GALILEOS / ORTHOPHOS XG 3D

Software Components Operating Instructions
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1 Introduction

This manual provides the following instructions and information to help you use the software for Sirona 3D X-ray units (DVT):

- Creating a 3D scan
- Instructions on use of the server services "Sirona Control Server" including "SIRONA Control Admin".
- The procedure to be followed when problems occur during the transmission of image data from the SIRONA 3D X-ray unit to the visualization PC after a patient scan (rescue management).

This manual does not provide descriptions of the GALAXIS software. You will find them in the document entitled "GALAXIS Operator's Manual".

1.1 Abbreviations

The following abbreviations are used in this document:

- **GALILEOS**: SIRONA 3D X-ray system
- **ORTHOPHOS XG 3D**: SIRONA 3D X-ray system
- **SIDEXIS**: SIRONA Dental X-Ray Imaging System
- **RCU**: Sirona Reconstruction Server
- **SCS**: Sirona Control Server (server service)
- **SCA**: Sirona Control Admin plug-in
- **Reconstruction**: Reconstruct existing 3D raw images
- **Rescue**: Retrieval of data which has not yet been transferred
2 Configuration

2.1 GALILEOS

2.1.1 Call method

1. Start the “SIDEXIS Manager”.
2. Click the “GALILEOS Configuration” button.
   - The “ConfigExplorer” configuration dialog box then opens.

2.1.2 Language version

Call method

➢ Under the “Plugin configuration” selection option, select the subitem “General settings”.

Activation/Deactivation

1. In the “Exposure sequence” area, activate/deactivate the “Language output” check box.
2. Click the “Save values” button to apply the settings.

2.1.3 Image filters

Explanation

Filter settings for X-ray reconstructions using GALILEOS can be made via the “Reconstruction settings” configuration dialog box.

Filter:

- Metal artifact reduction (MARS)
- Noise reduction (various filters for grading)

Call method

➢ Under the “Plugin configuration” selection option, select the subitem “Reconstruction settings”.

Configuration

1. Activate/deactivate the desired filter functions by clicking on the “on”/”off” buttons.
   - The selected filter settings are displayed in a preview using an example data record. A sagittal, coronal, and axial scan are shown.
2. Click the “Save current settings” button to apply the settings.
   - A confirmation dialog box appears.
3. Click on the “Yes” button.
   - All Galileos data records are now reconstructed with these filter settings, including selected data records which have been reconstructed again via SCA.
Default setting
1. Click on the "Reset to default settings." button.
    A confirmation dialog box appears.
2. Click on the “Yes” button.

Display
Images opened (for a panoramic and 3D view) in SIDEXIS XG are indicated with the filter used on the image title bar.

Designation:
- Metal artifact reduction (MARS)
- Noise reduction (various filters for grading)

2.1.4 Changing your password

Explanation

<table>
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<th>IMPORTANT</th>
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<tbody>
<tr>
<td>It is recommended not to change the password.</td>
</tr>
<tr>
<td>The password is the same as the password used when installing the “Sirona Reconstruction Server”.</td>
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</table>

Call method
➢ Under the “Plugin configuration” selection option, select the subitem "".

Changing your password
1. In the "Sirona Control Server" selection box, select the "Sirona Control Server" in question.
2. Enter the old password in the "Old password" text box.
3. Enter the new password in the "New password" text box.
4. Enter the new password in the "Confirm new password." text box to confirm.
5. Click the "Save values" button to apply the settings.

2.1.5 Exit
➢ Click on the “Quit” button.
    If changes have not yet been saved, a confirmation dialog box appears.
   In this case, click on the "Yes" button.
    The “ConfigExplorer” dialog closes.

2.2 ORTHOPHOS XG 3D

2.2.1 Call method
1. Start the "SIDEXIS Manager".
2. Click on the "XG3D Configuration" button. 
   ➢ The "ConfigExplorer" configuration dialog box then opens.

### 2.2.2 Language version

**Call method**

➢ Under the "Plugin configuration" selection option, select the subitem "General settings".

**Activation/Deactivation**

1. In the "Exposure sequence" area, activate/deactivate the "Language output" check box.
2. Click the "Save values" button to apply the settings.

### 2.2.3 Automatic image optimization

**Explanation**

Depending on the image type involved (panorama or ceph), there are certain settings that are useful for diagnostic image display. The possibility of having these settings performed automatically by SIDEXIS XG in the screen display of the corresponding image type has been created here.

**Call method**

➢ Under the "Plugin configuration" selection option, select the subitem "Automatic Image Optimization" for the respective image type (panorama or ceph).

**Activation/Deactivation**

➢ In the "Settings Image Optimization Panorama" or "Settings Image Optimization Ceph" area, activate/deactivate the "Automatic Image Optimization" check box.

**Structure and operation**

The following screen displays can be set depending on the image type (panorama or ceph):

- List boxes Filter 1, Filter 2, and Filter 3.
  - Up to three filters can be specified for the screen display here.
  - The list boxes are processed from top to bottom.
  - Example:
    - After an image view has been optimized with the "Sharpen" filters, the "Reduce noise" filter is used to reduce the increased noise level of the image view.
  - "Brightness" input field
    - The brightness is set here.
  - "Contrast" input field
The contrast is set here.

- "16 bit" check box

Newly acquired X-ray images with 16-bit depth are processed and managed with the "16 bit" check box activated.

Accepting settings

➢ Click the "Save values" button to apply the settings.

2.2.4 Changing your password

Explanation

**IMPORTANT**

It is recommended not to change the password.
The password is the same as the password used when installing the "Sirona Reconstruction Server".

Call method

➢ Under the "Plugin configuration" selection option, select the subitem "Data container settings".

Changing your password

1. In the "Sirona Control Server" selection box, select the "Sirona Control Server" in question.
2. Enter the old password in the "Old password" text box.
3. Enter the new password in the "New password" text box.
4. Enter the new password in the "Confirm new password." text box to confirm.
5. Click the "Save values" button to apply the settings.

2.2.5 Configuring the 2D data container

Explanation

- **2D data container:**
The 2D data container holds temporary data gathered during a 2D scan.

- **Circular buffer:**
2D data containers which are older than the specified storage time are deleted in order to create space on the hard disk.

Call method

➢ Under the "Plugin configuration" selection option, select the subitem "Data container settings".

Changing the path

➢ In the "Path" field, enter the desired path for the 2D data container.
Activating the circular buffer
➢ Activate the "Ring buffer active" check box (default value = "activated").

Configuring the storage time of the circular buffer
➢ In the "Days" text box, enter the desired storage time in days (default value = "150" days).

Save values
➢ Click the "Save values" button to apply the settings.

2.2.6 Exit
➢ Click on the "Quit" button.
   ▼ If changes have not yet been saved, a confirmation dialog box appears.
   In this case, click on the "Yes" button.
   ▼ The "ConfigExplorer" dialog closes.
Creating 3D X-Rays

General

This chapter describes the operating sequence for taking a 3D patient scan.

- For detailed descriptions of how to operate the 3D X-ray unit, please refer to the relevant unit operating instructions.
- The operation of SIDEXIS XG software is explained in detail in the document entitled “Operator’s Manual” (REF 59 62 134).

3.1 Enabling exposure readiness

1. Start SIDEXIS XG.
2. Select the appropriate patient.
3. Click the "3D-Exposure readiness" button.

If only one 3D X-ray unit is enabled for the workstation, it will be selected automatically. Otherwise the "Select X-ray component" dialog box appears.

IMPORTANT

If the last scan has not yet been confirmed, you must confirm it before proceeding:

➢ Press the R key on the unit.
➢ Press the R key again to move the unit to the start position.
4. To select the desired X-ray component, click on it and then press "OK" to confirm.

The software first checks the network connection to see whether the acquisition unit is communicating correctly before displaying the Exposure Readiness dialog.

Only with GALILEOS: For units with diaphragm "Type 3", a notice ("Please ensure correct diaphragm setting on X-ray tube assembly of 3D device!") appears in the message window.

IMPORTANT

The procedure for enabling X-ray acquisition units for single workstations is described in detail in the "SIDEXIS XG Installation Instructions".
3 Creating 3D X-Rays

3.1 Enabling exposure readiness

Creating 3D X-Rays
Sirona Dental Systems GmbH
Software Components Operating Instructions GALILEOS / ORTHOPHOS XG 3D

Example screen: ORTHOPHOS XG 3D

**IMPORTANT**

**Observe flashing lights:**
The unit is only ready for exposure when the green area in the dialog is flashing.

"Options" button

- Click the "Options" button.
  - The Exposure Readiness dialog box is extended by one option area.

Example screen: GALILEOS
Example screen: ORTHOPHOS XG 3D

The following options are available:

- "Import to SIDEXIS immediately" check box
  This check box is selected in the factory default setting. **NOTICE! This setting should be changed only by experienced users!**
  If this check box is selected, the scan will be saved directly to the SIDEXIS XG database (PDATA).
  Otherwise the scan will remain in the data container on the Sirona Reconstruction Server (RCU):
  - This enables an increased scan rate, since the time interval between scans can thus be reduced.
  - The scan must be imported at a later point of time via Sirona Control Admin Rescue.

- "Start 3D viewing immediately" check box
  This check box is not selected in the factory default setting.
  If this check box is selected, GALAXIS will be opened with the newly acquired image data as soon as they have been successfully stored in SIDEXIS XG.

- "Minimize exposure dialog box automatically" check box
  This check box is not selected in the factory default setting.
  If this check box is selected, the scan dialog box will be minimized automatically.

- "Inform at end of exposure" check box
  This check box is not selected in the factory default setting.
  If this check box is selected, the scan dialog box is brought to the fore and a message dialog box appears following the scan.

- Not for ORTHOPHOS XG 3D:
  Check box "Place panorama in SIDEXIS"
  This check box is selected in the factory default setting.
  If this check box is selected, a panoramic scan with a conventional blurring technique will be displayed directly in SIDEXIS.
IMPORTANT

The following applies to all check boxes:

Regardless of whether a scan is subsequently taken or interrupted, if a check mark is removed or inserted the resulting setting then also applies to all further scans until it is changed by the user.
3.2 Taking a scan

1. Position the patient properly (operation is explained in detail in the operating instructions of the 3D X-ray unit).

2. You can now trigger a scan at the unit.
   - While the scan is taking place, "Scan in progress..." appears in the exposure readiness dialog.
   - The scan is transferred in single images and forwarded to the Sirona Reconstruction Server (RCU) for reconstruction. "Processing image..." is displayed in the dialog box.
   - When reconstruction is complete, the data is imported into SIDEXIS XG. "Importing volume data" is displayed in the dialog box.
   - Finally, the first image of the scan appears in SIDEXIS XG while the title bar of the scan displays the 3D symbol.

Example screen: GALILEOS

- To conclude, the scan is then saved. You can follow the progress of the save process in the bottom left corner of the SIDEXIS XG program window.

IMPORTANT

- Saving the data can take more than a minute. The system will not respond during this time.
4 Sirona Control Server / Reco Server Service

4.1 General

“Sirona Control Server” (SCS) and "Reco Server" are services which run on the "Sirona Reconstruction Server" (RCU).

SCS is used for:
- acquiring scans
- managing license information
- communicating with the "Reco Server"

The "Reco Server" service is required for the reconstruction of 3D volume data.

Prerequisites

In order to operate a Sirona 3D X-ray unit, the "Sirona Control Server" service and the "Reco Server" service must be installed on the "Sirona Reconstruction Server" (RCU).

Installation of server services on the "Sirona Reconstruction Server" (RCU) is described in the document entitled "GALILEOS / ORTHOPHOS XG 3D Software installation".

4.2 SCS Monitor

**IMPORTANT**
The SCS monitor is not started automatically and must be started via the "SIDEXIS Manager".

**Starting the SCS Monitor**

1. Start "SIDEXIS Manager".
2. Click on the "Sirona Control Server" button.

**IMPORTANT**
This link is only available on the "Sirona Reconstruction Server" (RCU) where the SCS was installed.

**Starting and stopping the "Sirona Control Server" service**
The "Sirona Control Server" service can be started and stopped using the SCS Monitor, which only runs on the "Sirona Reconstruction Server" (RCU). However, this is not necessary in normal operation.
Sirona Control Server

Connecting Sirona Control Server...
Sirona Control Server service status: Running

Show log
Start
Stop
Hide

Connected to local RCU

IMPORTANT
When the "Sirona Control Server" is stopped or started, the "Reco Server" service is automatically stopped or started as well.

4.3 SIRONA Reconstruction Monitoring

The "Reco Server" service can also be started and stopped separately using the "SIRONA Reconstruction Monitoring" application, which also only runs on the "Sirona Reconstruction Server" (RCU). However, this is not necessary in normal operation.

SIRONA Reconstruction Monitoring

Windows Service Information
Name: CBRRecoServer
Status: Running

Start Service
Stop Service

Reconstruction Server Information
Version: 1.3.070404.5924
Client status: Client connected
Client address: 127.0.0.1:2184

Reconstruction Server Logging
11.04.2007 11:38:22 - INFO CBRRecoServer - Command received: GET_STATUS
11.04.2007 11:38:22 - INFO CBRRecoServer - Command received: NEXT_IMAGE
11.04.2007 11:38:22 - INFO CBRRecoServer - Command received: RELEASE
11.04.2007 11:38:22 - INFO CBRRecoServer - Command received: GET_STATUS

About
Minimize to system tray
5 Sirona Control Admin

“Sirona Control Admin” (SCA) is a specialized client for the “Sirona Control Server” (SCS) and is used to remotely control the following SCS services and components:

- SCS Information
- DataContainer management
- Rescue management
- License management

5.1 Starting via SIDEXIS Manager

SCA modes

SCA can be started on any workstation using the “SIDEXIS Manager”. You can start SCA in one of two modes:

- In Rescue mode [→ 18] via “Sirona Control Admin Rescue”.
- In License mode [→ 20] via “Sirona Control Admin License”.

5.2 Sirona Control Admin Rescue

In Rescue mode, “SIRONA Control Admin” (SCA) contains the following tabs:

1. “Settings”
2. “Rescue”
"Settings" tab card

- In the "Server data" area you can see the IP configurations and the description of the "Sirona Reconstruction Server" (RCU) which is currently selected.
- In the "Status" area you can see the status of the SCS on the selected "Sirona Reconstruction Server" (RCU). An LED indicates whether the SCS is operational:
  - Green LED - server is ready for operation.
  - Red LED - server is not ready for operation.
- The SCS services including their version numbers, which are available on the selected "Sirona Reconstruction Server" (RCU), are displayed in the "Services" area.

Use the "Restart" button to restart the SCS including the "Reco Server" service on the selected "Sirona Reconstruction Server" (RCU). When you restart the SCS, you may need to perform an update using the "Refresh" button.

If the server is not ready for operation even after "Restart" has been carried out, you can then shut down the "Sirona Reconstruction Server" (RCU) manually and restart it again via the "Reboot RCU PC" button.

"Rescue" tab card

This tab displays a list of all Rescue states. The status of a data container can be one of the following options:

- Device IP with the name of the unit
- "ready"
- "working"

For each Rescue state there is a description - generally a patient name or similar - and a creation date.
5.3 Sirona Control Admin License

In License mode, "SIRONA Control Admin" (SCA) contains the following tabs:

- "Settings"
- "Licenses"
- "Sessions"

"Settings" tab card

The information of the selected server (left side of the window) is displayed here.

- In the "Server data" area you can see the IP configurations and the description of the "Sirona Reconstruction Server" (RCU) which is currently selected.
- In the "Status" area the status of the SCS is displayed on the selected "Sirona Reconstruction Server" (RCU). An LED indicates whether the SCS is operational.
- The SCS services available on the selected "Sirona Reconstruction Server" (RCU) are displayed along with their version information in the "Services" area.

Use the "Restart" button to restart the SCS including the "Reco Server" service on the selected "Sirona Reconstruction Server" (RCU). When you restart the SCS, you may need to perform an update using the "Refresh" button.

If the server is not ready for operation even after "Restart" has been carried out, you can then shut down the "Sirona Reconstruction Server" (RCU) manually and restart it again via the "Reboot RCU PC" button.

"Licenses" tab card

This tab displays all of the licenses located on the dongle attached to the selected Sirona Reconstruction Server (RCU). If several dongles are
attached to the selected Sirona Reconstruction Server (RCU), all of the licenses available on all of the dongles are displayed.

- The ID numbers of the respective license types are displayed in the "ID" column.
- The license types are listed in the "Description" column.
- The number of acquired licenses of the respective license type is displayed in the "Count" column.
- The number of licenses of the respective license type currently used is displayed in the "Used" column.
- The serial numbers of the dongles of the respective license types are displayed in the "Dongle serial number" column.

The "Load license file..." button starts loading the activation and revocation license files.

More information can be found in the documentation "GALILEOS / ORTHOPHOS XG 3D Software installation".

**Sessions** tab card

All stations available in the network are displayed here.

- Column "IP Address" displays the IP addresses of the respective workstations.
- Column "PC name" displays the names of the PCs belonging to the respective workstation.
- Column "User" displays the names of the users who are logged into the respective station.
- The ID numbers of the respective license types are displayed in the "Licence IDs" column.
- A descriptive text on the workstation is displayed in the "Description" column.
The check box "Show only connected sessions" can be deactivated. Then, also the workstations that are currently not active in the network will be displayed in the list.

The field "Details" displays information about the workstations currently selected in the list. A text on the workstation can be entered in the "Description" input field. This appears after confirming the entry via the "Apply" button in the "Description" column.

**Delete workstation from the list**

To delete a workstation from the list, select the station in the list and then click on the "-" button.

**NOTICE**

Workstations that are currently connected can not be deleted from the list.

**Add a workstation to the list**

To add a new workstation to the list, click on the "+" button. The following dialog box opens.

![Dialog box](image)

Enter the IP address of the PC in the input field "IP Address" and (if required) a descriptive text in the input field "Description". Confirm your entries by clicking the "OK" button. The workstation is included in the list.
6 Rescue management

6.1 General

Explanation
A rescue state occurs after creating a scan if it is not possible to transfer data to SIDEXIS XG. There are three types of rescue state:

- Rescue state **Unit**: The scan could not be transferred. No further processing can be carried out on the unit.
- Rescue state **Reconstruction**: The individual scans were transferred, however, the reconstruction has not yet been performed. Further processing is possible on the unit.
- Rescue state **Import**: Data still has to be transferred to SIDEXIS XG. Further processing is possible on the unit.

Scope
The steps described here are valid for the following 3D X-ray systems:

- GALILEOS
- ORTHOPHOS XG 3D

6.2 Displaying a Rescue State

Displaying a Rescue state
If the warning “Data which has not yet been imported is available. Do you still want to continue the exposure?“ appears after you try to create a new scan, a Rescue state exists.

Handling
- If you need the respective data **immediately**, then cancel the scan.
  - Proceed as described in the section Reconstruction and Import Rescue states [→ 23].
- If you do not need the respective data **immediately**, then click on the “yes“ button.
  - If the “Ready for X-ray” message appears, you can proceed with the scan. In this case, you can transfer the data later as described in the section "Reconstruction and Import Rescue states“ [→ 23] ("ready" status)
  - If the "Device is in rescue state. Please retrieve scan data with Sirona Control Admin tool first." message is displayed, you must retrieve the data as described in the section entitled "Unit“ Rescue state [→ 24].

6.3 Reconstruction and Import Rescue States

Explanation
If SIDEXIS XG displays an error message when you open a 3D image, the scan was either not reconstructed correctly or it was not imported.

Eliminating Rescue states
1. If necessary, check out any patients who are still registered in SIDEXIS XG.
2. Start “Sirona Control Admin Rescue” via the “SIDEXIS Manager” on the scan PC.
3. In “SIRONA Control Admin” switch to the “Rescue” tab.
Case A: Status "Working"
This relates to the Reconstruction rescue state. This means that the data have not yet been reconstructed.

Case A: Status "Ready"
This relates to the Import rescue state. This means that the data have not yet been saved in the SIDEXIS database.

Solution
➢ Press the "Rescue" button in either case.
➢ The volume data will be reconstructed and saved.

**NOTICE**
An empty examination has to be created to remove a rescue state. If several Rescue states exist, then SIDEXIS XG requests that you create an empty examination and repeats this request several times if necessary. Press the "Rescue" button each time you create a new empty examination.

### 6.4 Rescue State "Unit"

The last scan could not be exported by the device.
A corresponding message is displayed on the device user interface (H420).

If a further scan is attempted, the message "Device is in rescue state. Please retrieve scan data with Sirona Control Admin tool first." is displayed in SIDEXIS XG.

**IMPORTANT**
If you switch off the 3D X-ray unit while it is in Rescue state, the scan will be lost.

**Procedure**
1. If necessary, check out any patients who are still registered in SIDEXIS XG.
2. Start Sirona Control Admin Rescue via the "SIDEXIS Manager" on the visualization PC.
3. In the Sirona Control Admin, open the “Rescue” tab.

All units that are reachable via the RCU as well as all Rescue states are displayed in a list.

- If the Rescue state is indicated by a yellow warning sign with an exclamation point, then the unit is in Rescue state.
  - In this case, proceed with the “Start Rescue” section.

- If the Rescue state is indicated by a white x on a red warning sign, then the unit is not reachable via the network.
  - In this case, proceed with the Create network connection [→ 25] section.

Start Rescue

➢ Press the “Rescue” button.

The connection to the server is made and the volume data is retrieved and reconstructed.

**NOTICE**

An empty examination has to be created to remove a rescue state. If several Rescue states exist, then SIDEXIS XG requests that you create an empty examination and repeats this request several times if necessary. Press the “Rescue” button each time you create a new empty examination.

6.5 Connecting to the network

This section describes the steps that have to be performed in order to reestablish a Sirona 3D X-ray unit to a network.

Sirona 3D X-ray systems which have no network connection are marked with a white “X” on a red warning sign.

You can continue eliminating the Rescue state only after the Sirona 3D X-ray unit can be reached again via the network.

Checking the network connection ✓ Check to make sure that the RCU is switched on.
✓ Check whether a physical network connection exists.

1. Switch to the "Settings" tab.
2. Press the "View" button.

**IMPORTANT**

In some cases it may be necessary to restart the Sirona Control Server. Restart the Sirona Control Server by clicking on "Restart".

3. In the Sirona Control Admin, open the "Restart" tab.
   - If the required unit is now in Rescue state, proceed with the Rescue State Unit [→ 24] section.
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We reserve the right to make any alterations which may be required due to technical improvements.