts List	Document ID 41792359
11	NX/MUSICA Acquisition Workstation - Spare Parts List	Document ID 72236819
12	Agfa Digitizer (Optional)	Refer to the Agfa Medimg Library

Note that for some components, spare parts may be named "renewal parts".

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13 Wiring diagram



NOTE:

For the wiring diagrams of the components, refer to the corresponding *Service Documentation* of the components.

For a complete overview of component Service Documentation, refer to the *DX-D 400 - List of Service Documents*, Document ID [54018232](#).

Overall wiring diagram without detector:

For an overall wiring diagram without detector, refer to the *DX-D 400 - X-Ray System - Service Manual*, Document ID [31833723](#), chapters *Introduction* and *System interconnection maps*.



NOTE:

For the wiring diagrams for the modifications of already installed systems, refer to section 0,

Upgrade procedure.

Wiring diagrams	section
Wiring diagram - XRDI connection to NX - No DR detectors	13.1
Wiring diagrams - analog systems	13.2
Analog system – one portable DX-D 10 detector	13.2.1
Analog system – one wireless DX-D 30/35 detector	13.2.2
Analog system – one wireless DX-D 40/45 detector	13.2.3
Analog system – one wireless DR 10s/14s detector	13.2.4
Analog system – combinations of wireless detectors	13.2.5
Wiring diagrams – digital system	13.3
Digital system – two fixed detectors	13.3.1
Digital system – two fixed detectors, one portable detector	13.3.2
Digital system – two fixed detectors, one wireless DX-D 30/35 detector	13.3.3
Digital system – two fixed detectors, one wireless DX-D 40/45 detector	13.3.4
Digital system – two fixed detectors, one wireless DR 10s/14s detector	13.3.5
Digital system – two fixed detectors, combinations of wireless detectors	13.3.6

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13.1 Wiring diagram - XRD connection to NX - No DR detectors

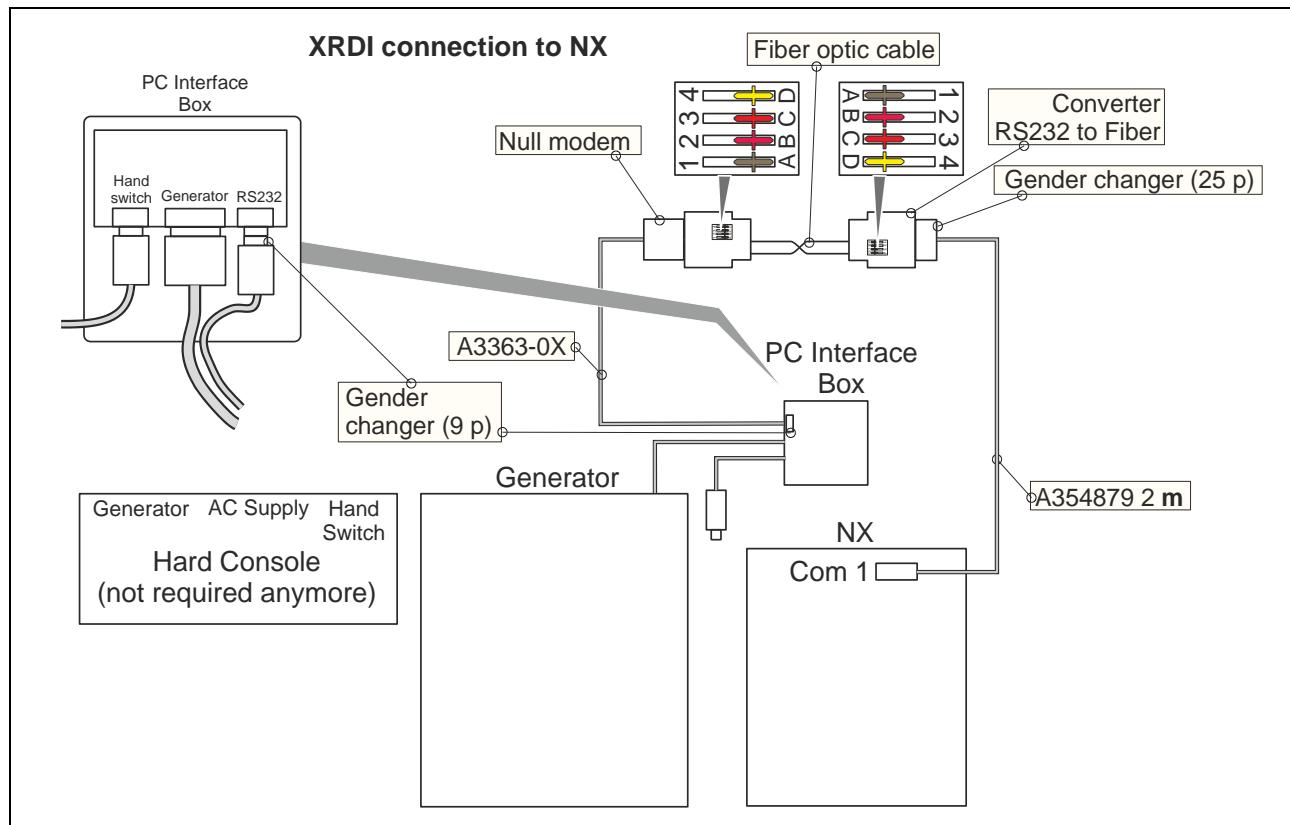


Figure 20

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13.2 Wiring diagrams - analog systems

13.2.1 Analog system – one portable DX-D 10 detector

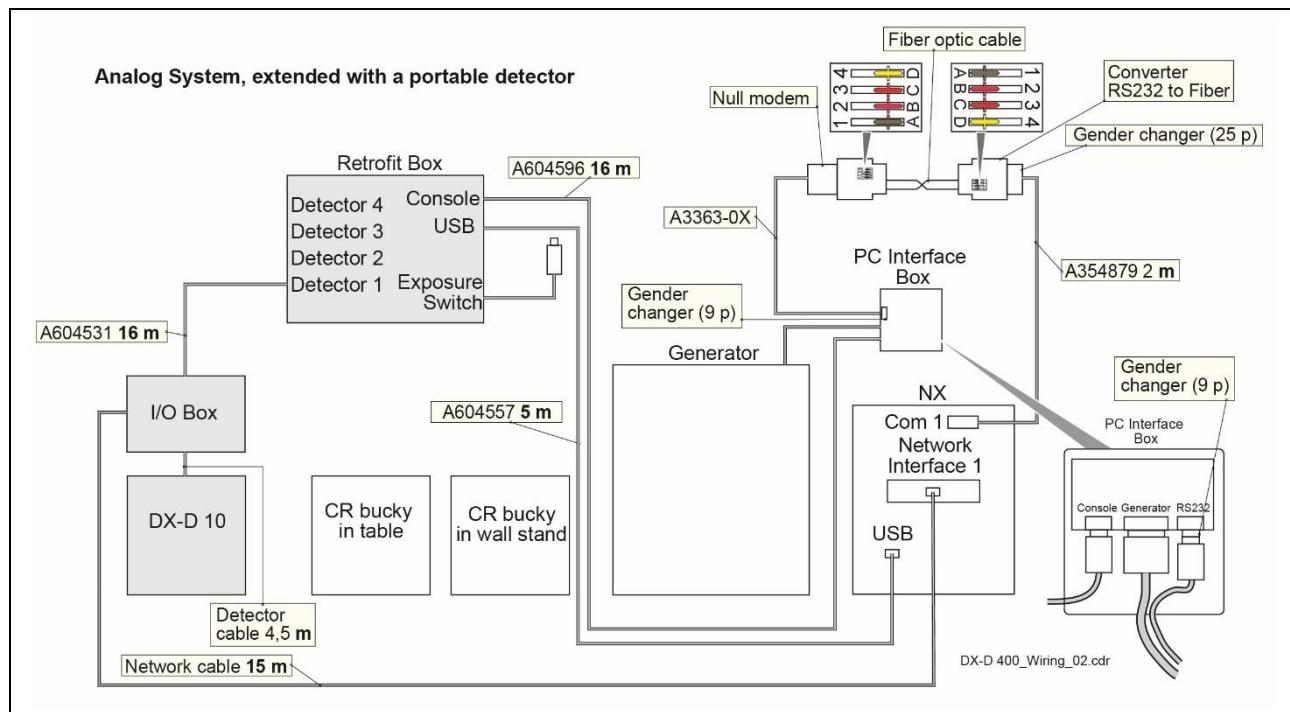


Figure 21

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13.2.2 Analog system – one wireless DX-D 30/35 detector

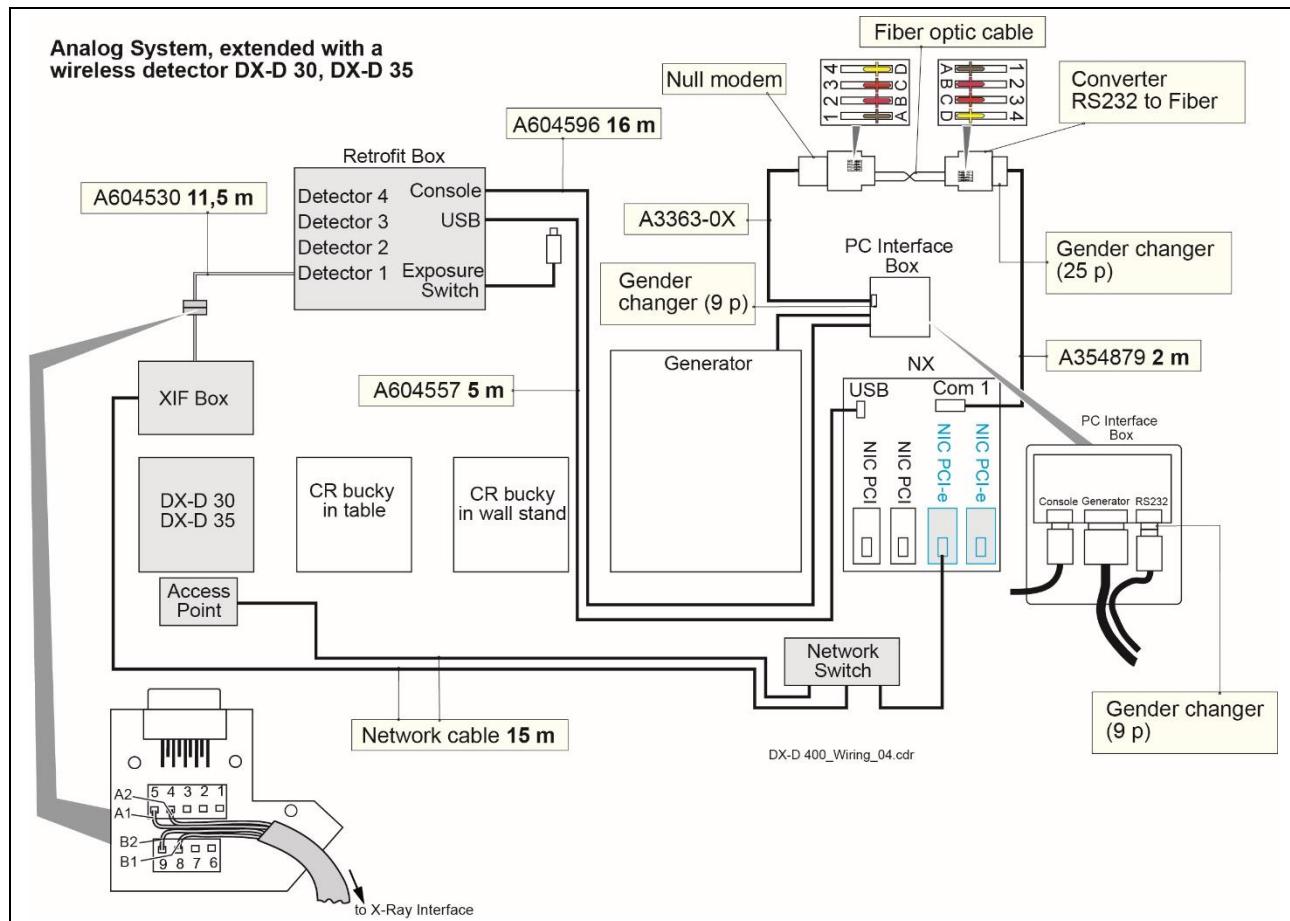


Figure 22

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13.2.3 Analog system – one wireless DX-D 40/45 detector with HW sync

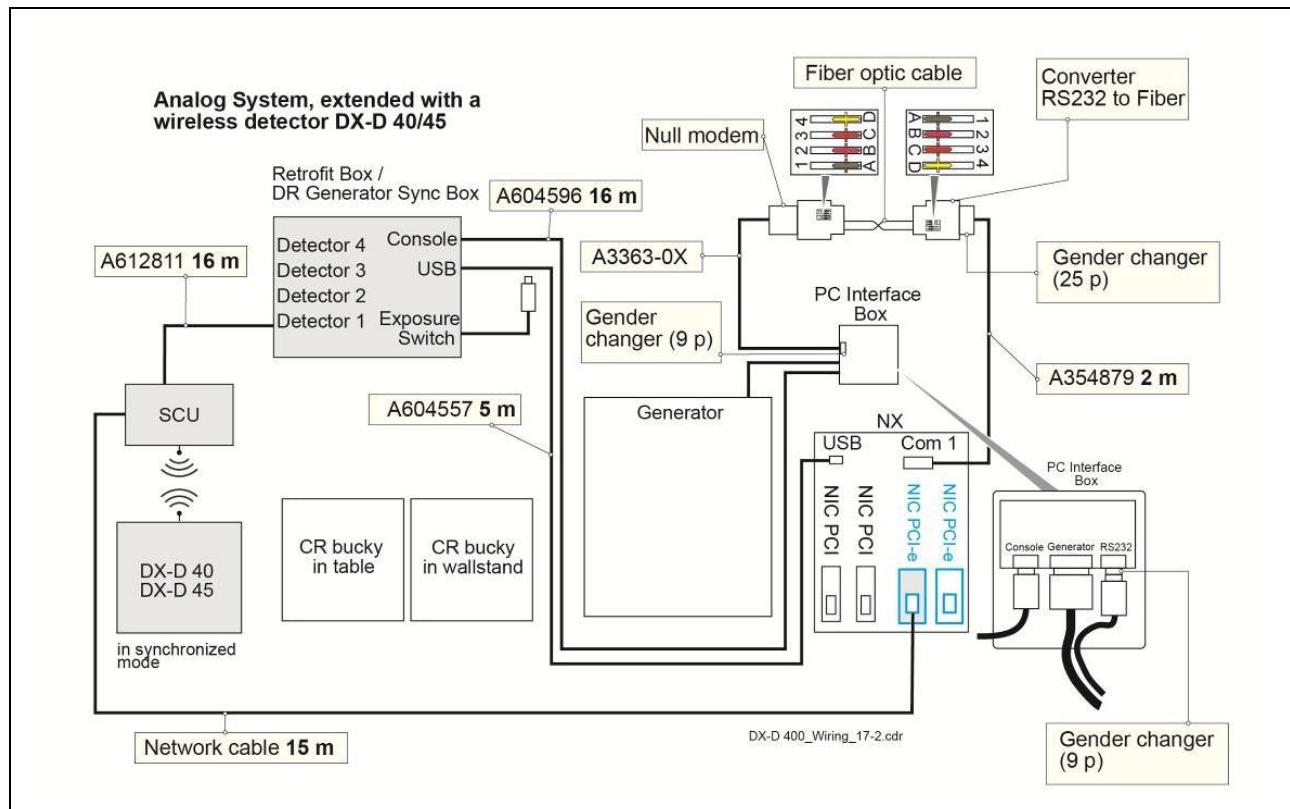


Figure 23

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13.2.4 Analog system – one wireless DR 10s/14s detector

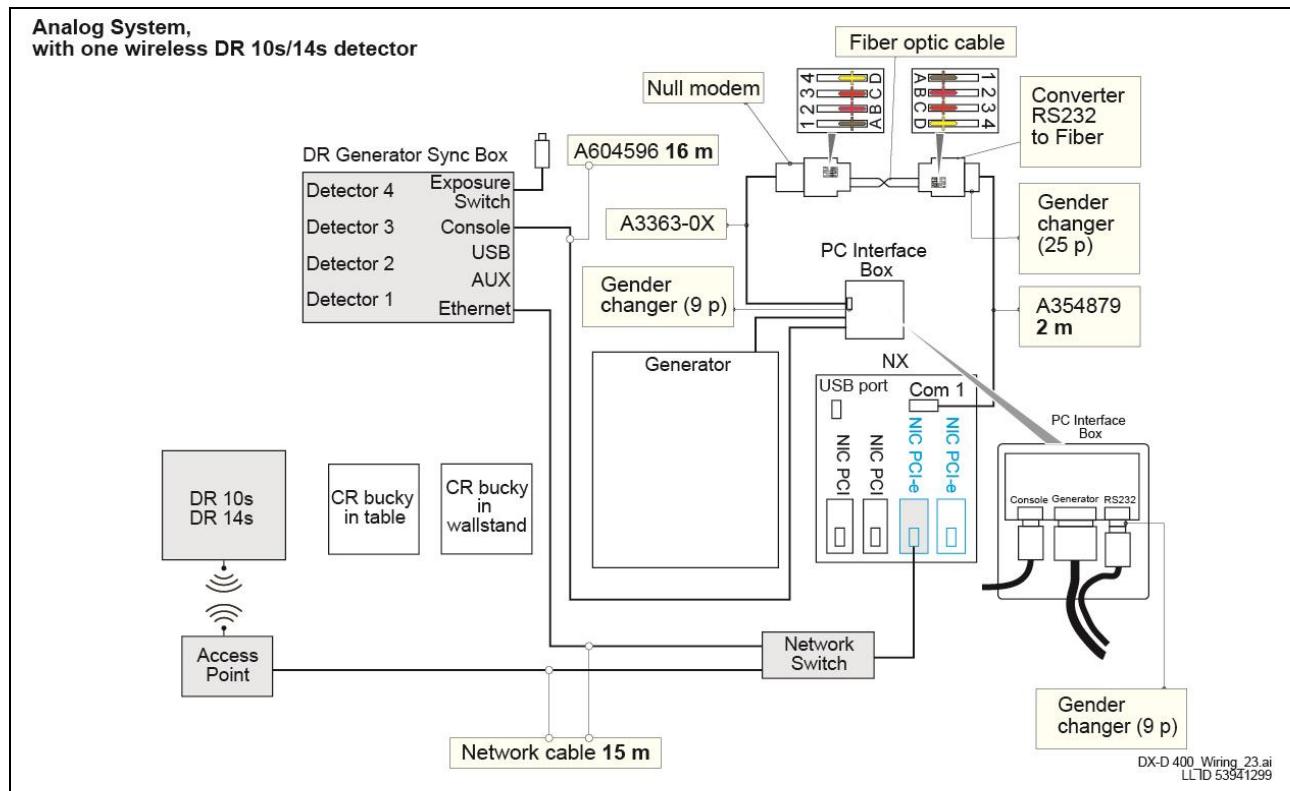


Figure 24

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13.2.5 Analog system – combinations of wireless detectors

For the wiring diagrams of detector combinations, refer also to section 0 Upgrade procedure.

13.2.5.1 Analog system with DX-D 30/35 & DX-D 40/45 HW sync & DR 10s/14s detectors

The figure below shows a combination of three wireless detectors.

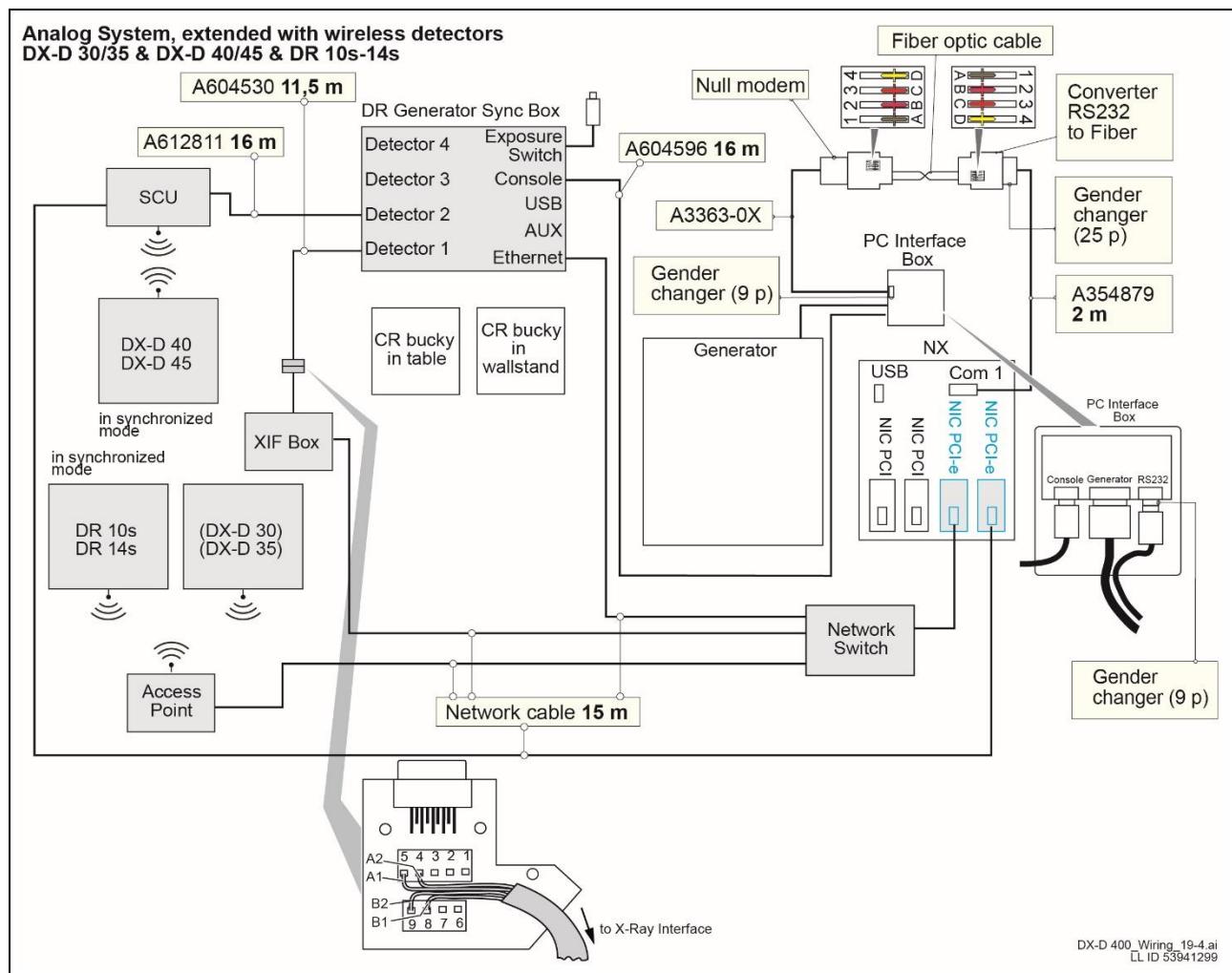


Figure 25: Analog system with DX-D 30/35 & DX-D 40/45 & DR 10s/14s detectors

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13.3 Wiring diagrams – digital system

13.3.1 Digital system – two fixed detectors

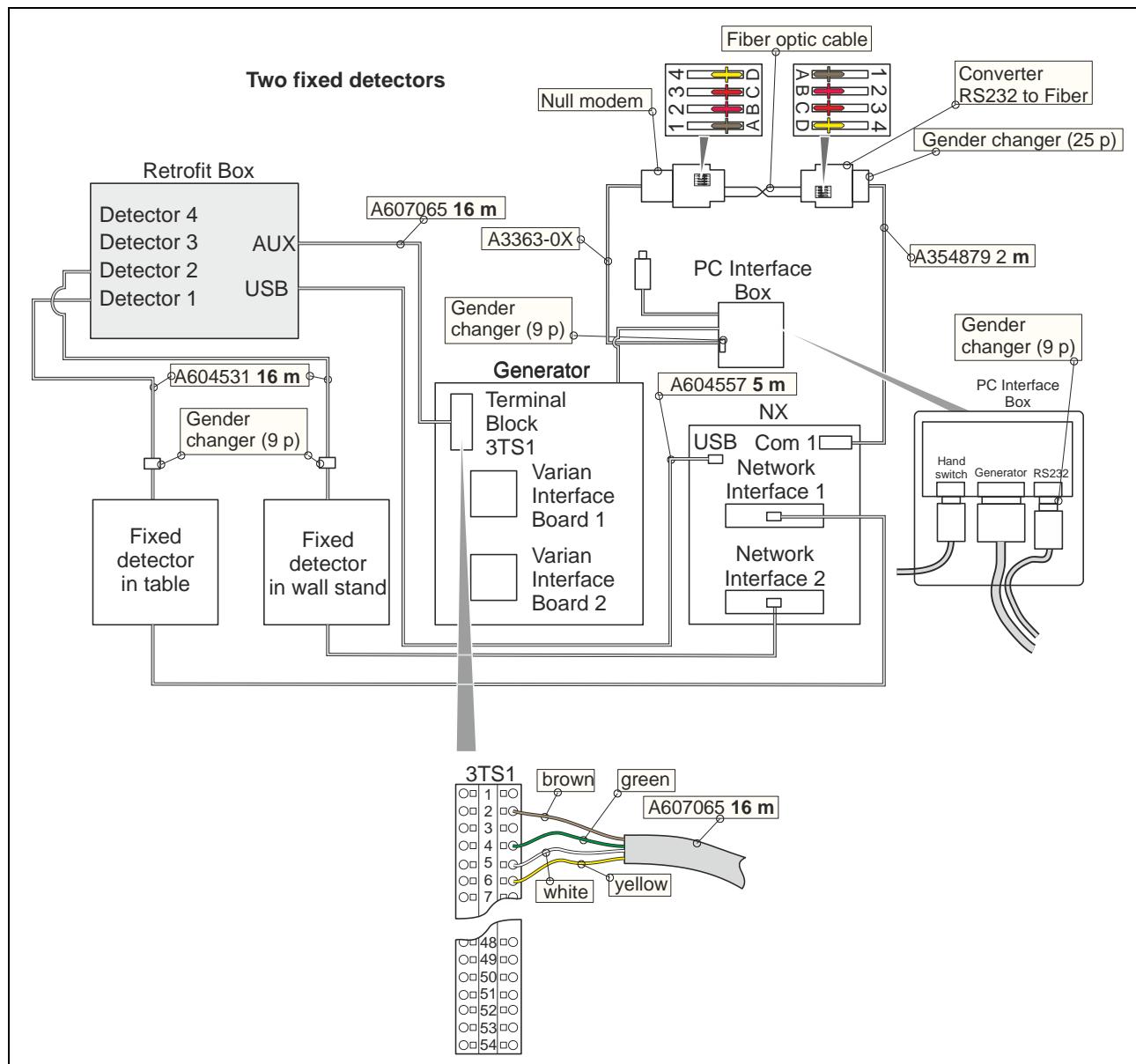


Figure 26

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13.3.2 Digital system – two fixed detectors, one portable detector

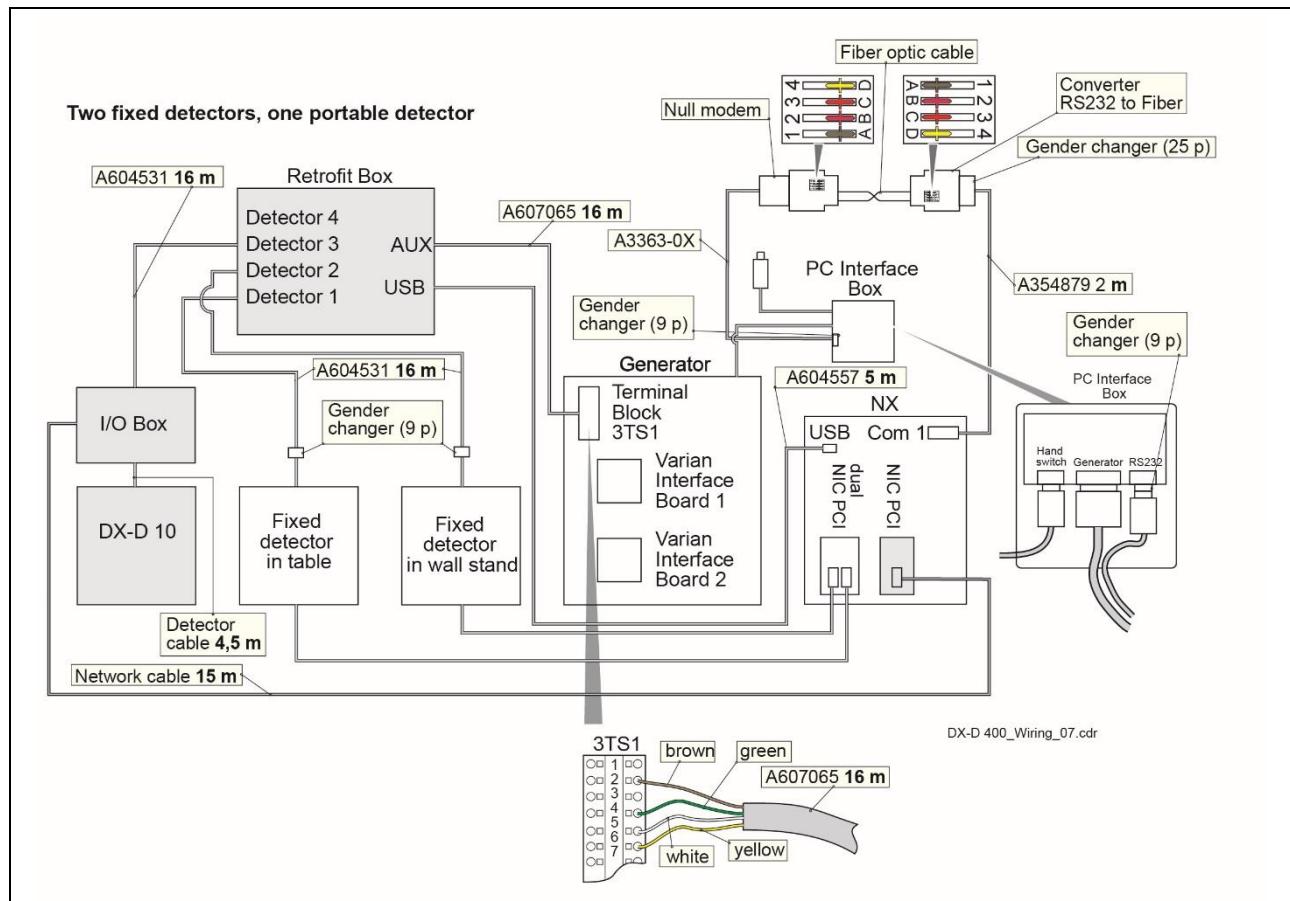


Figure 27

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13.3.3 Digital system – two fixed detectors, one wireless DX-D 30/35 detector

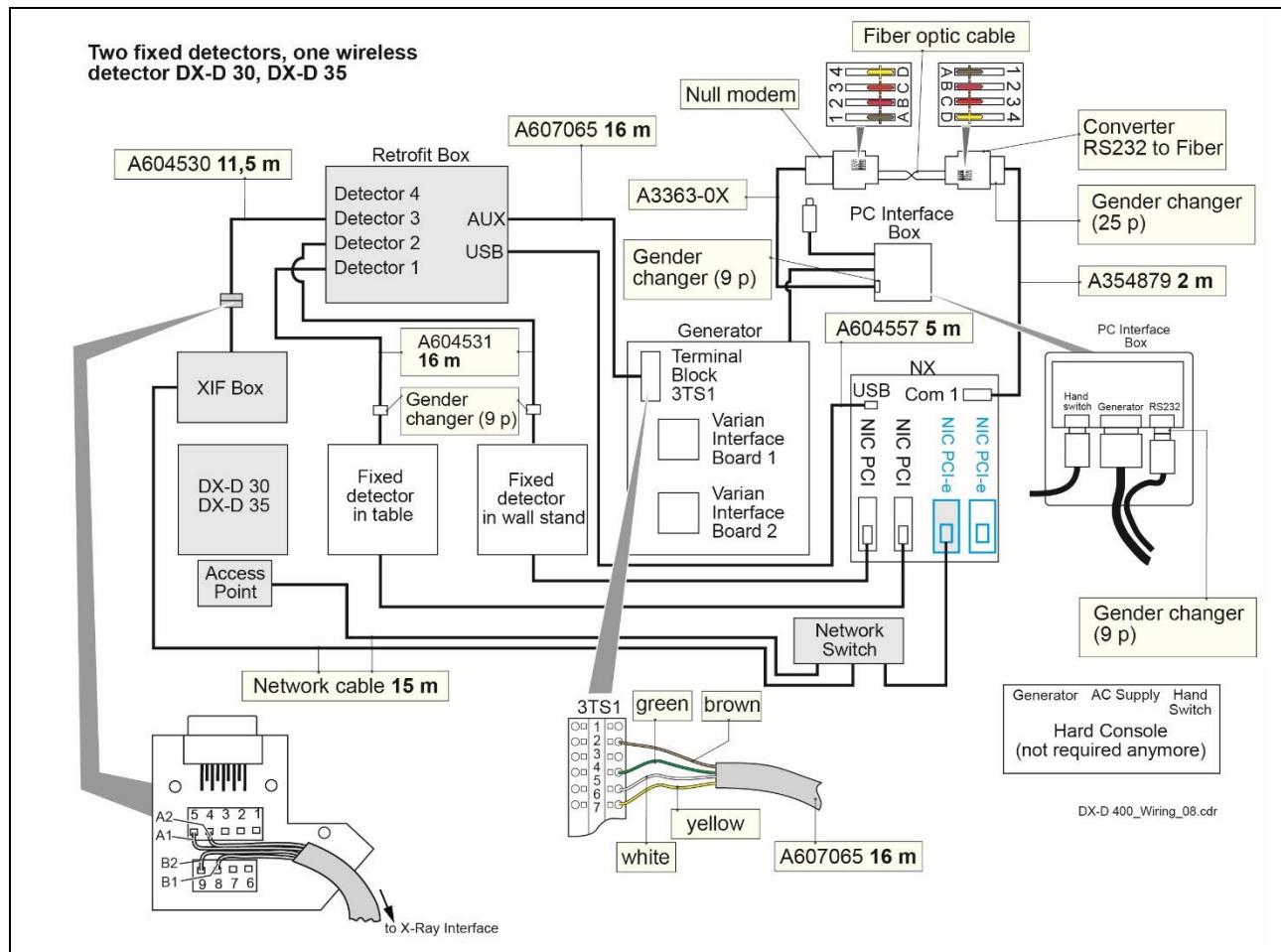


Figure 28

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13.3.4 Digital system – two fixed detectors, one wireless DX-D 40/45 detector HW sync

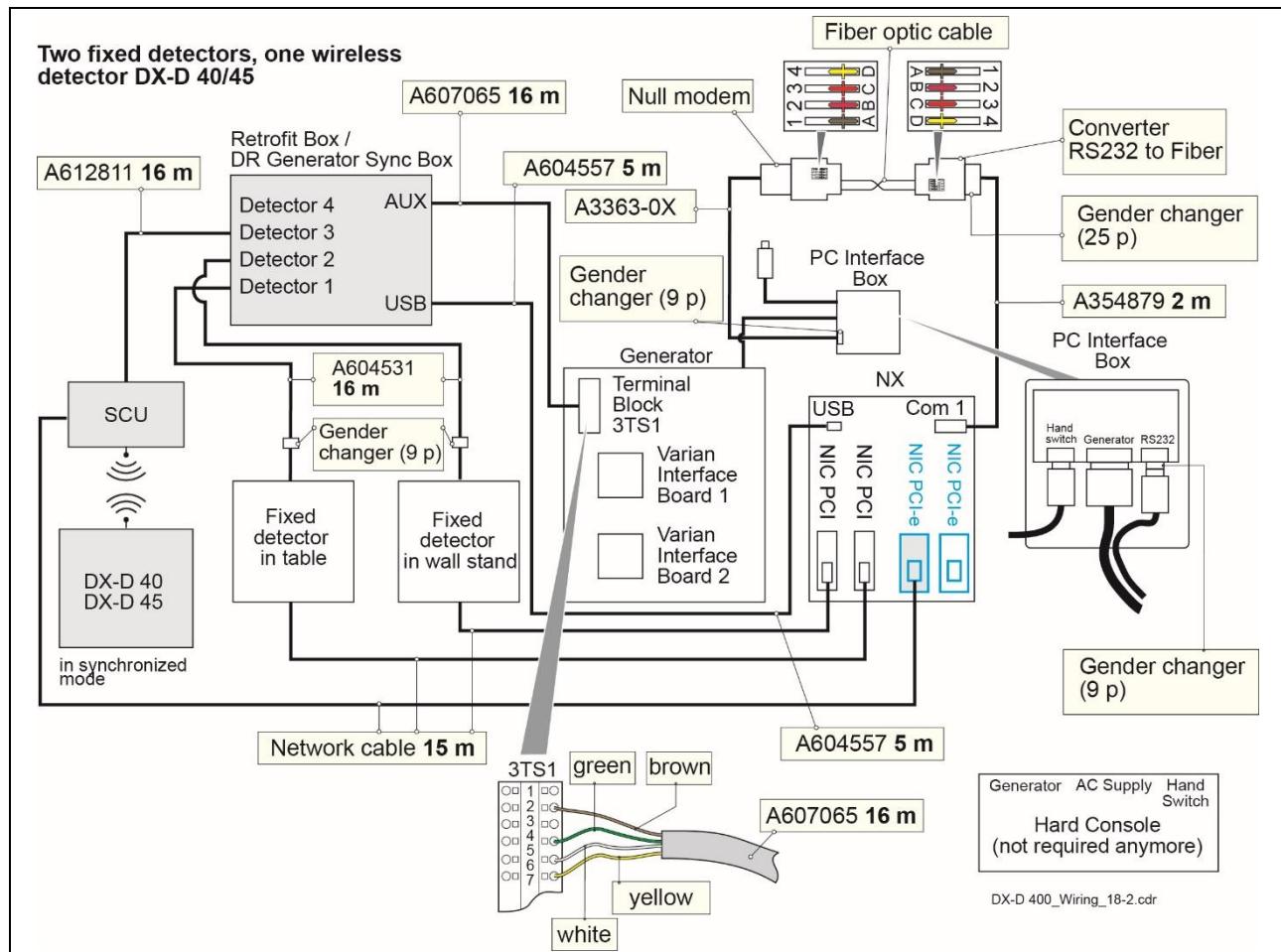


Figure 29

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13.3.5 Digital system – two fixed detectors, one wireless DR 10s/14s detector

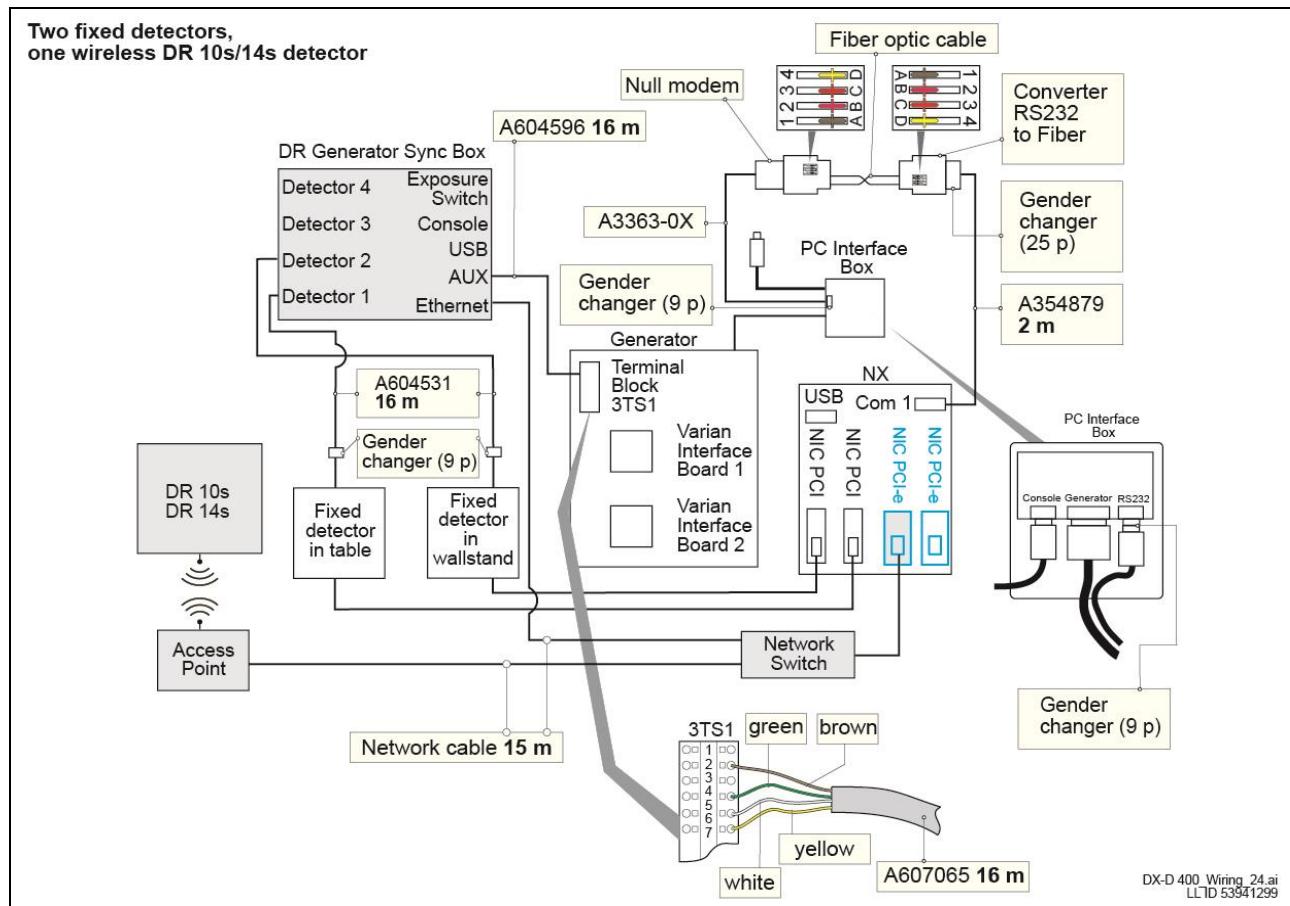


Figure 30

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13.3.6 Digital system – two fixed detectors, combinations of wireless detectors

For the wiring diagrams of detector combinations, refer also to section 0 Upgrade procedure.

13.3.6.1 Digital system – two fixed detectors, DX-D 30/35 & DX-D 40/45 HW sync & DR 10s/14s detectors

The figure below shows a combination of three wireless detectors.

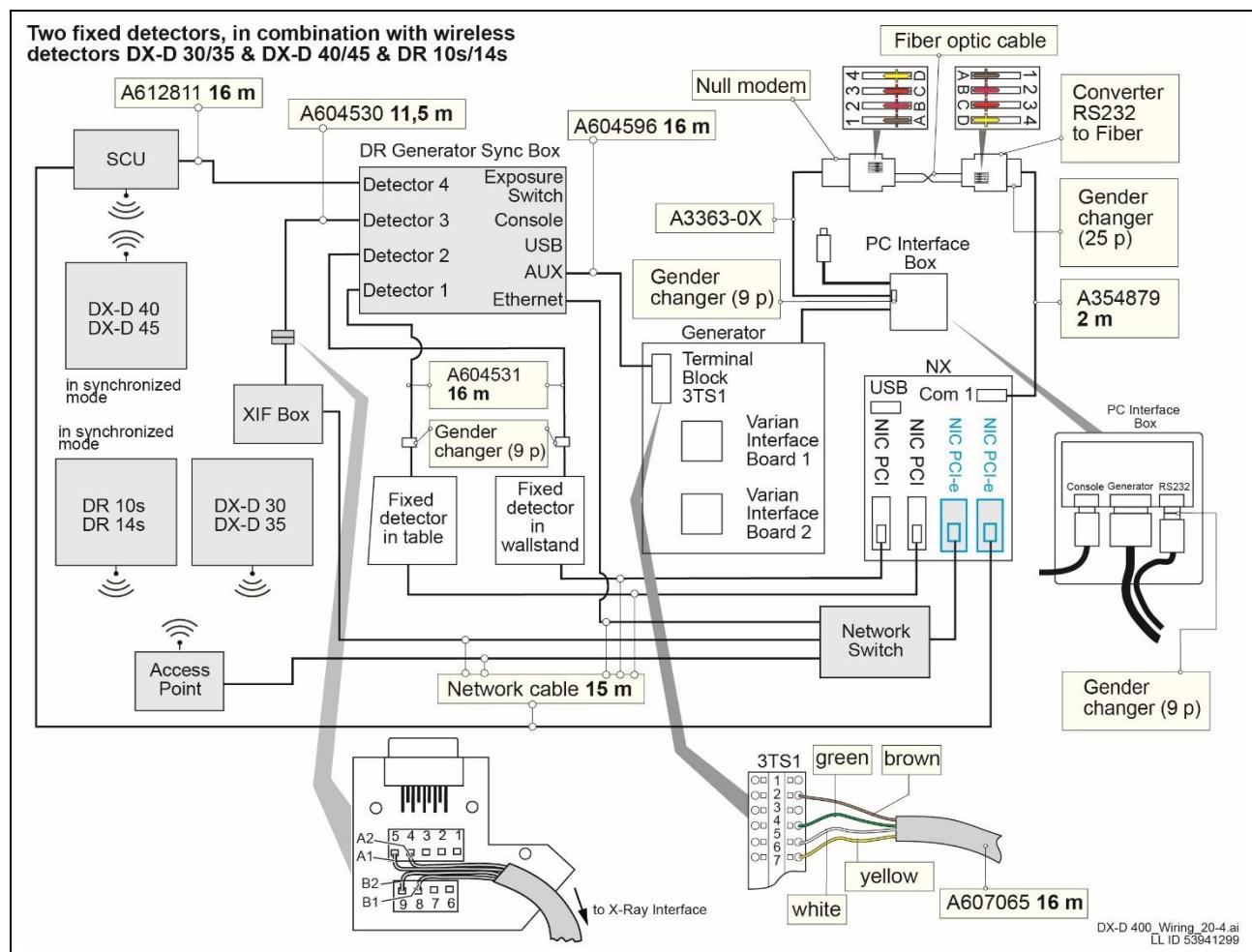


Figure 31: Two fixed detectors, DX-D 30/35 & DX-D 40/45 & DR 10s/14s

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13.3.6.2 Digital system – two fixed detectors, XD 10/14/17 SW sync & DX-D 30/35 & DR 10s/14s detectors

The figure below shows a combination of three wireless detectors.

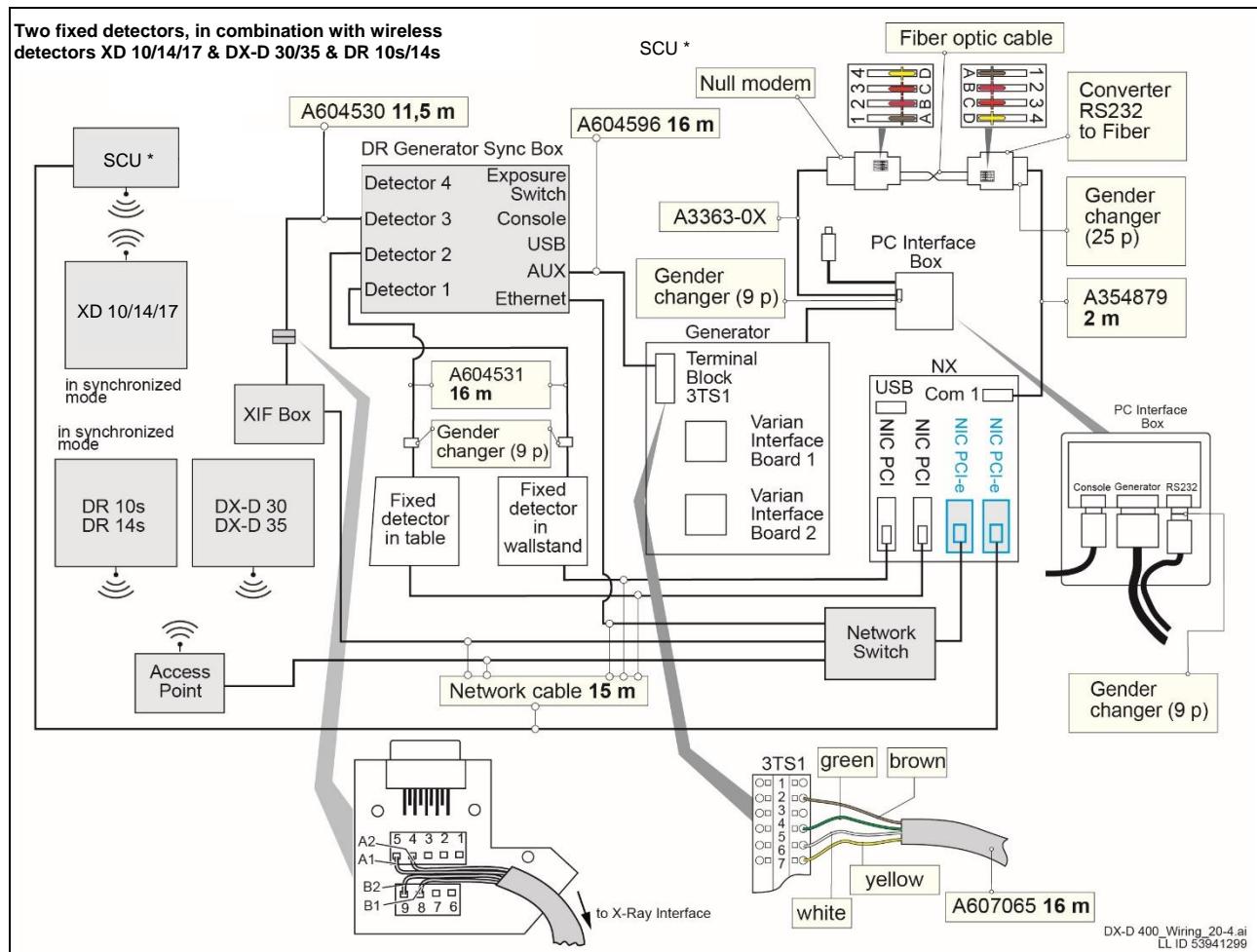


Figure 32: Two fixed detectors, DX-D XD 10/14/17 & 30/35 & DR 10s/14s

* SCU as Access Point if already available in the system,
XD 10/14/17 can also be added to another compatible Access Point.

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