## 5. CONTROL PANELS AND DISPLAY SYMBOLS
- 5.1 Console onboard the machine ................................................................. 191
- 5.2 Pushbutton panel on CEPH arm .............................................................. 192
## 6. SERVICE MENU
- 6.1 Unit block diagram ........................................................................ 195
- 6.2 LOGIC board (97661808) ................................................................. 196
- 6.3 POWER board (97662307) ................................................................. 200
- 6.4 BRUSH DC (97662306) ..................................................................... 204
- 6.5 CEPH keyboard (97661913) ............................................................... 207
- 6.6 PAN Sensor interface (97661912) ....................................................... 209
- 6.7 CEPH Sensor interface (97661912) ................................................... 210
- 6.8 3D Panel interface (97661579) ............................................................ 211
- 6.9 Keyboard (97661484) ........................................................................ 213
## 7. CIRCUIT BOARDS
- 7.1 Unit block diagram ........................................................................ 195
- 7.2 LOGIC board (97661808) ................................................................. 196
- 7.3 POWER board (97662307) ................................................................. 200
- 7.4 BRUSH DC (97662306) ..................................................................... 204
- 7.5 CEPH keyboard (97661913) ............................................................... 207
- 7.6 PAN Sensor interface (97661912) ....................................................... 209
- 7.7 CEPH Sensor interface (97661912) ................................................... 210
- 7.8 3D Panel interface (97661579) ............................................................ 211
- 7.9 Keyboard (97661484) ........................................................................ 213
## 8. CONNECTIVITY
- 8.1 2D sensors / 3D panel IP address amendment .................................. 215
- 8.2 Firmware upgrade .......................................................................... 215
- 8.3 Remote support .............................................................................. 217
1. GENERAL WARNINGS

1.1 FOREWORD

The device described in this manual is manufactured by CEFLA s.c. - via Selice Provinciale 23/A - 40026 Imola (BO) Italia, which is the manufacturer, in compliance with the applicable European Directives detailed in the declaration of conformity.

These technical instructions are addressed to the personnel in charge of repair and/or maintenance operations of CEFLA s.c. equipment and contain all the necessary information.

CEFLA s.c. shall be responsible for the safety, reliability and efficiency of the equipment provided that:

• installation, any modifications, settings or repairs are made by authorised technical personnel using CEFLA s.c. original spare parts
• In case of installation in medical locations: the electrical installation of the relevant location complies with IEC 60364-7-710:2002 Standards (Standards on electrical installations of medical locations) or with the equivalent Standards in force in the country of installation
• the equipment is used as outlined in User Manual
• in case of installation of an X-ray unit: The room where the X-ray unit is installed complies with the official Directives on protection from radiation in the country of use

1.2 SAFETY INSTRUCTIONS

All the safety instructions that help prevent any hazardous situations and operate the equipment in a trouble-free manner are given in the user’s manual as explained below:

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Attention Symbol" /></td>
<td>ATTENTION: General mandatory action sign</td>
</tr>
<tr>
<td><img src="image" alt="Glove Symbol" /></td>
<td>ATTENTION: Wear protective gloves</td>
</tr>
<tr>
<td><img src="image" alt="Foot Protection Symbol" /></td>
<td>ATTENTION: Wear foot protection</td>
</tr>
<tr>
<td><img src="image" alt="Eyewear Symbol" /></td>
<td>ATTENTION: Use protective eyewear</td>
</tr>
<tr>
<td><img src="image" alt="Clothing Symbol" /></td>
<td>ATTENTION: Use protective clothings</td>
</tr>
<tr>
<td><img src="image" alt="Earth Terminal Symbol" /></td>
<td>ATTENTION: Connect an earth terminal to the ground</td>
</tr>
<tr>
<td>SYMBOL</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td><img src="image" alt="Attention" /></td>
<td>ATTENTION: Refer to instruction manual-booklet</td>
</tr>
<tr>
<td><img src="image" alt="Attention" /></td>
<td>ATTENTION: Disconnect mains plug from electrical outlet</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: See the technical manual</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: Failure to observe instructions may result in equipment damage or injury to the user</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: High voltage</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: Crushing of hands</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: Radioactive material or ionizing radiation</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: Keep clear of moving parts</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: Laser beam</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: Hot surface</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: Biological hazard</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: Sharp objects</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>WARNING: Corrosive substances</td>
</tr>
</tbody>
</table>
### General Warnings

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Warning Symbol]</td>
<td><strong>WARNING:</strong> Combustible and flammable materials</td>
</tr>
<tr>
<td>![DANGER Symbol]</td>
<td><strong>DANGER:</strong> Tipping over</td>
</tr>
<tr>
<td>![DANGER Symbol]</td>
<td><strong>DANGER:</strong> Heavy object. Two persons are required</td>
</tr>
</tbody>
</table>

**WARNING!**

Always disconnect power supply before performing any maintenance or cleaning operation.

The packed device must be handled using, where possible, suitable mechanical means (forklift, pallet truck, etc.) and following the indications on the package. In case of manual handling, the device must be lifted by several persons using the suitable available means and, if possible, it must be moved with a truck or similar means.

Wear the proper protections
2. PACKAGING AND HANDLING

2.1 HANDLING AND STORAGE

Indications regarding storage, handling and unpacking are given on the outside of the cardboard packaging. These indications must be strictly observed.

1) The package must be kept upright in the direction indicated by the arrows at all times during handling and storage

2) Avoid banging the package

3) Keep the package free from damp

4) Do not use hooks to handle the package

5) A nameplate indicates the required ambient conditions for storage:
   a) temperature from -10° to +70° C
   b) relative humidity from 10 to 90%
   c) atmospheric pressure from 500 to 1060 hPa

It is recommended to transport and store the device at a temperature not lower than that indicated on the packing. A prolonged exposure to a low temperature can damage the device.

The packed device must be handled using, where possible, suitable mechanical means (forklift, pallet truck, etc.) and following the indications on the package.

In case of manual handling, it must be lifted by two or more persons using the suitable available means.

2.2 DAMAGE DURING SHIPMENT

When the device is received, check the packing container for any damage suffered.

If the packages are found to be damaged on delivery, accept them with reserve by signing the delivery note and indicating that the "CONTENTS ARE ACCEPTED BUT THEY NEED TO BE CHECKED".

If the contents are actually damaged, notify the shipping agent and request insurance compensation for damage within five work days. The claim is to be made by the person who commissioned the shipping agent. I.e.:

- if the goods are delivered “carriage forward”, the receiver shall notify the shipping agent
- if the goods are shipped “carriage free” or “free delivered”, the consigner shall notify the shipping agent and file a claim for damages. In this case, CEFLA s.c. shall be informed as soon as possible.

The damaged parts returned to CEFLA s.c. for replacement shall be placed inside the same damaged package. Return to CEFLA s.c. shall be “carriage free” (at the expense of the consigner), while shipment back to the customers shall be at the expense of CEFLA s.c. (carriage free).
3. PREINSTALLATION

Follow instructions described in the INSTALLATION PLAN, available on Extranet.
4. DEVICE INSTALLATION AND CALIBRATION

4.1 ASSEMBLY INSTRUCTIONS

Installation of the device unit must be done by qualified technicians in accordance with the mechanical and electrical assembly instructions defined as follows. Check that the voltage indicated on the system info plate corresponds to that of the electrical system.

REQUIRED INSTRUMENTS

4.1.1 REMOVAL OF PACKAGING
4.1.2 WALL MOUNTING

For further information, see the supplied INSTALLATION DIAGRAM.
4.1.3 FREESTANDING BASE

For further information, see the supplied INSTALLATION DIAGRAM.
4.1.4 WALL-MOUNTED COLUMN

1. Not included

2. Included

3. Not included

4. Included

5. 220kg M8

MAX 30mm

20mm
ONLY IF CEPH ARM IS PRESENT

Put the screws in place before fixing the column to the wall (do not tighten)

See “Screw kit”, section “Cinematic group installation”
4.1.4 CINEMATIC GROUP INSTALLATION

Screw kit

<table>
<thead>
<tr>
<th>#</th>
<th>DESCRIPTION</th>
<th>Q.TY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>SCREW TCEI M8x20 12.9</td>
<td>12 / 14</td>
</tr>
<tr>
<td>B</td>
<td>ELAS GROWER WASHER FOR M8</td>
<td>15 / 17</td>
</tr>
<tr>
<td>C</td>
<td>SCREW TE M8X20 INOX</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>SCREW TCEI M8X30 8.8</td>
<td>5</td>
</tr>
<tr>
<td>E</td>
<td>SCREW TPSEI M6X16 10.9</td>
<td>4</td>
</tr>
<tr>
<td>F</td>
<td>SCREW TCEI M5X16 8.8</td>
<td>2</td>
</tr>
<tr>
<td>G</td>
<td>WASHER 8.4X17 S 1.6 R40</td>
<td>2</td>
</tr>
</tbody>
</table>
SAFETY SCREWS REMOVAL

A

B

WARNING: REMOVE SAFETY LOCK BEFORE POWERING THE UNIT
ATENZIONE: Rimuovere blocco 3D ricovero prima dell’accesso

3D ONLY

EN

DEVICE INSTALLATION AND CALIBRATION » Assembly instructions
DEVICE INSTALLATION AND CALIBRATION » Assembly instructions
Connect: LAN (sensor)
LAN (logic)
**Electrical connections on POWER board**

- **K18** COLUMN LOWER ENDPOINT PHOTOCELL
- **K13/K22** COLUMN UPPER ENDPOINT PHOTOCELL / COLUMN ANTI-PINCH SWITCH
- **K2** COLUMN MOTOR THERMAL SENSOR
- **K1** COLUMN MOTOR POWER SUPPLY

**EXTERNAL SIGNAL LAMPS - 1, 2 = READY - 3, 4 = X-RAY EMISSION**

**X-RAY BUTTON**
(1 = VCC, 2 = BUTTON, 3 = READY LED, 4 = X-RAY LED, 5/6 = NOT USED)

**DOOR INTERLOCK**

**EXTERNAL EMERGENCY BUTTON**

**MAINS POWER SUPPLY**

**K17**

**K11**

**K12**

**K14**

**K10**

**K17**

**K11**

**K12**

**K14**

**COMPULSORY**

**OPTIONAL**

**DEVICE INSTALLATION AND CALIBRATION » Assembly instructions**
**X-Ray button**

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>VCC</td>
</tr>
<tr>
<td>BROWN</td>
<td>X-RAY Emission</td>
</tr>
<tr>
<td>WHITE</td>
<td>Green “Ready” LED</td>
</tr>
<tr>
<td>BLUE</td>
<td>Orange “X-Ray” LED</td>
</tr>
</tbody>
</table>

For further information, see the supplied INSTALLATION DIAGRAM.
4.1.6 CEPH ARM INSTALLATION (IF PRESENT)
4. Assembly instructions

5. [Diagram showing assembly process]

6. [Diagram showing assembly process]

hyperion X5 3D CEPH/CEPH Ready - TECHNICAL MANUAL

DEVICE INSTALLATION AND CALIBRATION » Assembly instructions
Logic board
(see point 8 "Electrical connections on logic board")
Electrical connections on LOGIC board

- K36 CEPH SYNCHRONIZATION SIGNAL
- K43/K44 CEPH KEYBOARD
- K22 CEPH LIMIT SWITCH
- K20 CEPH MOTOR
4.1.7 CHECK DURING THE ASSEMBLING

<table>
<thead>
<tr>
<th>PREINSTALLATION CHECK</th>
<th>RESULT OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intact external package</td>
<td>□</td>
</tr>
<tr>
<td>Check compliance of delivery documents</td>
<td>□</td>
</tr>
<tr>
<td>Check ID label/package labels match</td>
<td>□</td>
</tr>
<tr>
<td>Check place of installation and supplies*</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POWER SUPPLY CHECK</th>
<th>RESULT OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection of power and earth leads</td>
<td>□</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>□</td>
</tr>
<tr>
<td>Operation of main switch</td>
<td>□</td>
</tr>
<tr>
<td>Check presence of power mains protection</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANTI-ENTRAPMENT SAFETY DEVICE CHECKS</th>
<th>RESULT OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-entrapment safety microswitch*</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MECHANICAL CHECKS</th>
<th>RESULT OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance of pantograph arm*</td>
<td>□</td>
</tr>
<tr>
<td>Proper attachment and good condition of dental unit casing</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEVICE CHECK AND CALIBRATION</th>
<th>RESULT OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software installation and configuration</td>
<td>□</td>
</tr>
<tr>
<td>Control panel functions</td>
<td>□</td>
</tr>
<tr>
<td>Collimator setting</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INSTRUMENT CHECK AND CALIBRATION</th>
<th>RESULT OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curing lamp check*</td>
<td>□</td>
</tr>
<tr>
<td>Camera functions and image quality check*</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MULTIMEDIA</th>
<th>RESULT OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power on and monitor functions*</td>
<td>□</td>
</tr>
<tr>
<td>Installation carried out in accordance with local law</td>
<td>□</td>
</tr>
<tr>
<td>Check presence of Quick Guide</td>
<td>□</td>
</tr>
</tbody>
</table>

* if applicable

4.1.8 CHECKING AFTER MECHANICAL INSTALLATION

After mechanical installation, ensure to check the following points:

1) that the column has no clearance/end float relative to the fastening system used (stand or wall-mount) or relative to the metal base installed on the column. If this is not true, contact the manufacturer.
2) that the cephalometry arm (if any) is assembled with the 2 support pins and that the retaining screws are duly tightened; make sure there is no clearance or end float.
4.2 COVER INSTALLATION

**Screw kit**

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>SCREW TCEI M5X10 8.8</td>
</tr>
<tr>
<td>B</td>
<td>ELAS GROWER WASHER FOR M8</td>
</tr>
<tr>
<td>C</td>
<td>SCREW TCEI M8X20 8.8</td>
</tr>
<tr>
<td>D</td>
<td>SCREW TCEI M4X6 8.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>SCREW T/BOMB EI M4X10 10.9</td>
</tr>
<tr>
<td>F</td>
<td>SCREW TCEI M5X16 8.8</td>
</tr>
<tr>
<td>G</td>
<td>ELAS GROWER WASHER X M5</td>
</tr>
</tbody>
</table>

---

Connect K1 ▶ Logic board
(see section "Circuit boards")
2

3

Cover installation

DEVICE INSTALLATION AND CALIBRATION

EN

hyperion X5 3D CEPH/CEPH Ready - TECHNICAL MANUAL

EN

DEVICE INSTALLATION AND CALIBRATION » Cover installation

EN
DEVICE INSTALLATION AND CALIBRATION » Cover installation
Connect:
K1 / K11 ▶ Logic board
K12 ▶ Ear guides potentiometer
K13 ▶ Nasion potentiometer
K14 ▶ Cephalostat drum sensors
(see section "Circuit boards")
DEVICE INSTALLATION AND CALIBRATION » Cover installation
DEVICE INSTALLATION AND CALIBRATION » Cover installation
4.3 COVERS REMOVAL

1. Click on the covers to remove them.
1. Remove the cover by applying gentle pressure and ensuring a "CLICK!" sound is heard.

2. Repeat the process for the remaining covers.
4.4 OPERATING SYSTEM CONFIGURATION

4.4.1 SYSTEM REQUIREMENTS

The device works with 2 Ethernet connections, one for generic communication with the PC (that can be connected to a local area network) and another one (which must absolutely be point-to-point) dedicated to image acquisition from the 3D panel, therefore connecting the device to the INTEL GIGABIT network card of the computer.

The computer dedicated to image acquisition must have MANDATORY requirements. Refer to the user manual of the Imaging software for the minimum requirements of the pc clients not directly connected to the machine.

4.4.2 PRELIMINARY OPERATIONS

The PC supplied by Cefla is complete with hardware and software for the device operation. If another PC is chosen, it must comply with the specific requirements and the software must be installed on it autonomously.

The 2 PC network cards manage, respectively, the communication between device and PC and the connection between sensors and PC. The latter is carried out by means of a dedicated network card (INTEL GIGABIT) that must be compulsorily used and needs a free PCI-E slot on the PC motherboard.

The operating system of the PC is compulsorily WINDOWS 10 PRO 64 bit. Once installed, make sure that all the peripheral drivers are properly recognised.

WARNING: for the video card drivers, use the pack available on the Extranet.

4.4.3 OPERATING SYSTEM SETTINGS
DEVICE INSTALLATION AND CALIBRATION » Operating system configuration
4.4.3.1 POWER MANAGEMENT SETTINGS

![Image showing Power Options in Windows Control Panel]

1. Power Options
2. High performance
3. Change plan settings

Choose or customise a power plan

A power plan is a collection of hardware and system settings (like display brightness, sleep, etc.) that manages how your computer uses power.

Preferred plans:

- Balanced (recommended)
- High performance
- Power saver

Automatically balances performance with energy consumption on capable hardware.

See also:

User Accounts
Disabling “Fast start-up”

1. Choose what the power button does
2. Change settings that are currently unavailable
3. Turn on fast start-up (recommended)

Define power buttons and turn on password protection

Choose the power settings that you want for your computer. The changes that you make to the settings on this page apply to all of your power plans.
4.4.3.2 OPERATING SYSTEM OPTIMIZATION SETTINGS

1. **Choose which apps can run in the background**
   - System settings

2. **Background settings**
   - Change the picture on your lock screen
   - Remove Windows background images
   - Choose background, slideshow or solid colour as your background mode
   - Choose Windows Spotlight, picture or slideshow as your lock screen background

---

Define power buttons and turn on password protection

Choose the power settings that you want for your computer. The changes that you make to the settings on this page apply to all of your power plans.

**Power and sleep button settings**

- When I press the power button: Shut down
- When I press the sleep button: Sleep

**Shutdown settings**

- **Turn on fast start-up (recommended)**: This helps start your PC faster after shut-down. Restart isn’t affected. Learn More
- **Sleep**: Show in Power menu.
- **Hibernate**: Show in Power menu.
- **Lock**: Show in account picture menu.

[Save changes] [Cancel]
DEVICE INSTALLATION AND CALIBRATION » Operating system configuration
Operating system configuration

1. **System Properties**
   - Computer Name
   - Hardware
   - Advanced
   - System Protection
   - Remote
   - Performance
     - Visual effects, processor scheduling, memory usage and virtual memory
     - Settings...
   - User Profiles
     - Desktop settings related to your sign-in
     - Settings...
   - Start-up and Recovery
     - System start-up, system failure and debugging information
     - Settings...
   - Environment Variables...

2. **Performance Options**
   - Visual Effects
   - Advanced
   - Data Execution Prevention
   - Select the settings that you want to use for the appearance and performance of Windows on this computer.
   - Let Windows choose what’s best for my computer
   - Adjust for best appearance
   - Custom:
     - Animate controls and elements inside windows
     - Animate windows when minimizing and maximizing
     - Animations in the taskbar
     - Enable Peek
     - Fade or slide menus into view
     - Fade or slide ToolTips into view
     - Fade out menu items after clicking
     - Save taskbar thumbnail previews
     - Show shadows under mouse pointer
     - Show shadows under windows
     - Show thumbnails instead of icons
     - Show translucent selection rectangle
     - Show window contents while dragging
     - Slide open combo boxes
     - Smooth edges of screen fonts
     - Smooth-scroll list boxes
     - Use drop shadows for icon labels on the desktop

3. **Options Highlighted**
   - **Performance Options**
     - Adjust for best performance

4. **Buttons**
   - OK
   - Cancel
   - Apply

5. **Selection**
   - Adjust for best performance
4.4.3.3 DISABLING “WINDOWS AUTO-UPDATE SERVICE”
DEVICE INSTALLATION AND CALIBRATION » Operating system configuration
4.4.3.4 DISABLING WINDOWS UPDATES SHARING OVER THE NETWORK (LOW DATA TRAFFIC)

Choose how updates are delivered

Updates from more than one place

Download Windows updates and apps from other PCs in addition to Microsoft. This can help speed up app and update downloads.

When this is turned on, your PC may also send parts of previously downloaded Windows updates and apps to PCs on your local network or PCs on the Internet, depending on what’s selected below.

On/Off

Get updates from Microsoft, and get updates from and send updates to:

- PCs on my local network
- PCs on my local network, and PCs on the Internet

Do you have a question?

Get help
4.4.3.5 FIREWALL SETTINGS, PRIVACY AND SECURITY

4.4.3.6 “WINDOWS DEFENDER” SETTINGS

See document 97050743 “SOFTWARE Main Workstation Security Guidelines”
Windows Defender

Windows Defender Antivirus protects your computer against viruses, spyware and other malicious software. Open Windows Defender Security Centre to use it.

Version info

- Anti-malware client version: 4.18.1806.18062
- Engine version: 1.15100.1
- Anti-virus definition: 1.273.422.0
- Anti-spyware definition: 1.273.422.0
- Network inspection system engine version: 1.15100.1
- Network inspection system definition version: 1.273.422.0

Keep your PC safe

Windows Defender Security Center has options to help keep you protected online, maintain your device’s health, run periodic scans, manage your threat-protection settings, and more.

Get more info about Windows Defender Security Center
Real-time protection

Locates and stops malware from installing or running on your device. You can turn off this setting for a short time before it turns back on automatically.

- On

Cloud-delivered protection

Provides increased and faster protection with access to the latest Windows Defender Antivirus protection data in the cloud. Works best with automatic sample submission turned on.

- Cloud-delivered protection is off. Your device may be vulnerable.

- Off

Privacy statement

Automatic sample submission

Send sample files to Microsoft to help protect you and others from potential threats. We’ll prompt you if the file that we need is likely to contain personal information.

- Automatic sample submission is off. Your device may be vulnerable.

- Off

Privacy statement

Submit a sample manually

Exclusions

Windows Defender Antivirus won’t scan items that you’ve excluded. Excluded items could contain threats that make your device vulnerable.

Add or remove exclusions

Notifications

Windows Defender Antivirus will send notifications with critical information about the health and security of your device. You can specify which non-critical notifications you would like to receive.

Change notification settings
4.4.3.7 DEVICE INSTALLATION SETTINGS

AFTER SOFTWARE INSTALLATION (see paragraphs “Acquisition Server Plus software installation”, “iRYS software installation and configuration”)

Exclusions
Add or remove items that you want to exclude from Windows Defender Anti-virus scans.

- NNT Folder
- iCapture Folder
- Acquisition Server Plus Folder

Adjust your computer’s settings

1. Devices and Printers
DEVICE INSTALLATION AND CALIBRATION » Operating system configuration
Type the name of a program, folder, document or Internet resource, and Windows will open it for you.

Open: **gpedit.msc**

- Local Group Policy Editor
  - File
  - Action
  - View
  - Help
- Local Computer Policy
  - Computer Configuration
    - Software Settings
    - Windows Settings
  - Administrative Templates
    - Control Panel
    - Network
    - Printers
    - Server
    - Start Menu and Taskbar
    - System
  - Windows Components
    - ActiveX Installer Service
      - Add features to Windows 10
    - App Package Deployment
    - App Privacy
    - App runtime
    - Application Compatibility
    - AutoPlay Policies
    - Biometrics
    - BitLocker Drive Encryption
    - Camera
    - Cloud Content
    - Connect
    - Credential User Interface
    - Data Collection and Preview Builds
    - Delivery Optimization
    - Desktop Gadgets
    - Desktop Windows Manager
    - Device and Driver Compatibility
    - Device Registration
    - Digital Locker
    - Edge UI
    - Windows PowerShell
    - Windows Reliability Analytics
    - Windows Remote Management (Wmif)
    - Windows Remote Shell
    - Windows Update
    - Windows Update for Business
EN

DEVICE INSTALLATION AND CALIBRATION » Operating system configuration
4.4.4 PC-DEVICE CONNECTION

The device may be connected to a local area network or directly to the main workstation. In both cases, the Ethernet connection for sensors must be point-to-point and is always managed autonomously by the software and the machine.

Therefore, at this point of the installation, it is not necessary to set any IP address on the INTEL GIGABIT board, as it will be set autonomously during the software installation procedure described in the following chapters.

The network card dedicated to the communication with the device must be configured as follows:

4.4.4.1 CASE1-DEVICE-PCDIRECTCONNECTION(SETTINGASTATICIPADDRESSON THE NETWORK CARD)

It is necessary to set a static IP address for the network card dedicated to PC - device communication and it must be compatible with the device’s default address (192.168.1.160).
3. Click on the LAN Network Connections icon.

4. Click on the Properties option.

5. Ensure that the Internet Protocol Version 4 (TCP/IPv4) is selected.

6. Click on the Properties button to configure the IP settings.
4.4.4.2 CASE 2 - DEVICE-PC CONNECTION OVER THE NETWORK (SETTING A DYNAMIC IP ADDRESS ON THE NETWORK CARD)

It is necessary to set a dynamic IP address for the network card dedicated to PC – device communication.
3. Click on the LAN network adapter.
4. Click on Properties.
6. Click on Properties.
4.4.5 “INTEL GIGABIT” NETWORK CARD CONFIGURATION
Device Installation and Calibration

Operating system configuration

1. Connect using:
   - Intel(R) Gigabit CT Desktop Adapter

2. This connection uses the following items:
   - Client for Microsoft Networks
   - File and Printer Sharing for Microsoft Networks
   - eBUS Universal Pro Driver
   - QoS Packet Scheduler
   - GigE Vision Filter Driver
   - Internet Protocol Version 4 (TCP/IPv4)
   - Microsoft Network Adapter Multiplexor Protocol

3. Configure...

4. Description
   - Allows this PC to be discovered and located on the network.

5. Advanced

6. IPv4 Checksum Offload

7. 9014 Bytes
WARNING: maybe the “Receive Buffers” item is not displayed directly in this window. If it is not displayed, search for the “Performance Options” item and click on “Properties”. The “Receive Buffers” value is displayed there.

WARNING: maybe the “Interrupt Moderation” item is not displayed directly in this window. If it is not displayed, search for the “Performance Options” item and click on “Properties”. The “Interrupt Moderation” value is displayed there.
WARNING: maybe the “Interrupt Moderation Rate” item is not displayed directly in this window. If it is not displayed, search for the “Performance Options” item and click on “Properties”. The “Interrupt Moderation Rate” value is displayed there.
DEVICE INSTALLATION AND CALIBRATION » Operating system configuration

17. Click on the network device in the Network Connections window.

18. Right-click on the network device and select Properties.

19. In the Properties window, ensure that the correct network adapter is selected and configure it as necessary.

20. Check the box for Internet Protocol Version 4 (TCP/IPv4) and click OK to apply the changes.
Avoid using 192.168.2.xxx subnet for other network adapters in the PC.
4.5 SOFTWARE INSTALLATION

4.5.1 “ACQUISITION SERVER PLUS” SOFTWARE INSTALLATION

1. Click on the Acquisition Server Plus icon twice.

2. Select English as the language.

3. Click OK.

4. Accept the agreement.

5. Click Next.
Confirm as requested by the installer to complete the installation.

**WARNING:** Drivers for communication with 2D sensors will be installed during this installation.
4.5.2 CBCT PANEL INSTALLATION

WARNING: each panel is equipped with a specific installation CD, containing data that are not interchangeable with other units. Carefully keep the CD and make sure that at least one backup copy is available.

Run and complete the installation leaving the default settings.

4.5.3 “ACQUISITION SERVER PLUS” CONFIGURATION
USER MODE:

1. Ensure the device is connected and visible in the Acquisition Server Plus software.
2. Select the correct language and application mode.
3. Change the mode to SERVICE.
4. Confirm the change and restart the application.
5. Select Service mode.
6. Enter the password for the SERVICE mode.
7. Enter the password (e.g., cefla).
8. Click OK to save the changes.
4.5.3.1 DEVICE SEARCH AND CONNECTION

[Image of Acquisition Server Plus software interface]

Service Mode:

10. Find Device

11. Select device:
   - IP = 192.168.1.8
   - Name = 708HPA67

12. OK
**Software installation**

1. Find Device
2. Connect Device
3. Set IP Address
4. Find Folder
5. Connect Panel
6. User Shot
7. Update Firmware
8. Show Margins
9. Show preview while downloading
10. Apply full filtering to the image preview displayed on console (slow)
11. AE Dose adjust
12. Connection status: PA14 - 172.20.32.75
13. No sensor selected
14. Configure a sensor before reactivating autoconnection
15. Close
NOTE: should it be necessary to change the device IP address for any need, it is possible to change it from the menu “Settings -> Device Options”

A fixed IP can be set in this window in the field “Fall back Ip address”. Removing the tick from “DHCP” will make it impossible for the device to obtain a dynamic address by a router. Click on “OK”. The IP change becomes effective when the device is restarted.

It is necessary to repeat the device search and connection procedure.

4.5.3.2 SENSOR SEARCH AND CONNECTION
DEVICE INSTALLATION AND CALIBRATION » Software installation
4.5.4 PLEORA DRIVER INSTALLATION
Attention!
The application will be restarted to select new mode.
Are you sure you want to continue?

Yes
No

Acquisition Server Plus

Select server mode
- Factory mode
- User mode
- Superuser mode
- Service mode

Don't ask me again

Exit

Password for SERVICE mode:

Password:

OK

Acquisition Server

Device Installation and Calibration - Software installation

Device:
- Specify fixed IP: 172.30.1.191
- Auto connect device

Sensor:
- PAN
- CEPH

CBCT Panel:
- IP: 192.168.2.34
- MAC: 00:00:00:00:00:00

Switch On CBCT Panel

CBCT Panel ON

Close
DEVICE INSTALLATION AND CALIBRATION » Software installation

An app on your PC needs the following Windows feature:

.NET Framework 3.5 (includes .NET 2.0 and 3.0)

Download and install this feature
Windows will get the files that it needs from Windows Update and complete the installation.

Skip this installation
Your apps might not work correctly without this feature.
DEVICE INSTALLATION AND CALIBRATION » Software installation

- Ensure you have administrative privileges.
- Navigate to the software installation directory.
- Run the installer as administrator.
- The operation completed successfully.

- Check the installation directory for the required components.
- Update the software as needed.
The installer will check whether a previous version of Pleora Driver is already present and will uninstall it if necessary.

**WARNING:** this procedure may take a long time, do not interrupt the process. During the procedure the PC will restart and resume installation. If this does not happen, it is necessary to manually run “Updater.exe” and reselect the installation steps which are not yet completed.

**WARNING:** During this procedure do not disconnect or switch off the device. Failure of panel firmware update may compromise its functionality. If dialogs appear, follow the instructions.

**INSTALLATION COMPLETED:**
4.5.5 DRIVER INSTALLATION CHECKS

**WARNING:** perform the procedures (1 -> 4) for all the network cards that may be present on the PC, except for the one dedicated to the communication with sensors (INTEL GIGABIT).
If items (7 -> 7a) are missing, this indicates that the driver installation was not successful and it must be repeated.

Missing item 7: see chapter “Pleora driver installation”
Missing item 7a: see chapter “Acquisition Server Plus software installation”
The software used to manage the images downloaded from the device is iRYS, installed in the version MAIN WORKSTATION in case of 3D device, or in the version iRYS Station in case of 2D device only.
DEVICE INSTALLATION AND CALIBRATION » Software installation

3. Select the software you need to install.

- hyperion X5 3D ceph/ceph ready main workstation

4. Description:
   Workstation connected to a hyperion X5 3D ceph/ceph ready device

5. Select installation mode:

- Stand-alone (Recommended)
  This is the standard installation mode.
  It applies to both single and multiple users (in a network domain).

6. For partnering software
   The application will be driven by a certified third-party software.
   For more information, contact your local distributor.
Confirm as requested by the installer to complete the installation.

<table>
<thead>
<tr>
<th>Installation complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>iRYS was successfully installed</td>
</tr>
</tbody>
</table>

Remove any disks from their drives, and then click REBOOT to complete setup.

8

7 Reboot
Application mode setup

To improve user experience, please choose the predefined application mode that better suits the practice:

- Imaging Center, Maxillofacial
- Oral and Maxillofacial Surgery
  - Enables Sharp2D options
  - Enables TMJ options
  - ENT Specialties

Before starting...

WARNING:

The system is a medical radiological device subject to the applicable international standards and to local safety regulations.

It is responsibility of the user that the system is operated in accordance with its intended indication of use and operational instructions, and the local safety regulators.

It is responsibility of the user that the system is duly maintained and serviced, as per the instructions provided in the User and Service Manuals.

Failure to comply with the a.m. instructions, and unauthorized alterations of the systems, may cause incidents that are the exclusive responsibility of the user in control of the system, and may lead to voiding the product warranty.

I agree
I do not agree
Enter Service Mode:

METHOD 1
METHOD 2

12a Tools
Start error log viewer...
Send log file via e-mail...
Configure automatic dispatch of log files...
Scanner tests

12b Insert password
Create new image template...
Select image template...

12c
306090

Ok

13
336699

Ok
DEVICE INSTALLATION AND CALIBRATION » Software installation
DEVICE INSTALLATION AND CALIBRATION » Software installation

17

18
**DEVICE INSTALLATION AND CALIBRATION**

- **Software installation**
Under normal operating conditions, the lower box may be grey: this does NOT indicate a connection problem since PAN/CEPH sensors are usually off. They are on only when they are being used.
### List devices that require authorization

<table>
<thead>
<tr>
<th>Hostname</th>
<th>Username</th>
<th>Authorized</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC</td>
<td>cefia</td>
<td></td>
</tr>
</tbody>
</table>

**23**

**Delete**  **Update**  **Close**

---

**WELL DONE!**
4.6 2D CALIBRATION

REQUIRED INSTRUMENTS

Calibration kit, including:

- Support plate
- Dentition phantom
- Aluminium filter
- Laser reference sheet
- Allen wrench set
- Screwdriver set
- Pliers

4.6.1 TUBE HEAD WARM-UP

PERFORM THIS OPERATION ONLY IF THE DEVICE REMAINS UNUSED FOR MORE THAN THREE MONTHS
2D calibration

1. User Shot
2. AE Dose adjust
3. Shot Parameters
   - kV: 50
   - mA: 4
   - Time exposure (ms): 1000
4. SHOT
Perform Daily Check (see paragraph 4.5.2)
4.6.2 PRELIMINARY ACTIONS

1. Settings
2. Change Mode
Attention!
The application will be restarted to select new mode.
Are you sure you want to continue?

3. Yes

4. Service mode

5. OK

6. Password for SERVICE mode: cefla

7. OK
### 4.6.3 MACHINE CONFIGURATION

![Calibration Screen]

- **Calibration Steps**
  - Advanced

- **Calibration step**
  - Machine Configuration: 
    - Status: ✔
  - PAN Verify XRay Alignment: 
    - Status: ✔
  - PAN Verify Sensor Calibration: 
    - Status: ✗
  - PAN Verify Mechanical Centering: 
    - Status: ✔
  - Laser Calibration: 
    - Status: ✔
  - CEPH Verify XRay Alignment: 
    - Status: ✔
  - CEPH Verify Sensor Compliance: 
    - Status: ✗
  - CEPH Verify Sensor Calibration: 
    - Status: ✗
  - CEPH Verify Mechanical Centering: 
    - Status: ✔
  - Headrest Calibration: 
    - Status: ✔
  - Nason Calibration: 
    - Status: ✔

- **Report PDF**

- **Data**
  - Backup calibration date to file
  - Restore calibration date from file

- **Close**
2D calibration
4.6.4 PAN VERIFY X-RAY ALIGNEMENT

![Calibration Steps Diagram]

- Advanced
  - Machine Configuration: ✅
  - PAN Verify XRay Alignment: ✅
  - PAN Verify Sensor Calibration: ❌
  - PAN Verify Mechanical Centering: ✅
  - Laser Calibration: ✅
  - CEPH Verify XRay Alignment: ✅
  - CEPH Verify Sensor Compliance: ❌
  - CEPH Verify Sensor Calibration: ❌
  - CEPH Verify Mechanical Centering: ✅
  - Headrest Calibration: ✅
  - Nasion Calibration: ✅

Report PDF

Data
- Backup calibration data to file
- Restore calibration data from file

Close
DEVICE INSTALLATION AND CALIBRATION » 2D calibration
If one of these situations occurs, it is necessary to manually regulate the collimator (See paragraph “Manual regulation of the collimator”).
**DEVICE INSTALLATION AND CALIBRATION » 2D calibration**

**12**

**13**

**14**

**15**

**16**

*Warning*

X-ray Alignment procedure completed.
MANUAL REGULATION OF THE COLLIMATOR

(To be performed when strictly necessary)

- Rotation regulation
EN

DEVICE INSTALLATION AND CALIBRATION » 2D calibration
• **Horizontal alignment**

![Diagram of horizontal alignment](image)

1. Press Start button
2. Not Centered - Manually move collimator then press OK to take another image
3. Not Centered - Collimator will be automatically moved to new position. Press OK to take another image
4. Press Xray button
5. Image must be centered between red lines
6. OK
• Vertical alignment

1. Use the 1/2 screws to adjust the vertical alignment.

2. If not centered, manually move the collimator and press OK to take another image.

3. If not centered, the collimator will be automatically moved to the new position. Press OK to take another image.

4. Press Xray button.
4.6.5 PAN VERIFY SENSOR CALIBRATION

1. Click on "PAN Verify Sensor Calibration".

2. Start procedure.

Calibration Steps:
- Advanced
- Machine Configuration [✓]
- PAN Verify XRay Alignment [✓]
- PAN Verify Mechanical Centering [✓]
- Laser Calibration [✓]
- CEPH Verify XRay Alignment [✓]
- CEPH Verify Sensor Compliance [✗]
- CEPH Verify Sensor Calibration [✗]
- CEPH Verify Mechanical Centering [✓]
- Headrest Calibration [✓]
- Nasion Calibration [✓]

Report PDF
DEVICE INSTALLATION AND CALIBRATION » 2D calibration

3. Before start procedure remove any object between X-ray source and sensor. Remove child headrest rubber supports and position aluminium filter.

4. PRESS XRAY BUTTON

5. SENSOR COMPLIANCE PASSED

6. Sensor Calibration procedure completed
4.6.6 PAN VERIFY MECHANICAL CENTERING

![Calibration Steps Diagram]

- PAN Verify XRay Alignment: Status - ✓
- PAN Verify Sensor Calibration: Status - ✗
- PAN Verify Mechanical Centering: Status - ✓
- Laser Calibration: Status - ✓
- CEPH Verify XRay Alignment: Status - ✓
- CEPH Verify Sensor Compliance: Status - ✗
- CEPH Verify Sensor Calibration: Status - ✗
- CEPH Verify Mechanical Centering: Status - ✓
- Headrest Calibration: Status - ✓
- Nasion Calibration: Status - ✓
Before start calibration procedure remove any object between XRay source and sensor and position technical phantom.
TARGET

DEVICE INSTALLATION AND CALIBRATION » 2D calibration
4.6.7 LASER CALIBRATION

![Calibration Steps](image)

- Machine Configuration: ✔
- PAN Verify XRay Alignment: ✔
- PAN Verify Sensor Calibration: ✗
- PAN Verify Mechanical Centering: ✔
- Laser Calibration: ✗
- CEPH Verify XRay Alignment: ✔
- CEPH Verify Sensor Compliance: ✗
- CEPH Verify Sensor Calibration: ✗
- CEPH Verify Mechanical Centering: ✔
- Headrest Calibration: ✔
- Nasion Calibration: ✔

Report PDF

Data
- Backup calibration data to file
- Restore calibration data from file
- Close
2D calibration

Put mechanical template for laser in correct position and press Start button

Acquisition Server Plus 6.2.2.6

Remove carter. The device will automatically move to position of laser calibration. Press OK to Continue

See section “Covers removal”
If the laser turns off, any of the movement buttons of the column can be pressed to turn it on again.

Put mechanical template for laser in correct position and press Start button

Laser ON  OFF  STOP

4  Exit
4.6.8 CEPH VERIFY X-RAY ALIGNMENT  
(ONLY IF CEPH ARM IS PRESENT)
DEVICE INSTALLATION AND CALIBRATION » 2D calibration

REMOVE
(See chapter “Covers removal”)
Before start procedure remove any object between XRay source and sensor and REMOVE SECONDARY COLLIMATOR.

6

HEADREST in wrong position. Rotate it to AP position before continue procedure.

7

AP position

8
DEVICE INSTALLATION AND CALIBRATION » 2D calibration
DEVICE INSTALLATION AND CALIBRATION » 2D calibration

14. PRESS XRAY BUTTON

15. Not Centered - Take another image

16. OK

17. PRESS XRAY BUTTON

18. Edge found

19. OK
20 PRESS XRAY BUTTON

21 OPEN STATION

22 OK

23 OK

REASSEMBLE
If one of these situations occurs, it is necessary to manually regulate the collimator (See paragraph “Manual regulation of the secondary collimator”).
DEVICE INSTALLATION AND CALIBRATION » 2D calibration
2D calibration

- Select action
  - Line - Manually move primary calibrator then press OK
  - Edge seized

- Press X-ray button

- Left edge must be vertical as shown on the image on the left

- Right edge must be vertical as shown on the image on the left

- Exit service mode

OK
4.6.8.1 MANUAL REGULATION OF THE SECONDARY COLLIMATOR
(TO BE PERFORMED WHEN STRICTLY NECESSARY)

- Rotation regulation
DEVICE INSTALLATION AND CALIBRATION » 2D calibration

1. TARGET

2. PRESS XRAY BUTTON

3. Not Centered - Manually move collimator then press OK to take another image.

4. OK

5. PRESS XRAY BUTTON
• **Horizontal alignment**

1. Horizontal alignment

2. Not centered - manually move collimator then press OK to take another image

3. OK

4. Press Xray button
• **Vertical alignment**

1. **1/2 Vertical alignment**

2. **Take a vertical alignment calibration**

3. **Not Centered - Adjust the collimator then press OK to take another image**

4. **OK**

5. **Press XRAY button**

TARGET
DEVICE INSTALLATION AND CALIBRATION » 2D calibration
4.6.9 CEPH VERIFY SENSOR COMPLIANCE
(ONLY IF CEPH ARM IS PRESENT)
Before start procedure remove any object between XRay source and sensor
4

**WARNING**

Sensor compliance procedure completed

**OK**
4.6.10 **CEPH VERIFY SENSOR CALIBRATION**

*(ONLY IF CEPH ARM IS PRESENT)*

![Calibration Interface](image)

- **Calibration Steps**
  - Advanced
  - Calibration step: Machine Configuration
    - Status: ✅
  - PAN Verify XRay Alignment
    - Status: ✅
  - PAN Verify Sensor Calibration
    - Status: ❌
  - PAN Verify Mechanical Centering
    - Status: ✅
  - Laser Calibration
    - Status: ✅
  - CEPH Verify XRay Alignment
    - Status: ✅
  - CEPH Verify Sensor Compliance
    - Status: ❌
  - CEPH Verify Sensor Calibration
    - Status: ❌
  - CEPH Verify Mechanical Centering
    - Status: ✅
  - Headrest Calibration
    - Status: ✅
  - Nasion Calibration
    - Status: ✅

- **Data**
  - Backup calibration data to file
  - Restore calibration data from file

- **Report PDF**

- **Close**
Before start procedure remove any object between X-ray source and sensor.

2

Gain Acquisition

Sensor Calibration Gain

START PROCEDURE

3

ATTENTION!!! DANGEROUS PROCEDURE
Verify safety devices before proceed

WARNING: During procedure X-rays will be emitted automatically

4
4.6.11 CEPH VERIFY MECHANICAL CENTERING
(ONLY IF CEPH ARM IS PRESENT)
DEVICE INSTALLATION AND CALIBRATION » 2D calibration

1. Start procedure.
2. Mechanical centering CEPH.
4. Press Xray button.
DEVICE INSTALLATION AND CALIBRATION » 2D calibration

IF

See section “CEPH arm installation”

CHECK!
If the image is not horizontally centred, follow the instructions to manually adjust the settings.
DEVICE INSTALLATION AND CALIBRATION » 2D calibration
4.6.12 HEADREST CALIBRATION
(ONLY IF CEPH ARM IS PRESENT)
DEVICE INSTALLATION AND CALIBRATION » 2D calibration

2. Open headrest. Press OK to confirm.
3. Headrest calibration procedure completed.
4.6.13 NASION CALIBRATION
(ONLY IF CEPH ARM IS PRESENT)
DEVICE INSTALLATION AND CALIBRATION » 2D calibration
4.6.14 BACKUP CALIBRATION DATA TO FILE

![Calibration Steps](image1)

1. Click on the button to backup calibration data to file.
4.6.15 ALIGNING THE EAR GUIDE RINGS

To check the correct alignment it is possible to take the image by using a CEPH mechanical positioning window or by launching the virtual keyboard and performing a CEPH LL examination.

- **Horizontal alignment**
DEVICE INSTALLATION AND CALIBRATION » 2D calibration
• **Vertical alignment**
4.7 3D CALIBRATION

Required instruments

3D calibration kit, including:

- cylinder with two rows of eight metal spheres (code 97901494)
- support plate

⚠️ All covers must be assembled.

4.7.1 BEAM LIMITER TEST
DEVICE INSTALLATION AND CALIBRATION » 3D calibration

3. Tools
   - Open log error file
   - Scanner tests

5. Beam limiter test

6. Beam limiter test
DEVICE INSTALLATION AND CALIBRATION » 3D calibration
DEVICE INSTALLATION AND CALIBRATION » 3D calibration
When passing from one FOV to the next, remove the tick from “Enable Manual Tuning” to allow the collimator to reposition itself according to the chosen FOV.

4.7.2 BLANK ACQUISITION AND DAILY CHECK

IMPORTANT: If requested by the customer, select menu “Tools-->Force always use dead man button for automated procedure” to force the use of ray button both for Daily Check and for Blank Acquisition.
### DAILY CHECK

<table>
<thead>
<tr>
<th>TEST</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST 1</td>
<td>Set up device for CBCT / 3D exam</td>
</tr>
<tr>
<td>TEST 2</td>
<td>Detector initialization</td>
</tr>
<tr>
<td>TEST 3</td>
<td>X-Ray source calibration</td>
</tr>
<tr>
<td>TEST 4</td>
<td>Verification of stability - consistency of emitted/ measured dose</td>
</tr>
<tr>
<td>TEST 5</td>
<td>Verification of consistency of images acquired at different frame rates</td>
</tr>
<tr>
<td>TEST 6</td>
<td>Verification of the background image (without RX) of detector</td>
</tr>
</tbody>
</table>

#### DAILY CHECK

**Daily check**

<table>
<thead>
<tr>
<th>Test</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test n° 1</td>
<td>Running...</td>
</tr>
<tr>
<td>Test n° 2</td>
<td></td>
</tr>
<tr>
<td>Test n° 3</td>
<td></td>
</tr>
<tr>
<td>Test n° 4</td>
<td></td>
</tr>
<tr>
<td>Test n° 5</td>
<td></td>
</tr>
<tr>
<td>Test n° 6</td>
<td></td>
</tr>
</tbody>
</table>

**Technique factors**

- $kV: 90$
- $mA: 3.00$
- $s: 0.500$
Daily check

<table>
<thead>
<tr>
<th>Test</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test n° 1</td>
<td>Completed</td>
</tr>
<tr>
<td>Test n° 2</td>
<td>Completed</td>
</tr>
</tbody>
</table>
| Test n° 3 | Running...
| Test n° 4 |          |
| Test n° 5 |          |
| Test n° 6 |          |

Technique factors

kV: 90
mAs: 3.00
mA: 6.00
s: 0.500

Stop
4.7.3 CYLINDRICAL TEST PHANTOM ACQUISITION ("MATTARELLUM")
The software has a certain tolerance: even if the spheres are not inside the respective positions, the important thing is that the Mattarellum does not generate a software error and that it is therefore possible to proceed with calibration.
TARGET

TARGET

DEVICE INSTALLATION AND CALIBRATION » 3D calibration
System positioning for next acquisition...

Processing: 66%

Stop

Tin Report - 1 / 4

Serial number: PA08

Analysis date: 13/04/2018 - 15:57
FOV: [10 x 8] (from a Calibration Scan performed on: 13/04/2018 - 15:51

Software version: 8.5 63

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilt (degrees)</td>
<td>0.85 (min: 0.10; max: 1.60; rms: 0.4609)</td>
</tr>
<tr>
<td>AOR MID [pixel]</td>
<td>311.47</td>
</tr>
<tr>
<td>AOR P1 [1/1000]</td>
<td>0.26</td>
</tr>
<tr>
<td>ISO (U; V) [pixel]</td>
<td>(309.35; 220.85)</td>
</tr>
<tr>
<td>Origin (U; V) [pixel]</td>
<td>(311.07; 162.96)</td>
</tr>
<tr>
<td>DSD [mm]</td>
<td>649.16</td>
</tr>
<tr>
<td>DSCR [mm]</td>
<td>418.03</td>
</tr>
<tr>
<td>AOR Trace [dmm]</td>
<td>1.82</td>
</tr>
<tr>
<td>Average Tin Error [dmm]</td>
<td>0.4751 (views: 360; spheres: 24)</td>
</tr>
</tbody>
</table>
4.7.4 3D CALIBRATION BACKUP

1. Open the calibration software.

2. In the settings, select "Settings backup..."
Backup 3D
RESTORE

Backup 3D

Software

DEVICE INSTALLATION AND CALIBRATION » 3D calibration
4.7.5 QA PHANTOM SCAN (OPTIONAL)

Check for evaluation of 3D images quality.
7

8
FIRST SCOUT QA PHANTOM POSITIONING
Center the QA phantom for the first scout view acquisition and verify the positioning by performing a single acquisition with the "X-Ray Flash" button. Then press 'Next...'
(Press 'CTRL' to enable the patient positioning tuning)
3D calibration

1. Press Ctrl + a
2. Press Ctrl + b

3. Perform the 3D scan using the software.

4. Use the mouse to adjust the positioning.

5. Press Ctrl to lock the positioning.
DEVICE INSTALLATION AND CALIBRATION » 3D calibration

12

13
16

Device Installation and Calibration » 3D Calibration

hyperion X5 3D CEPH/CEPH Ready – TECHNICAL MANUAL

17
### QA Phantom Report - 1 / 3

Software version: 8.5.83  
Scan date: 13/04/2018 - 16:03  

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAP [-1.00 - 1.00 degrees]</td>
<td>0.42</td>
</tr>
<tr>
<td>ALL [-1.00 - 1.00 degrees]</td>
<td>0.02</td>
</tr>
<tr>
<td>Scan duration [26.10 - 26.70 sec.]</td>
<td>27.20 *</td>
</tr>
<tr>
<td>RNS [% [0.00 - 3.50]]</td>
<td>0.67</td>
</tr>
<tr>
<td>HDE [59.30 - 60.50 mm]</td>
<td>59.87</td>
</tr>
<tr>
<td>HDI [55.50 - 56.70 mm]</td>
<td>56.26</td>
</tr>
<tr>
<td>VDE [59.30 - 60.50 mm]</td>
<td>59.67</td>
</tr>
<tr>
<td>VDI [55.50 - 56.70 mm]</td>
<td>56.25</td>
</tr>
<tr>
<td>H FWHM [&lt; 0.41 mm]</td>
<td>0.28</td>
</tr>
<tr>
<td>V FWHM [&lt; 0.41 mm]</td>
<td>0.47 *</td>
</tr>
<tr>
<td>HFD [44.70 - 45.70 mm]</td>
<td>45.25</td>
</tr>
<tr>
<td>VFD [26.50 - 27.50 mm]</td>
<td>26.93</td>
</tr>
<tr>
<td>Min Level (*)</td>
<td>900.87</td>
</tr>
<tr>
<td>Max Level (*)</td>
<td>3290.82</td>
</tr>
</tbody>
</table>

(*) Reserved for internal use

13/04/2018 - 16:08

Signature ____________________
### QA Phantom Report - 1 / 3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software version</td>
<td>8.5.03</td>
</tr>
<tr>
<td>Scan date</td>
<td>13/04/2018 - 16:03</td>
</tr>
<tr>
<td>Device Number</td>
<td>PA08</td>
</tr>
<tr>
<td>FOV [13 x 8] Best quality</td>
<td></td>
</tr>
<tr>
<td>AAP [-1.00 - 1.00 degrees]</td>
<td>0.42</td>
</tr>
<tr>
<td>ALL [-1.00 - 1.00 degrees]</td>
<td>0.02</td>
</tr>
<tr>
<td>Scan duration [26.10 - 26.70 sec.]</td>
<td>26.41</td>
</tr>
<tr>
<td>RNS % [0.00 - 3.50]</td>
<td>0.67</td>
</tr>
<tr>
<td>HDE [59.30 ± 60.50 mm]</td>
<td>59.87</td>
</tr>
<tr>
<td>HDI [55.50 ± 56.70 mm]</td>
<td>56.28</td>
</tr>
<tr>
<td>VDE [59.30 ± 60.50 mm]</td>
<td>59.67</td>
</tr>
<tr>
<td>VDI [55.50 ± 56.70 mm]</td>
<td>56.25</td>
</tr>
<tr>
<td>H FWHM [≤ 0.41 mm]</td>
<td>0.28</td>
</tr>
<tr>
<td>V FWHM [≤ 0.41 mm]</td>
<td>0.27</td>
</tr>
<tr>
<td>HFD [44.70 ± 45.70 mm]</td>
<td>45.25</td>
</tr>
<tr>
<td>VFD [26.50 - 27.50 mm]</td>
<td>28.93</td>
</tr>
<tr>
<td>Min Level (*)</td>
<td>960.87</td>
</tr>
<tr>
<td>Max Level (*)</td>
<td>3290.82</td>
</tr>
</tbody>
</table>

(*) Reserved for internal use

13/04/2018 - 16:08

Signature __________________________

--------------------- Conditions (Reserved for Service) ---------------------
QA Phantom scan

Please, select a FOV.
Then, press 'Ok' to proceed.

<table>
<thead>
<tr>
<th>FOV</th>
<th>Last execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>[10x10] Best quality</td>
<td>Today</td>
</tr>
<tr>
<td>[10x10] Regular</td>
<td>Never</td>
</tr>
</tbody>
</table>

Ok  Cancel
5. CONTROL PANELS AND DISPLAY SYMBOLS

5.1 CONSOLE ONBOARD THE MACHINE

- **RESET**
- **COLUMN UPWARD MOVEMENT**
- **COLUMN DOWNWARD MOVEMENT**
- **X-RAY EMISSION**
- **ON**
- **STANDBY**
- **X-RAY READY**
- **INTERLOCK**

Canine cusp or condyle
VIRTUAL LASER POSITIONING (-)
to frame the patient

Canine cusp or condyle
VIRTUAL LASER POSITIONING (+)
to frame the patient
5.2 PUSHBUTTON PANEL ON CEPH ARM

- **ON**
- **STANDBY**
- **X-RAY READY**
- **INTERLOCK**

- **COLUMN UPWARD MOVEMENT**
- **COLUMN DOWNWARD MOVEMENT**
6. SERVICE MENU

Method 1
Method 2

1. Tools
   - View
   - Help
   - Start error log viewer...
   - Send log file via e-mail...
   - Configure automatic dispatch of log files...
   - Scanner tests
   - Create new image template...
   - Select image template...

2. Insert password

3. Insert password
   - 306090
   - Ok
7. CIRCUIT BOARDS

**IMPORTANT**: Before carrying out any maintenance work on electronic boards or wiring it is necessary to switch off the machine and wait until all the LEDs on the boards go out. Do not disconnect/reconnect wires or leads with the machine on.

7.1 UNIT BLOCK DIAGRAM
7.2 LOGIC BOARD (97661808)
### 7.2.1 CONNECTOR LIST

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>Power supply input from POWER board</td>
</tr>
<tr>
<td>K2</td>
<td>Collimator motor</td>
</tr>
<tr>
<td>K3</td>
<td>Power supply and sync signal PAN/3D sensor</td>
</tr>
<tr>
<td>K4</td>
<td>CAN towards POWER connection (only if BRUSHDC is present)</td>
</tr>
<tr>
<td>K5</td>
<td>Collimator photocell</td>
</tr>
<tr>
<td>K8</td>
<td>Y axis motor</td>
</tr>
<tr>
<td>K9</td>
<td>Y axis photocell</td>
</tr>
<tr>
<td>K10</td>
<td>Ethernet 100Mb to PC</td>
</tr>
<tr>
<td>K13</td>
<td>CAN towards POWER or BRUSHDC</td>
</tr>
<tr>
<td>K14</td>
<td>R axis motor</td>
</tr>
<tr>
<td>K15</td>
<td>R axis photocell</td>
</tr>
<tr>
<td>K16</td>
<td>Keyboard signals connector</td>
</tr>
<tr>
<td>K20</td>
<td>CEPH motor</td>
</tr>
<tr>
<td>K22</td>
<td>CEPH limit switch</td>
</tr>
<tr>
<td>K23 / K26</td>
<td>Monobloc lasers</td>
</tr>
<tr>
<td>K24</td>
<td>Chin rest lasers</td>
</tr>
<tr>
<td>K36</td>
<td>CEPH sensor synchronization/power supply</td>
</tr>
<tr>
<td>K39</td>
<td>Myray logo backlight power supply</td>
</tr>
<tr>
<td>K41</td>
<td>Chinrest microswitch</td>
</tr>
<tr>
<td>K42</td>
<td>Power supply towards BRUSHDC</td>
</tr>
<tr>
<td>K43 / K44</td>
<td>CEPH keyboard</td>
</tr>
</tbody>
</table>

### 7.2.2 DIAGNOSTIC LEDS

<table>
<thead>
<tr>
<th>NAME</th>
<th>COLOUR</th>
<th>SCREEN PRINTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL1</td>
<td>Yellow</td>
<td>ACT</td>
<td>CAN activity. Normally on flashing. On steady or off in case of CAN error condition.</td>
</tr>
<tr>
<td>DL2</td>
<td>Red</td>
<td>ERR</td>
<td>Error status, normally off. Flashing upon startup, the number of flashes represents the FW version. When ERR is on the number of flashes from CPU LED represents the error code.</td>
</tr>
<tr>
<td>DL3</td>
<td>Green</td>
<td>CPU</td>
<td>Normally flashing at 1Hz. When ERR is on the number of flashes from CPU LED represents the error code.</td>
</tr>
<tr>
<td>DL4</td>
<td>Yellow</td>
<td>MOT. ENB</td>
<td>Motors enabled, normally on</td>
</tr>
<tr>
<td>DL5</td>
<td>Green</td>
<td>SYNC PAN</td>
<td>Logic-PAN sensor sync signal</td>
</tr>
<tr>
<td>DL7</td>
<td>Green</td>
<td>X MOT</td>
<td>On if X motor is active. If flashing the motor is in error (disconnected, short-circuit, overheating, broken driver)</td>
</tr>
<tr>
<td>DL8</td>
<td>Green</td>
<td>Y MOT</td>
<td>On if Y motor is active. If flashing the motor is in error (disconnected, short-circuit, overheating, broken driver)</td>
</tr>
<tr>
<td>DL9</td>
<td>Green</td>
<td>H MOT</td>
<td>On if H motor is active. If flashing the motor is in error (disconnected, short-circuit, overheating, broken driver)</td>
</tr>
<tr>
<td>DL10</td>
<td>Green</td>
<td>R MOT</td>
<td>On if R motor is active. If flashing the motor is in error (disconnected, short-circuit, overheating, broken driver)</td>
</tr>
<tr>
<td>DL11</td>
<td>Green</td>
<td>PROG</td>
<td>FPGA on, normally flashing (3Hz)</td>
</tr>
<tr>
<td>DL12</td>
<td>Green</td>
<td>RUN</td>
<td>FPGA programmed, normally on</td>
</tr>
<tr>
<td>DL13</td>
<td>Green</td>
<td>SYNC</td>
<td>Synchronization 3D pulses (from POWER)</td>
</tr>
<tr>
<td>DL14</td>
<td>Green</td>
<td>ENABLE</td>
<td>ON if POWER enabled</td>
</tr>
<tr>
<td>No.</td>
<td>Color</td>
<td>Function</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>---------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>DL15</td>
<td></td>
<td>ACK</td>
<td></td>
</tr>
<tr>
<td>DL16</td>
<td>Yellow</td>
<td>XRAY HW-Rays emission signal from POWER board, normally off (On during ray emission)</td>
<td></td>
</tr>
<tr>
<td>DL18</td>
<td>Yellow</td>
<td>ACT LAN activity LED. Normally flashing.</td>
<td></td>
</tr>
<tr>
<td>DL19</td>
<td>Green</td>
<td>LINK LAN connection established. Normally on.</td>
<td></td>
</tr>
<tr>
<td>DL22</td>
<td>Green</td>
<td>3.3V 3.3V CPU tension present, normally on.</td>
<td></td>
</tr>
<tr>
<td>DL23</td>
<td>Green</td>
<td>24V 24V tension present, normally on.</td>
<td></td>
</tr>
<tr>
<td>DL24</td>
<td>Green</td>
<td>5.0V 5V CPU tension present, normally on.</td>
<td></td>
</tr>
<tr>
<td>DL25</td>
<td>Green</td>
<td>1.2V 1.2V CPU tension present, normally on.</td>
<td></td>
</tr>
<tr>
<td>DL29</td>
<td>Green</td>
<td>DL29 ON if CEPH axis fuse OK</td>
<td></td>
</tr>
<tr>
<td>DL30</td>
<td>Green</td>
<td>DL30 CEPH photocell. On if photocell is obscured or disconnected/broken.</td>
<td></td>
</tr>
<tr>
<td>DL32</td>
<td>Green</td>
<td>DL32 ON if R axis fuse OK</td>
<td></td>
</tr>
<tr>
<td>DL33</td>
<td>Green</td>
<td>DL33 If ON, R-axis photocell obscured or disconnected</td>
<td></td>
</tr>
<tr>
<td>DL35</td>
<td>Green</td>
<td>DL35 ON if collimator fuse OK</td>
<td></td>
</tr>
<tr>
<td>DL36</td>
<td>Green</td>
<td>DL36 Collimator photocell. On if photocell is obscured or disconnected/broken</td>
<td></td>
</tr>
<tr>
<td>DL38</td>
<td>Green</td>
<td>DL38 ON if Y axis fuse OK</td>
<td></td>
</tr>
<tr>
<td>DL39</td>
<td>Green</td>
<td>DL39 If ON, Y-axis photocell obscured or disconnected</td>
<td></td>
</tr>
<tr>
<td>DL41</td>
<td>Green</td>
<td>SYNC CEPH LOGIC-CEPH sensor synchronization signal</td>
<td></td>
</tr>
<tr>
<td>DL43</td>
<td>Green</td>
<td>PAN IN PAN sensor present, normally off. On if broken cable or PAN sensor removed</td>
<td></td>
</tr>
<tr>
<td>DL44</td>
<td>Green</td>
<td>CEPH IN CEPH sensor present, normally off. On if broken cable or CEPH sensor removed</td>
<td></td>
</tr>
<tr>
<td>DL46</td>
<td>Green</td>
<td>PAN ON 48V PAN Sensor power supply ok. Normally on. Off during standby or in error condition on sensor or interface board</td>
<td></td>
</tr>
<tr>
<td>DL47</td>
<td>Green</td>
<td>CEPH ON 48V CEPH Sensor power supply ok. Normally on. Off during standby or in error condition on sensor or interface board</td>
<td></td>
</tr>
<tr>
<td>DL49</td>
<td>Green</td>
<td>48V 48V Sensor power supply ok. Normally on. Off during standby or in error condition on sensor or interface board</td>
<td></td>
</tr>
<tr>
<td>DL53</td>
<td>Green</td>
<td>CHIN-L OFF if chinrest not present or chinrest in left position</td>
<td></td>
</tr>
<tr>
<td>DL54</td>
<td>Green</td>
<td>CHIN-R OFF if chinrest not present or chinrest in right position</td>
<td></td>
</tr>
<tr>
<td>DL56</td>
<td></td>
<td>AUX2 Not used</td>
<td></td>
</tr>
<tr>
<td>DL57</td>
<td>Green</td>
<td>AUX1 ON if BRUSHDC enabled</td>
<td></td>
</tr>
</tbody>
</table>
7.3 POWER BOARD (97662307)
7.3.1 CONNECTOR LIST

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>Column motor power supply</td>
</tr>
<tr>
<td>K2</td>
<td>Column motor thermal sensor</td>
</tr>
<tr>
<td>K3</td>
<td>Monoblock High voltage</td>
</tr>
<tr>
<td>K4</td>
<td>Power switch live wire</td>
</tr>
<tr>
<td>K5</td>
<td>Power switch neutral wire</td>
</tr>
<tr>
<td>K7</td>
<td>Gigabit switch power supply</td>
</tr>
<tr>
<td>K9</td>
<td>Monobloc feedback</td>
</tr>
<tr>
<td>K10</td>
<td>X-ray button (1/2 = Button, 3 = Ready, 4 = X-Ray)</td>
</tr>
<tr>
<td>K11</td>
<td>Door interlock</td>
</tr>
<tr>
<td>K12</td>
<td>External emergency button</td>
</tr>
<tr>
<td>K13</td>
<td>Column upper endpoint photocell</td>
</tr>
<tr>
<td>K14</td>
<td>External signal lamps (Wires 1,2 ready - Wires 3,4 X-ray emission)</td>
</tr>
<tr>
<td>K15</td>
<td>Machine On-Board Emergency Access</td>
</tr>
<tr>
<td>K16</td>
<td>LOGIC-board power supply</td>
</tr>
<tr>
<td>K17</td>
<td>Mains power supply</td>
</tr>
<tr>
<td>K18</td>
<td>Column lower endpoint photocell</td>
</tr>
<tr>
<td>K21</td>
<td>CAN towards LOGIC or BRUSHDC</td>
</tr>
<tr>
<td>K22</td>
<td>Column anti-pinch switch</td>
</tr>
</tbody>
</table>

7.3.2 DIAGNOSTIC LEDS

<table>
<thead>
<tr>
<th>NAME</th>
<th>COLOUR</th>
<th>SCREEN PRINTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL1</td>
<td>Yellow</td>
<td>ACT</td>
<td>CAN communication activity: normally flashing. Problems on CAN bus if off or on steady</td>
</tr>
<tr>
<td>DL2</td>
<td>Red</td>
<td>ERR</td>
<td>Error status, normally off. Flashing upon startup, the number of flashes represents the FW version. When ERR is on the number of flashes from CPU LED represents the error code.</td>
</tr>
<tr>
<td>DL3</td>
<td>Green</td>
<td>CPU</td>
<td>Normally flashing at 1Hz (10Hz during column movement or x-ray emission). When ERR is on the number of flashes from CPU LED represents the error code.</td>
</tr>
<tr>
<td>DL4</td>
<td>Yellow</td>
<td>UP</td>
<td>Normally off, if on the upper column endpoint has been reached. Always on if photocell damaged or disconnected.</td>
</tr>
<tr>
<td>DL5</td>
<td>Yellow</td>
<td>DN</td>
<td>Normally off, if on the upper column endpoint has been reached. Always on if photocell damaged or disconnected.</td>
</tr>
<tr>
<td>DL6</td>
<td>Red</td>
<td>STOP</td>
<td>Normally off, if on the anti-pinch microswitch has been pushed. Always on if microswitch damaged or disconnected.</td>
</tr>
<tr>
<td>DL8</td>
<td>Yellow</td>
<td>VAC</td>
<td>On when mains power supply is on. Off during stand by or in case of issues with power amplifier on the board.</td>
</tr>
<tr>
<td>DL9</td>
<td>Yellow</td>
<td>VDC</td>
<td>On when 395V are present on power amplifier. Off when in stand-by or in case of issues with the power amplifier.</td>
</tr>
<tr>
<td>DL10</td>
<td>Green</td>
<td>-5VA</td>
<td>Analog -5.3V present, normally on</td>
</tr>
<tr>
<td>DL11</td>
<td>Green</td>
<td>+5VA</td>
<td>Analog +5.3V present, normally on</td>
</tr>
<tr>
<td>DL12</td>
<td>Green</td>
<td>SW</td>
<td>On if switch GBIT power supply present</td>
</tr>
<tr>
<td>DL13</td>
<td>Green</td>
<td>18V</td>
<td>18V driver tension present, normally on</td>
</tr>
<tr>
<td>DL14</td>
<td>Green</td>
<td>12V</td>
<td>12V driver tension present, normally on</td>
</tr>
<tr>
<td>DL15</td>
<td>Green</td>
<td>5V</td>
<td>5V CPU tension present, normally on</td>
</tr>
<tr>
<td>DL16</td>
<td>Green</td>
<td>12V</td>
<td>12V for x-ray button, emergency button and interlock, normally on.</td>
</tr>
<tr>
<td>DL17</td>
<td>Green</td>
<td>3.3V</td>
<td>3.3V CPU tension present, normally on</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>DL18</td>
<td>Green</td>
<td>24V</td>
<td>24V tension present, normally on</td>
</tr>
<tr>
<td>DL19</td>
<td>Green</td>
<td>SYNC</td>
<td>Flashing CBCT during frame acquisition</td>
</tr>
<tr>
<td>DL20</td>
<td>Green</td>
<td>ENB</td>
<td>Inverter enabled signal from LOGIC board, normally on. Off during standby or in error condition.</td>
</tr>
<tr>
<td>DL21</td>
<td></td>
<td>ACK</td>
<td>Not used</td>
</tr>
<tr>
<td>DL22</td>
<td>Green</td>
<td>RDYL</td>
<td>External “ready” lamp relay status. Normally off, on when unit is “ready”.</td>
</tr>
<tr>
<td>DL23</td>
<td>Yellow</td>
<td>XRYL</td>
<td>External “x-ray on” lamp relay status. Normally off, on during x-ray emission.</td>
</tr>
<tr>
<td>DL24</td>
<td>Green</td>
<td>BUT</td>
<td>Xray button pressed. On when x-ray button is pressed.</td>
</tr>
<tr>
<td>DL25</td>
<td>Yellow</td>
<td>ILK</td>
<td>Interlock status. Normally off. On if door is open or interlock is not connected.</td>
</tr>
<tr>
<td>DL26</td>
<td>Red</td>
<td>EMG</td>
<td>External emergency button status. Normally off. On if external emergency button status is pressed or not connected.</td>
</tr>
<tr>
<td>DL27</td>
<td>Yellow</td>
<td>FIL</td>
<td>X-ray filament on. On during emission.</td>
</tr>
<tr>
<td>DL28</td>
<td>Yellow</td>
<td>INV</td>
<td>Inverter on. On during emission</td>
</tr>
<tr>
<td>DL29</td>
<td>Yellow</td>
<td>DRV</td>
<td>Driver enabled, normally on. Off during standby or in error condition.</td>
</tr>
<tr>
<td>DL30</td>
<td>Green</td>
<td>48V</td>
<td>48V tension ON. Off during standby or in error condition.</td>
</tr>
<tr>
<td>DL31</td>
<td>Yellow</td>
<td>ON</td>
<td>Mains power supply to power amplifier relay status. Off during standby or in error condition.</td>
</tr>
<tr>
<td>DL32</td>
<td>Yellow</td>
<td>PC</td>
<td>Preload resistance by-pass relay. Off during standby or in error condition.</td>
</tr>
<tr>
<td>DL33</td>
<td>Red</td>
<td>EMG</td>
<td>Integrated emergency button status. Normally off. On if integrated emergency button status is pressed or not connected.</td>
</tr>
<tr>
<td>DL34</td>
<td>Red</td>
<td>MT</td>
<td>Column engine overload. Normally off. On when thermal sensor is active or not connected.</td>
</tr>
</tbody>
</table>
7.4 BRUSH DC (97662306)
7.4.1 CONNECTOR LIST

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>24V/48V power supply from LOGIC</td>
</tr>
<tr>
<td>K2</td>
<td>Revolver motor</td>
</tr>
<tr>
<td>K5/K6</td>
<td>Revolver limit switch</td>
</tr>
<tr>
<td>K13</td>
<td>CAN towards POWER</td>
</tr>
<tr>
<td>K14</td>
<td>CAN towards LOGIC</td>
</tr>
</tbody>
</table>

7.4.2 DIAGNOSTIC LEDS

<table>
<thead>
<tr>
<th>NAME</th>
<th>COLOUR</th>
<th>SCREEN PRINTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL41</td>
<td>Red</td>
<td>ERR</td>
<td>ON in error condition</td>
</tr>
<tr>
<td>DL42</td>
<td>Green</td>
<td>CPU</td>
<td>Flashing if CPU is OK</td>
</tr>
<tr>
<td>DL44</td>
<td>Yellow</td>
<td>ACT</td>
<td>Flashing if CAN communication is OK</td>
</tr>
<tr>
<td>DL45</td>
<td>Green</td>
<td>ENBX</td>
<td>X axis motor (ON if active)</td>
</tr>
<tr>
<td>DL47</td>
<td>Green</td>
<td>ENB</td>
<td>ON if enabling from LOGIC present</td>
</tr>
<tr>
<td>DL48</td>
<td>AUX</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>DL49</td>
<td>Green</td>
<td>OUT</td>
<td>On</td>
</tr>
<tr>
<td>DL50</td>
<td>DRV</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>DL51</td>
<td>Green</td>
<td>24V</td>
<td>On it 24V power supply present</td>
</tr>
<tr>
<td>DL52</td>
<td>Green</td>
<td>5.0V</td>
<td>On it 5.0V power supply present</td>
</tr>
<tr>
<td>DL53</td>
<td>Green</td>
<td>3.3V</td>
<td>On it 3.3V power supply present</td>
</tr>
<tr>
<td>DL54</td>
<td>Green</td>
<td>48V</td>
<td>On it 48V power supply present</td>
</tr>
<tr>
<td>DL55</td>
<td>Green</td>
<td>DL55</td>
<td>ON if X axis fuse OK</td>
</tr>
<tr>
<td>DL56</td>
<td>Green</td>
<td>MINX</td>
<td>PAN limit switch (ON if darkened)</td>
</tr>
<tr>
<td>DL57</td>
<td>Green</td>
<td>MAXX</td>
<td>CEPH limit switch (ON if darkened)</td>
</tr>
</tbody>
</table>
7.5 CEPH KEYBOARD (97661913)
7.5.1 CONNECTOR LIST

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1 / K11</td>
<td>LOGIC board connection</td>
</tr>
<tr>
<td>K12</td>
<td>Ear guides potentiometer</td>
</tr>
<tr>
<td>K13</td>
<td>Nasion potentiometer</td>
</tr>
<tr>
<td>K14</td>
<td>Cephalostat drum sensors</td>
</tr>
</tbody>
</table>
7.6 PAN SENSOR INTERFACE (97661912)

7.6.1 CONNECTOR LIST

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>Synchronization signals from LOGIC</td>
</tr>
<tr>
<td>K2</td>
<td>Connector for switch GBIT</td>
</tr>
</tbody>
</table>
7.7 CEPH SENSOR INTERFACE (97661912)

7.7.1 CONNECTOR LIST

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>Synchronization signals from LOGIC</td>
</tr>
<tr>
<td>K2</td>
<td>Connector for switch GBIT</td>
</tr>
</tbody>
</table>
7.8 3D PANEL INTERFACE (97661579)
7.8.1 CONNECTOR LIST

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>Synchronization signals from LOGIC</td>
</tr>
<tr>
<td>K2</td>
<td>Power supply towards panel</td>
</tr>
<tr>
<td>K3</td>
<td>Synchronization signals towards panel</td>
</tr>
</tbody>
</table>
7.9 KEYBOARD (97661484)

7.9.1 CONNECTOR LIST

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>LOGIC board connection</td>
</tr>
</tbody>
</table>
8. CONNECTIVITY

8.1 2D SENSORS / 3D PANEL IP ADDRESS AMENDMENT

8.2 FIRMWARE UPGRADE

Acquisition Server Plus

Connection status 192.168.1.2

Device
PAN Sensor connected (2D mode)
8.3 REMOTE SUPPORT

1. Click on the Irys icon.
2. Click on Help and then Remote Support.
3. Enter the ID and Password to enable the remote session.

www.teamviewer.com

SERVICE MENU