PRIMO S

USER Manual
Revision A

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1.1.73

PRIMO S is an application software for image acquisition and processing, in radiography mode using Flat Panel detectors.

PRIMO S could be installed on:

- *Complete Radiographic rooms,*
- *Portable Units,*
- *Mobile Units.*

Note: depending on the device, some features should not be present. Please refer to the following Manual for full details.

This X-ray device is produced by:

Applicazione Tecnologie Speciali srl
Via A. Volta, 10
24060 Torre de' Roveri (BG) – Italia -
TEL. +39/035584311
FAX +39/035580220
e-mail: infoats@atsmed.it
    http://www.atsmed.it/

The equipment complies with European Directive 93/42 EEC and subsequent amendments, 2007/47 EEC.

The following harmonised standards apply to the EM equipment:

EN 62304 :	2006 + A1 : 2015
EN 62366-1 :	2015
EN 62563-1 :	2010
EN ISO 14971 :	2012
EN ISO 15223-1:	2016
EN 1041:	2008

CE 0051

Part 1 : **GENERAL DESCRIPTION**
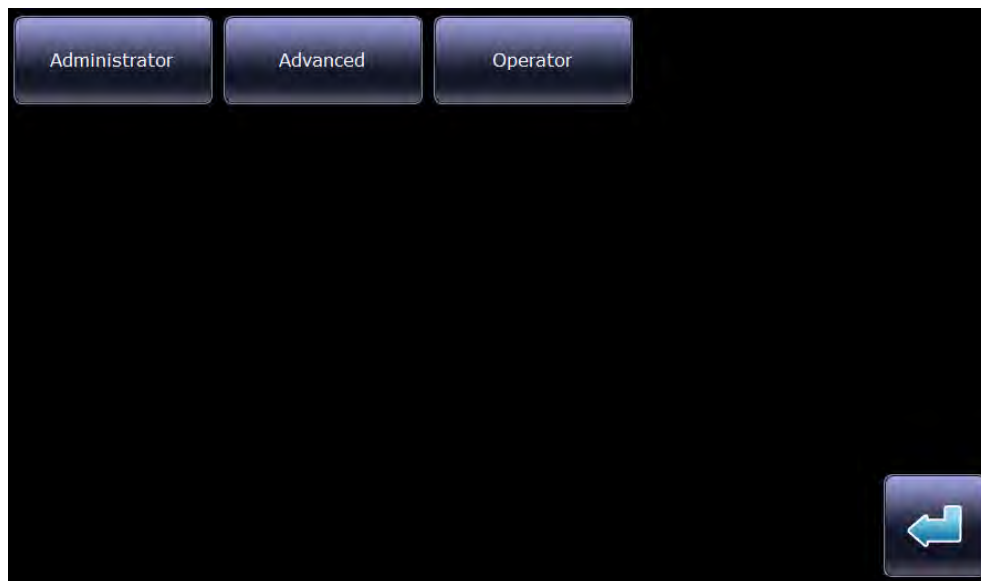
CONTENTS

1   DESCRIPTION OF THE SOFTWARE

1.1   LOGIN

● After about one minute the equipment has been switched on, the operating system opens and the *Login* page appears:

⚠ *Attention: the use of the device must be reserved to persons who are competent, qualified, trained and informed about the risks when using X-rays.*

● Fill in the User field or click [button] to view the User list.

● Select a user, enter the right password in the relevant field and finally **Log in** by pressing the Confirm button.

Notes: *The system requires that each password lasts for 60 days. The user will be advised to change his own password a few days before expiration (see next paragraph).*

1.1.1 CHANGING A USER'S PASSWORD

Login passwords are only valid for 60 days. After this time, the system asks the user to update his password every time he logs in.

When a password gets too old, the following message appears during the Login:
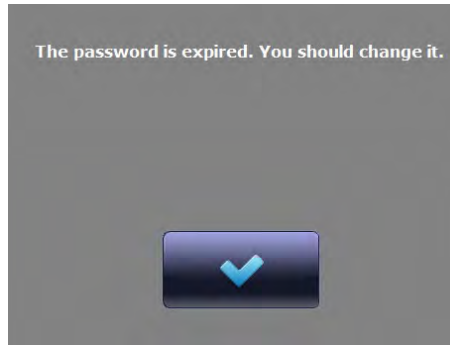
- To change the password, first click the **Key** icon:
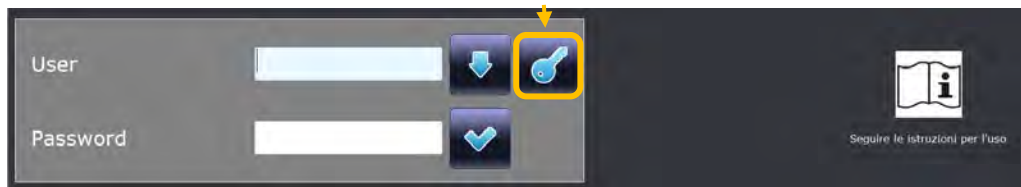
- Now enter your old password (field #1) and the new one (field #2). Repeat the new password in the last field (field #3). Finally, confirm with the accept command:

*Note: The Administrator could change the password from the **User Setup**, too. See Paragraph 1.10 in Part 1 of the Technical Manual.*

1.1.2   CHECKING THE MONITOR ADJUSTMENTS

In order to check the monitor correct calibration, a test pattern (SMPTE) is presented after a user logged in, to check the grey scale correct representation.
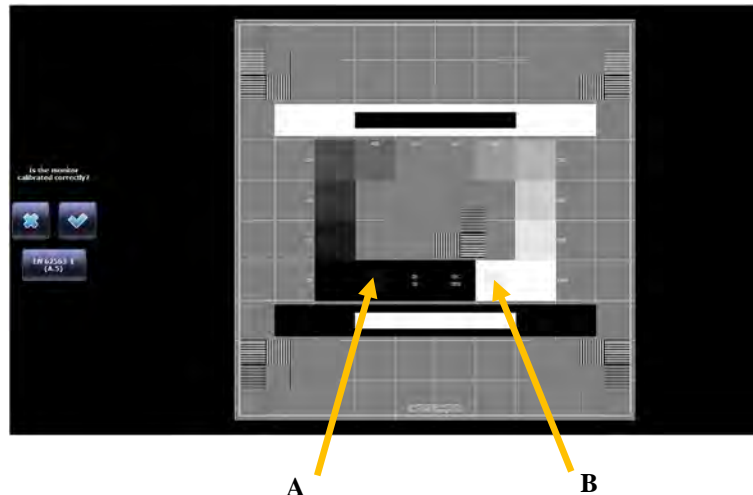
Check the monitor brightness and contrast by checking the appearance of the grey scale.

You need to check that the Test Pattern here is displayed correctly.

More specifically, it must be possible to see:

-   the full grey scale (boxes from 0% to 100%),

-   the grey square in the black box (0%),

-   the grey square in the white box (100%).

If necessary, adjust the brightness and contrast values of the monitor, in order to make the entire grey scale visible.

It is possible to check the correctness of calibration on other images, too.

Press **Accept** if the Test Pattern is displayed correctly.

Once the calibration is correct, press the indicated key and the **Create a new Patient** frame will be opened.

Note: *For Administrator only, it is possible to check the correctness of calibration on other images, too.*
Press the button indicated and browse through the images with the relevant tips, checking the points above are satisfied.

- Now, the **Patient Creation** frame is opened:

Now you can:

- Consult the Operator Manual before using this software.

- **Create a new Study**: fill in the required patient's data in the relevant fields.

- Enter the **Emergency** mode;

- Get the **Worklist;**

- Open the **Study list;**

1.1.3   ONLINE MANUALS

Touch **the PRIMO S** icon, as shown in the figure below:
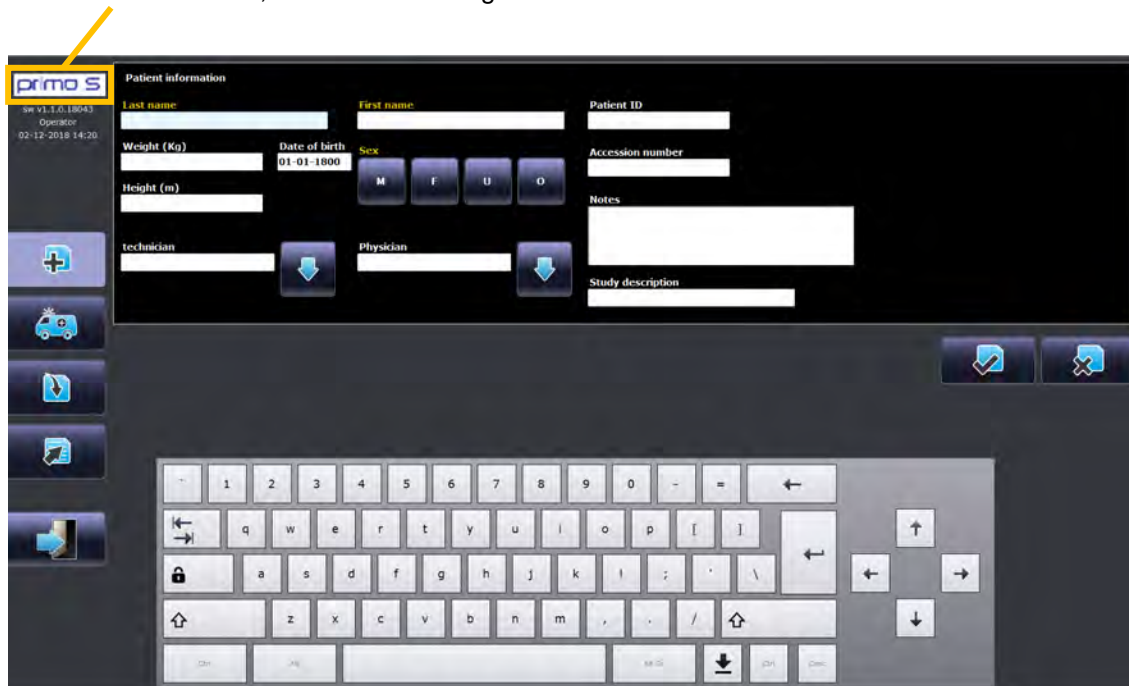
It opens a window and here you can:

1) Get information about software versions and manufacturer.

2) Open the **User Manual** (PDF format).

3) Open the **Technical Manual** (PDF format).

Note: You can visualize the Technical Manual only if you enter the system as **Advanced** or **Administrator** user.

1.1.4   PATIENT CREATION FRAME
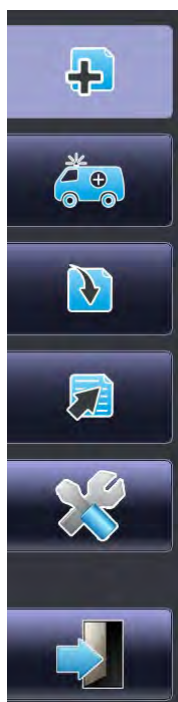
Once you log in, the **Create a New Patient** frame is opened:

Now you can use the short-cut keys, on the left, to:

A. Manually create a new study (*see Paragraph 1.2.5 below)*;

B. Open the Emergency mode: you can skip directly in the working frame (without entering all the patient data), in order to place the exam faster. *See Paragraph 1.1.5 below*.

C. Get the Worklist (optional). *See Paragraph 1.2.6 below.*

D. Open the study list frame;

E. Open System Setup (only for **Administrator** and **Advanced** users);

F. Logout (return to login page);

1.1.5 EMERGENCY MODE

If you press the relevant key, the **Emergency** mode Working frame opens.

In the image area appears the **Exam selection** window; you can choose the needed anatomical region:

- *Head*
- *Chest*
- *Abdomen*
- *Cervical Spine*
- *Pelvic Measurements*
- *Humerus*
- *Femur*
- *AEC adjustment.*

For each anatomical region are available one or more exams, divided in anatomical part and view.

Once you selected the required exam (or exams), close the APR selection menu, pressing the relevant key.

Now, adjust the acquiring parameters values (kV, mA, etc…) if needed, and carry the exam out.

To **Add** another exam, press the relevant button.

Once you finish the exam, in order to close the working frame, press the **Suspend Study** key or the **Complete Study** one.

|	In order to **Edit** the **Patient's Information**, choose the study in the Study List and press the relevant button, enter the required data and finally press the **Confirm** key to save the study. The emergency modality will be available again.
Edit button	If the study is no longer required, the **Administrator** can delete it, and the Emergency modality will be available again.

1.2 STUDY LIST FRAME

If you press the relevant key, the **Study List** frame is opened.
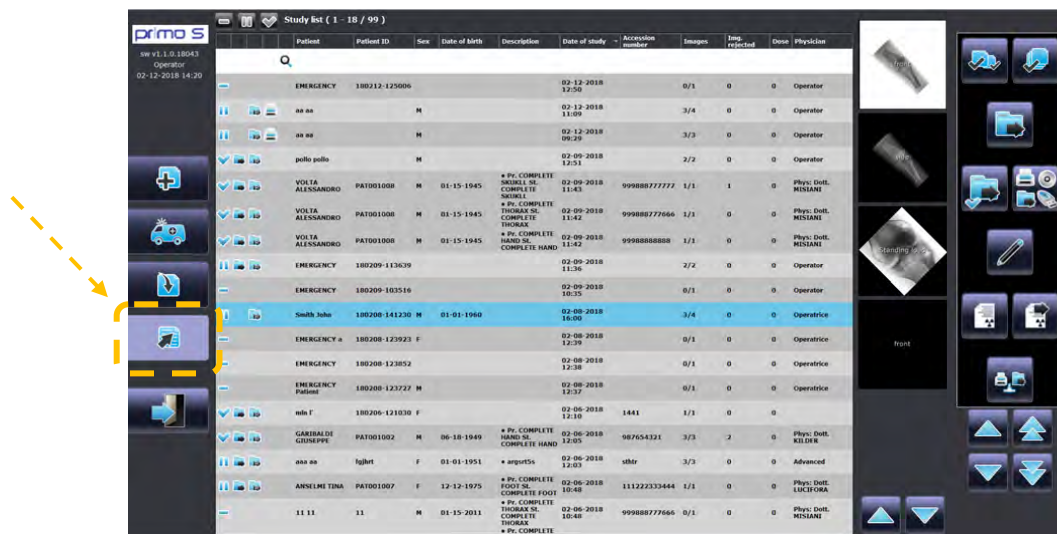
The central part of the frame is dedicated to the patients list, which reports the following fields:

- ➢ A study status, which may be:
    - *To Do:* ▭ / *Suspended*: ▮▮ / *Completed*: ✓ / *Protected*: 🔒
    - *Sent to DICOM store server*: 📁 / *Sent to DICOM printer:* ▬

- ➢ There are also the following icons, if the DICOM Storage Commitment (SC) function is envisaged:
    - ⧗ if the study awaiting STORE confirmation (from the SC server)
    - ✓ if at least one image in the study received STORE confirmation
    - ◼ if there has been a STORE error for at least one image in the study
    - SR if the RDSR report has been successfully sent.

➢ Patient	➢ Accession Number
➢ Patient ID	➢ Images
➢ Sex	➢ Images rejected
➢ Date of Birth	➢ Dose
➢ Description	➢ Physician.
➢ Date of Study	

*Note: the system is **not to be considered a patient data archive**. It's up to the hospital to provide a proper archive and storage for patient data.*

You can enter data to filter the List, or you can sort it using the fields listed above (except Images, Images rejected and Dose).

From the Study List, tap on a study once, to see its images in preview mode, aside the study list; tap twice to open the study.

- The **Working frame** is opened when you open a *To Do* study or a *Suspended* one which contains at least one procedure to be performed (see paragraph 2.1 in this Manual).

- The **Image Processing frame** is opened when you select a *Completed* study or a *Suspended* one with no procedure to be performed (see paragraph 3.1 in this Manual).

On the right-hand side of the study list frame, you find the following keys:

1. **Select Multiple studies**: to select more studies at the same time; (*see Paragraph 1.2.4.1 below*).
2. **Select All**: to select all studies in the page. (*see Paragraph 1.2.4.1 below*).

3. **Store:** send the selected study, or studies, to a DICOM store to be chosen (*see Paragraph 3.1.1 in part 2 of this Manual*).
4. **Export studies:** to export the selected study to a cd/dvd or to a USB memory device, only for **Advanced** and **Administrator** users *see Paragraph 3.2 in part 2 of this Manual*)).

5. **Default Store:** send the selected study, or studies, to the default DICOM store.
6. **Report tool:** to access the Report Tool Menu (*see Paragraph 2.16 in part 2 of this Manual*).

7. **Edit:** to edit patient's data.
8. **Delete studies:** to delete studies (only for **Administrator** user).

9. **RDSR:** It shows the dose report of the selected study. 1.1.53
10. **Send the RDSR:** to send the dose report of the selected study to the related DICOM node.

11. **Rejected images:** it shows the statistics about rejected images (only for **Administrator** and **Advanced** users).
12. **Spooler:** it shows the queue for DICOM store and print services (*see Paragraph 3.1.3 in part 2 of this Manual*).

13. **Up/Down arrow:** to scroll the study list upward or downward, study by study.
14. **Page Up/Down:** to go to the next/previous page in the list.

1.2.1   EXISTING STUDY

Select the study in the Study List by tapping on it: the study is highlighted on the screen and previews (thumbnails) of the images appear on the right.
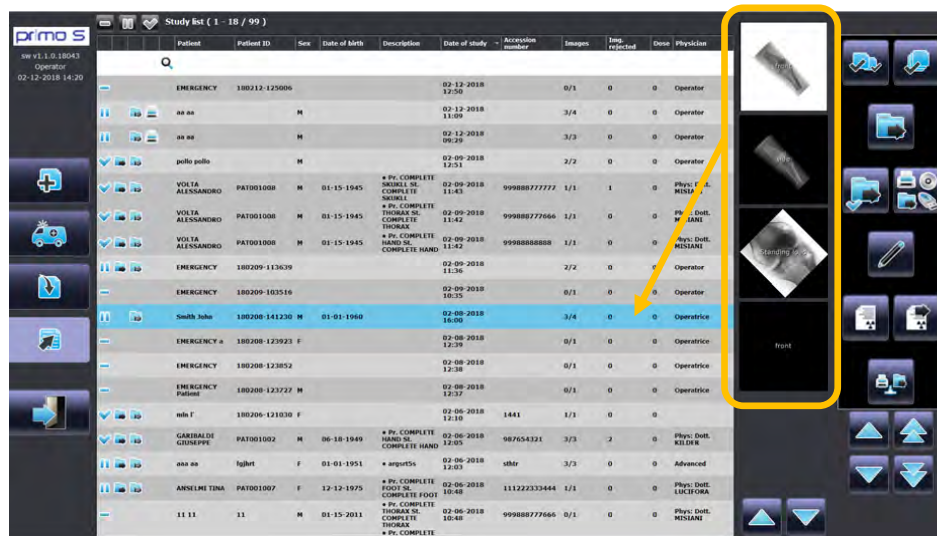
- To change a study data, use the **Edit** command.

- Tap the study twice, or click on a thumbnail, to open the **Image Processing** frame:

- Now you can:

  - Process the saved images using the commands on the right-hand side of the screen.
    (*See chapter 3 in this part of the manual* for further details).

- Open the Working frame to acquire new images, using this key:
  (This is not possible if the study has already been completed: in this case the relevant button will not be shown).

- Complete (i.e. close) the current study by touching:

If the Study list contains a long list of patients, it is a good idea to use the search functions in order to easily find the required study. See next paragraph (1.2.2) for details.

Note: *if you click on an empty thumbnail (the related image has not been acquired, yet), it will be opened the acquisition frame.*

1.2.2 SEARCH FUNCTIONS

The following functions help you to use and manage the Study List:

1. **Sort list**

2. **Find study**

3. **Select study**

4. **Delete study *(Administrator only)***

1.2.3 SORT THE LIST

The Study List can be sorted:

1. in chronological order (study date),

2. in alphabetical order by:

   - Patient name,
   - Patient ID,
   - Description,
   - Physician.

Touch the title of the parameter column you want to use, to sort the list. Touch the same column again to reverse the order (increasing/decreasing).
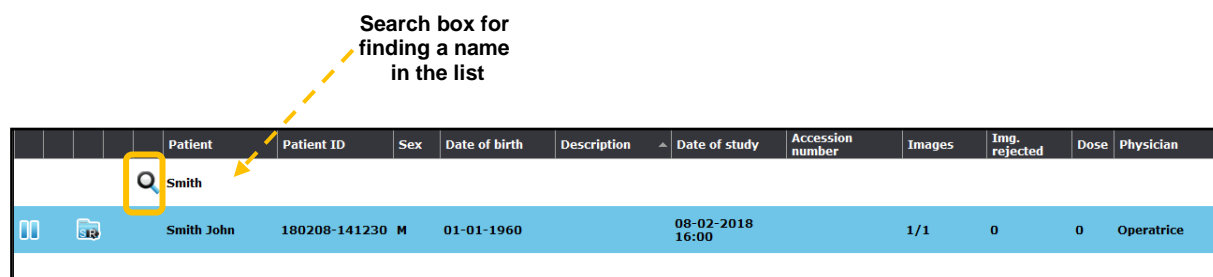
Sort by
Date of study

			Patient	Patient ID	Sex	Date of birth	Description	Date of study	Accession number	Images	Img. rejected	Dose	Physician
		🔍											
⏸	📇		Smith John	180208-141230	M	01-01-1960		08-02-2018 16:00		1/1	0	0	Operatrice
—			EMERGENCY	180208-123923				08-02-2018 12:39		0/1	0	0	Operatrice

1.2.4 FIND A STUDY

You can filter the Study List, using the white field below a category name; enter the required data and only the corresponding study (or studies) will be shown.

You can use this search function for each category in the list (e.g. by "Patient"), except the **Image Rejected** one.


Search box for finding a name in the list

			Patient	Patient ID	Sex	Date of birth	Description	Date of study	Accession number	Images	Img. rejected	Dose	Physician
		Q	Smith										
❚❚			Smith John	180208-141230	M	01-01-1960		08-02-2018 16:00		1/1	0	0	Operatrice

➤ Enter the data in the selected field and then press the **Glass** key to start the search.
Now, only the studies that meet your search criterium appear in the list.

In the figure above, it has been carried out a search by **Patient name**; only the studies where the patient name is **"Smith"** are shown.

Note: *to restore the complete list, delete the search filters and press the Glass key, again.*

When you try to filter the list by **Date of study**, you are required to enter a date range (after you enabled the "From" and "To" fields):

Field Enabled

From: 07-13-2018

To: 07-13-2018
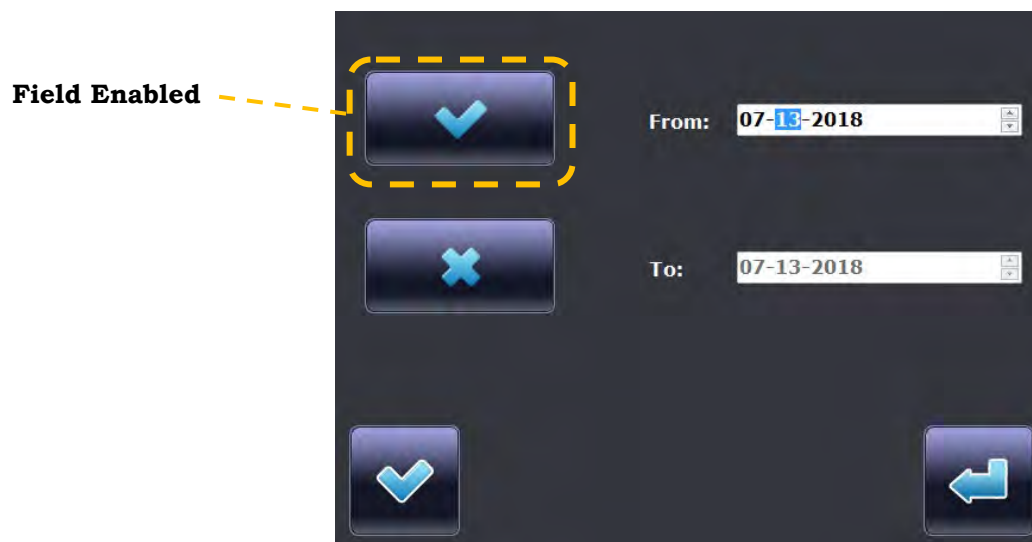
In **General Setup,** it is possible to set the number of days you want to see the studies of. (***View Last X days*** *function).* Set "0" to view all the studies.

If the **View Last X days** function, in **General Setup**, is enabled (*see paragraph 1.5.1 in Part 1 of the Technical manual*), when you apply a different range of date, only the studies that fall into the new range will be shown.
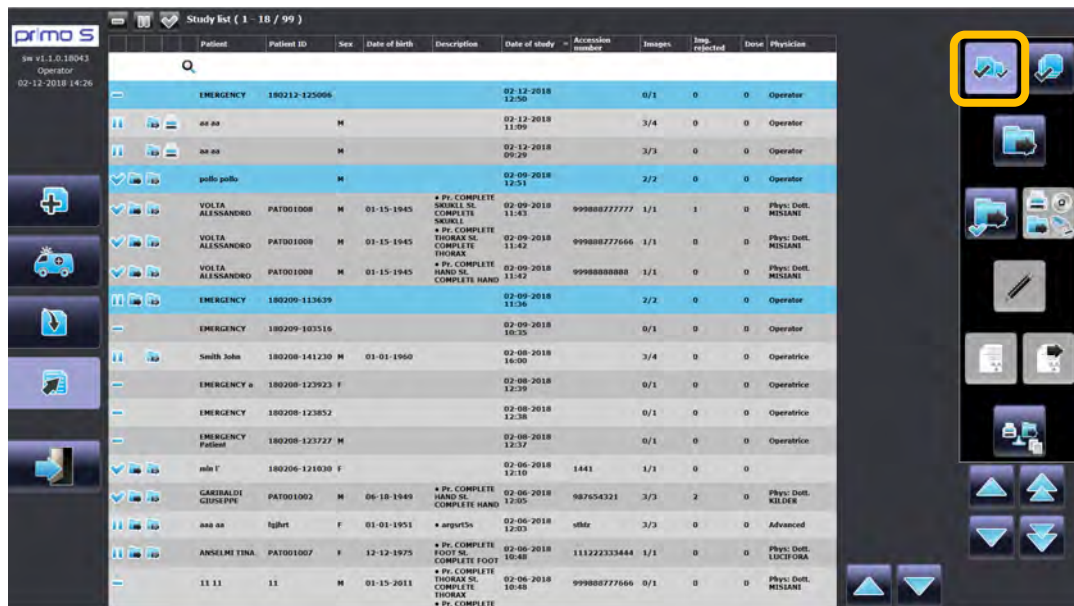
This condition lasts until you are in the study list. After you exit this page, the **View Last X days** function will prevail.
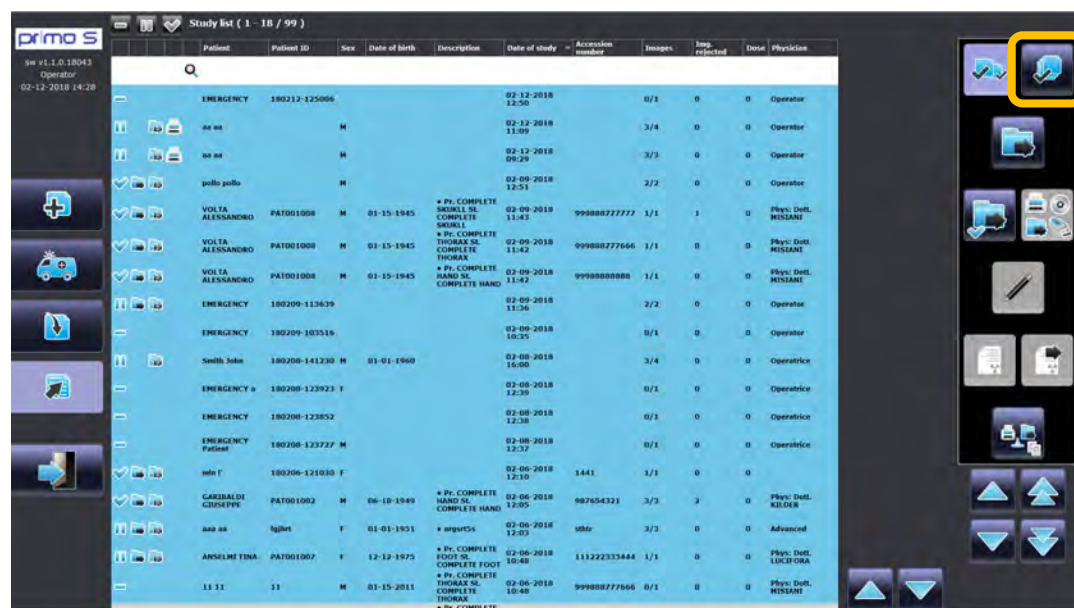
1.2.4.1 SELECT STUDIES

To select a single study, just tap on it and it will appear highlighted in blue.
Use the relevant command to select more studies in the Study List (e.g. if you need to send them to a DICOM device or to delete them):

- The selected studies are now highlighted in blue.

The relevant key makes you select all the studies present in the **current page** of the list. They are shown **18 studies** per page; it means that only these studies will be selected.
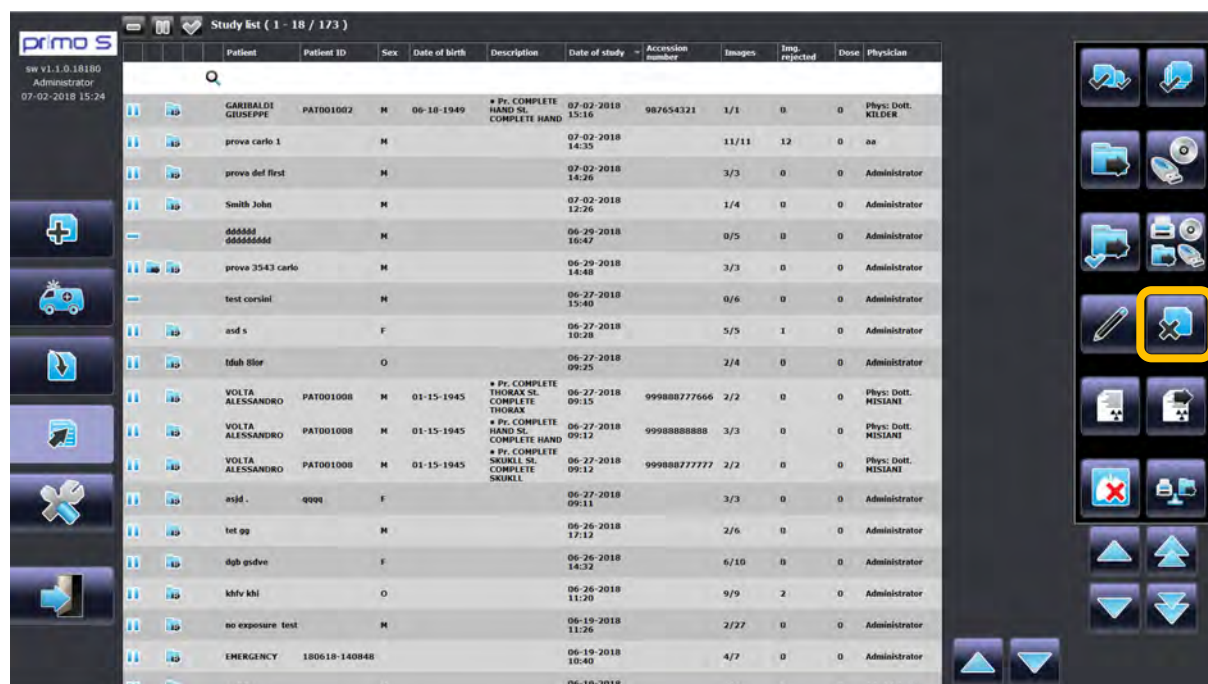
*Note: The icons with a grey background (respectively **Report tool, Edit patient information, RDSR** and **send the RDSR**) cannot be used when more than a study is selected.*
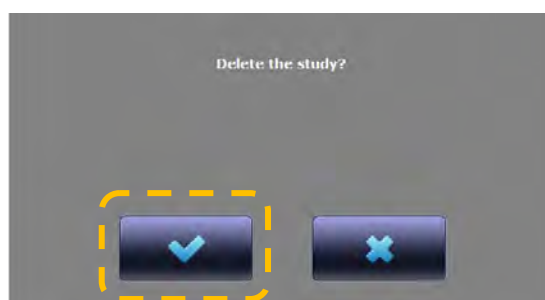
1.2.4.2 DELETE STUDIES

*Note: Only the **Administrator** could delete studies or images.*

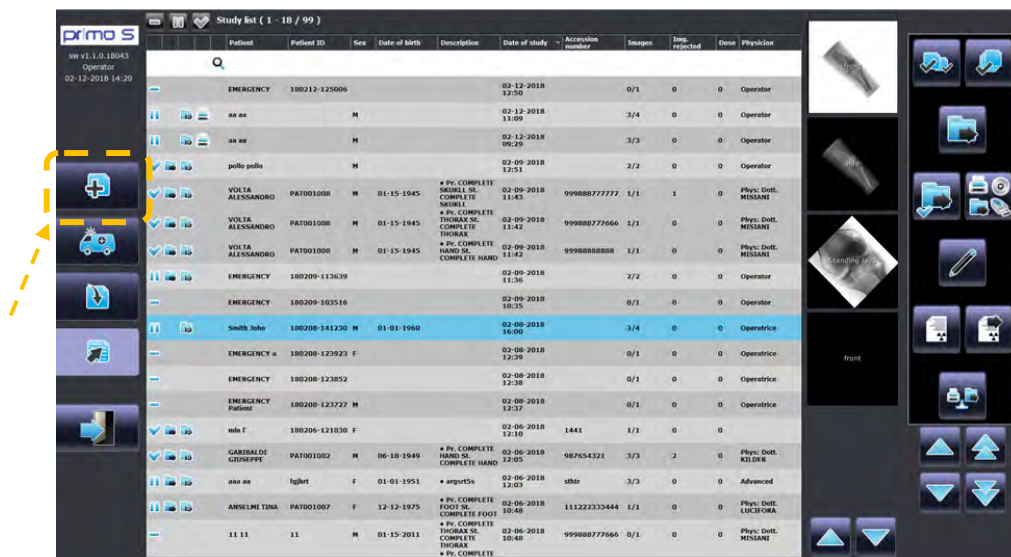Select from the Study List the study (or studies) you want to delete. Now, press the relevant icon.

It is required to confirm the deletion:

Note: a deleted study cannot be restored.

1.2.5 CREATING A NEW STUDY

You can manually create a new study with the relevant command:

It opens this window and you can enter the required data in the **Patient Information Box**:

- *Patient's* **Last Name**   Enter the patient's last name (max 30 characters).

- *Patient's* **First Name**   Enter the patient's first name (max 30 characters).

- **Patient ID**   The code, generated by the clinic management system, should normally be entered here. (You can leave this field empty if there are no ID code).
In **Emergency modality**, the system automatically create an ID based on date and time of the study creation.

- **Weight**   Patient's weight (in kg).

- *Height*   Patient's height (in m).

- *Date of birth*   *dd-mm-yyyy* or *mm-dd-yyyy*, depending on the language set.

- *Sex*   **M**ale – **F**emale - **U**nknown – **O**ther

- *Accession Number*   The access code your management software gave to the
                                          patient.

- *Technician*   Who carries out the exam. With the drop-down menu, you can
                                          select between the enabled users list; otherwise, enter the
                                          name manually.

   Physician   Who carries out the medical report. With the drop-down menu,
                                          you can select between the enabled users list; otherwise,
                                          enter the name manually.

- *Notes*   Any note about the patient that could be useful to accomplish
                                          your exam.

- *Study Description*   A short note to describe the exam.

Note: Patient's Last and First name, and Sex *are always mandatory. From the setup menu, you
         can set the other fields as mandatory, or leave it discretionary (default); the name of a
         mandatory field is coloured in yellow.*

Now:

- Press **Cancel** to close this window, without saving any data;

- Press **Apply** to save the new patient and the **Working frame** will open.
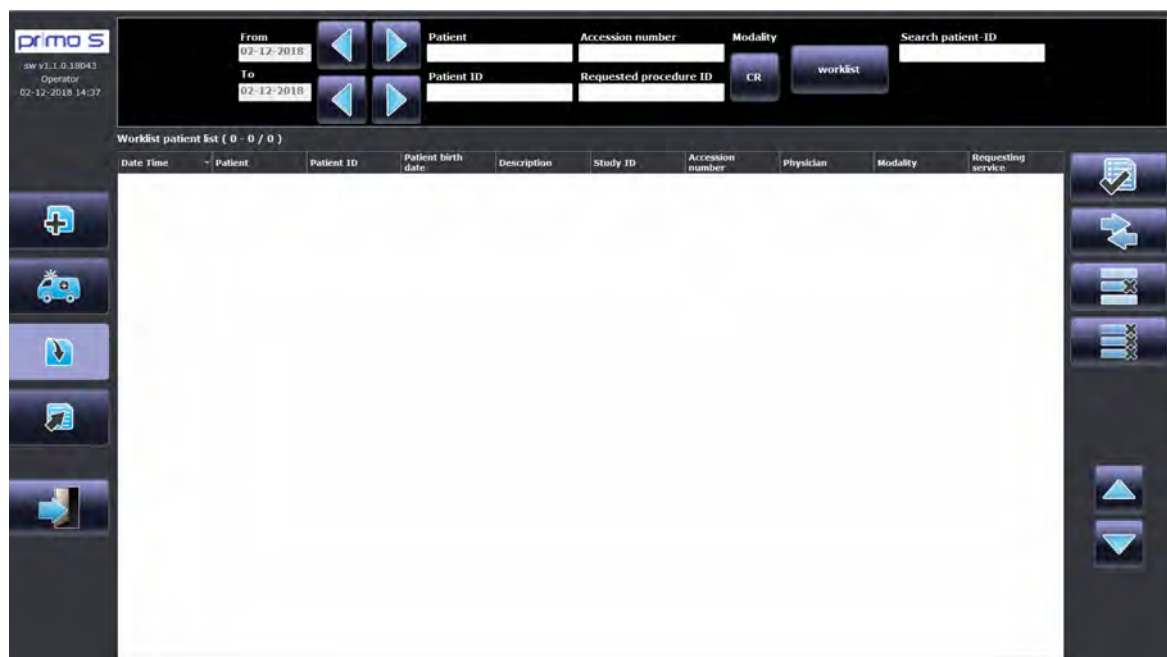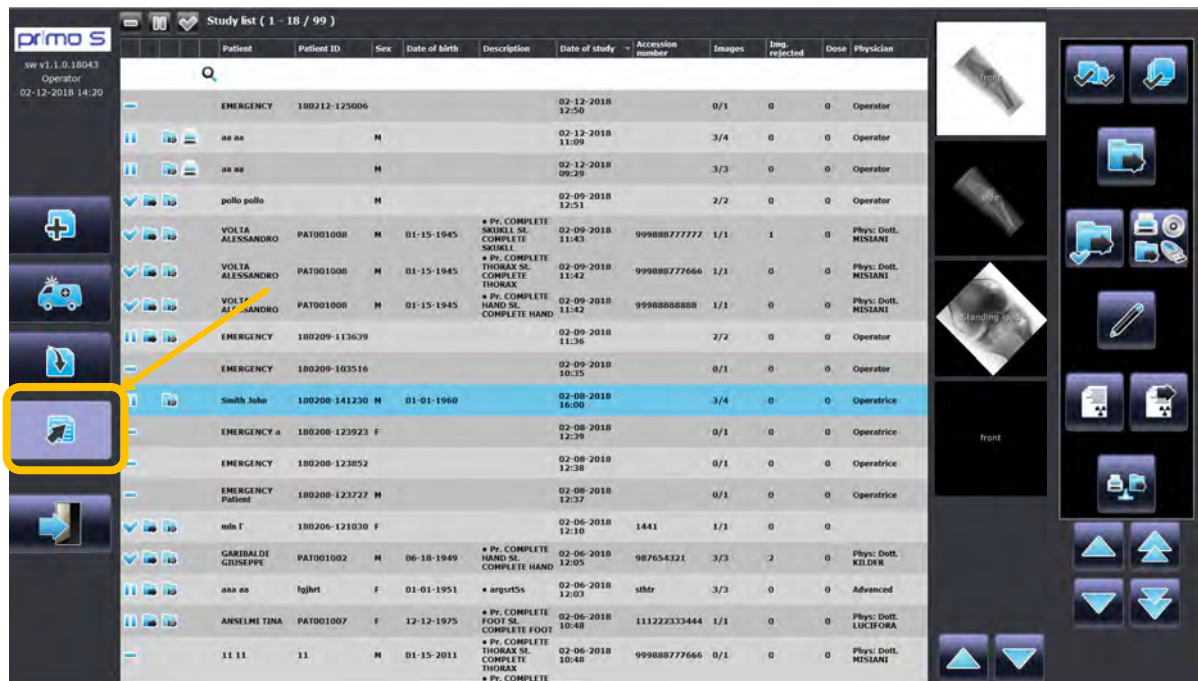
1.2.6   RECEIVING STUDIES FROM WORKLIST

The DICOM Worklist function lets you receive a list of required studies from your acceptance software.

● Open the **Worklist** menu using the relevant command:

- When you open the Worklist frame, the list is already set, by default, on the current day.
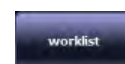
- To request the Worklist:

  - Set the **From** and **To** dates, if required. You can scroll through dates, using tips. Click once to scroll day by day, keep press to scroll faster.
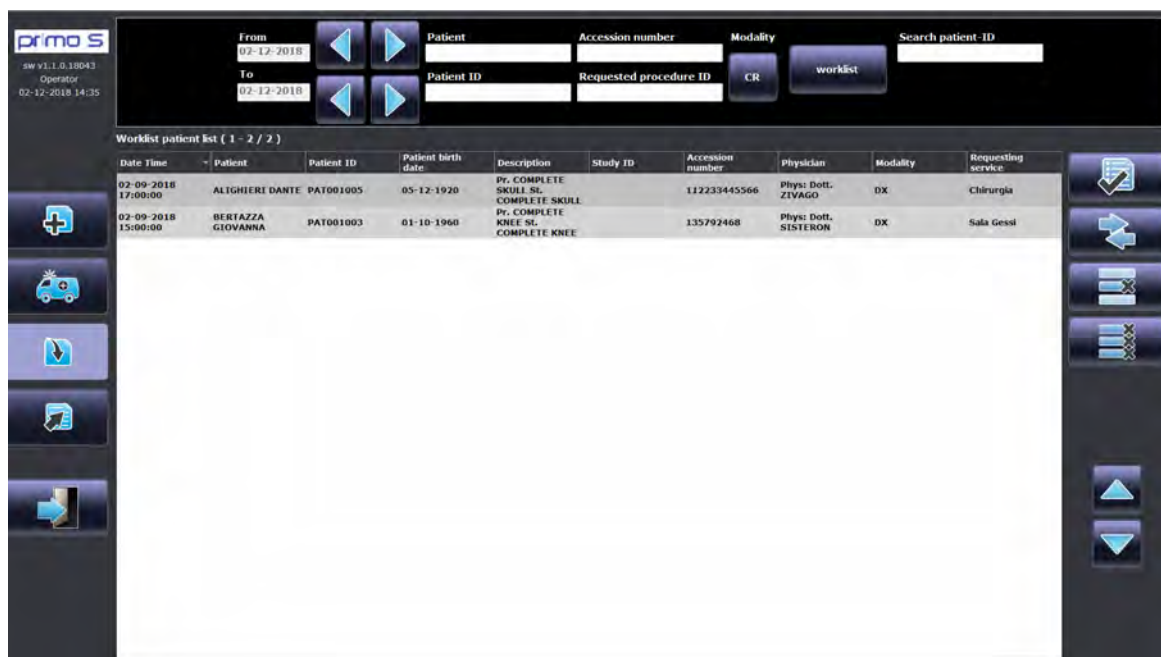
  - Set the EXAM TYPE MODALITY to request by selecting DX, CR or ALL:

- It is possible to filter studies to receive from the Worklist, by:
  - Patient name,
  - Patient ID,
  - Accession number,
 - Requested procedure ID.

- Finally request the Worklist by touching the relevant command:

Note: In DICOM setup menu, it is possible to set a series of parameters that will be used to filter the Worklist you are receiving. The parameters selected will be compared to those of studies already received from the Worklist. If selected parameters match with those of a study present in the Worklist you are receiving, this study will not be shown.

After receiving the Worklist, select the needed study/studies. Now you can:

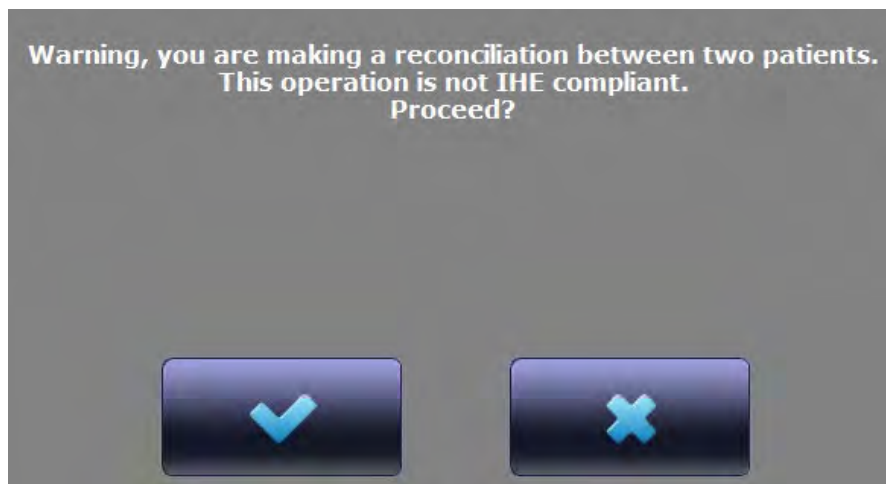- **Transfer one or more selected studies to the Study List:**
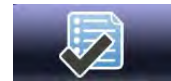
➢ if you transfer a single study, the acquisition frame is automatically opened,
➢ if you transfer more studies, the Study list frame will be opened,
➢ if you transfer a multi-study patient, the acquisition frame is opened (different studies associated to the patient will be automatically divided),
➢ if one or more RIS codes are associated to the study, the acquisition frame is opened and related exams or procedures are automatically loaded.

- **Merge** selected patient with a local one (a pop-up, showing your Study List appears: select the needed study and press the **Confirm** key).

Attention: local patient data will be permanently replaced by data of the selected patient.
This operation is not IHE compliant. *You will be required to confirm the operation.*

Warning, you are making a reconciliation between two patients.
This operation is not IHE compliant.
Proceed?

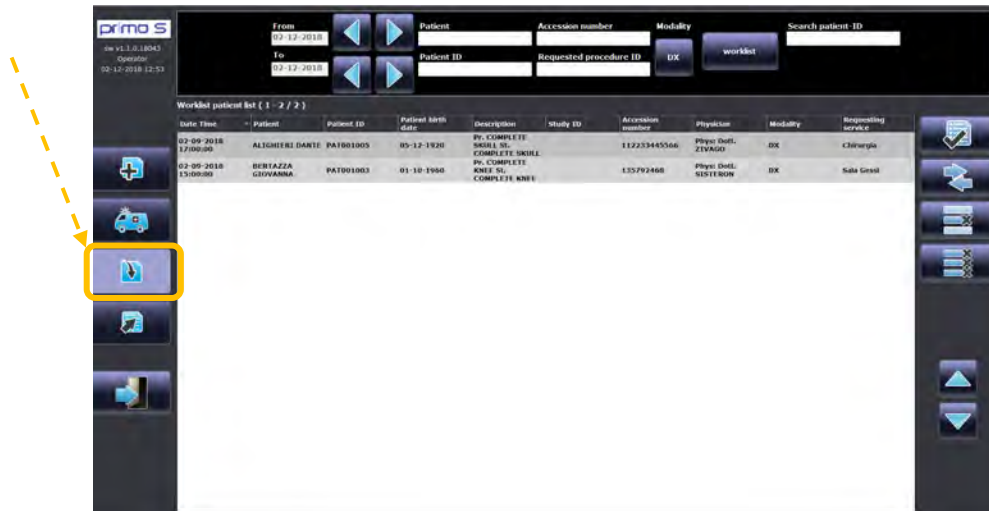- **Delete** one or more selected studies
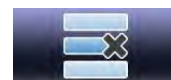
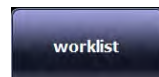- **Delete the whole list**

- **Browse** into the list.

1.3 WORKLIST FRAME

If you press the relevant key, the **WorkList** frame is opened.

To receive the Worklist, press the relevant button; if required, you can filter the search using **From** and **To dates**, **Patient's information** and **modality (CR, DX, ALL).**

Press the **Worklist** key to receive the studies that meets the criteria entered.

Once you receive the Worklist, use the keys on the right-hand side of the frame, in order to:

A. Accept one or more selected elements

B. Merge selected patient with local patient

C. Delete one or more selected study

D. Delete all the Worklist received

E. Browse into the Worklist

Select the study (or studies) required, press the **Accept** button to transfer the selected elements to the Study list.

2   SAFETY

2.1   WARNINGS

2.1.1 SYMBOLS USED

Other symbols are used on the EM equipment, on the serial n° plate and in this manual, as follows:

Follow the instructions for use (ISO 7010-M002)

Operating instructions (ISO 7000-1641)

Name and address of manufacturer

Radio wave emitting device

Device compliant with the relevant European Directive, with certain operating restrictions concerning radio wave transmission

2.1.2   WARNINGS IN THE MESSAGE AREA

The message area in the Working frame provides you with information on EM equipment status and alarm messages, detector connection status and the amount of free space on the video processor archive hard disk:
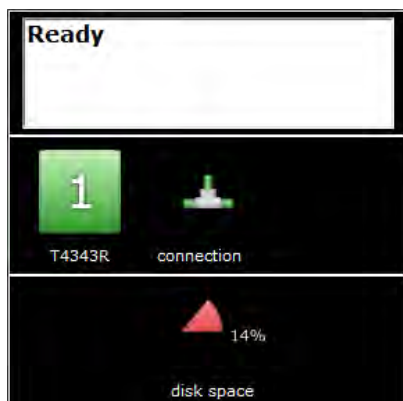
EM equipment status and alarms
(see Table 1)

Detector and Connection status messages
(see Tables 2)

**Percentage of free space on archive disk for image archiving**

Table 1	
EM Status message	**Meaning**
READY	The equipment is ready to acquire images. You can give the X-ray emission command.
RAD PREPARATION	Preparing for acquisition. This occurs after giving the X-ray preparation.
READY FOR RAD	Preparation completed. The system waits to receive an acquisition request.
IMAGE ACQUISITION	Transferring images from the detector.
DETECTOR NOT CONNECTED	The detector is not correctly connected.
LOW BATTERY, RECOMMENDED TO CHANGE BATTERY	It is recommended to change the wi-fi FPD battery. *Attention: if the battery charge falls **below 10%**, the system **will not be able to acquire new images.*** *Change the battery to restore the complete functionality of the equipment.*

Table 2			
Detector status messages			
	READY	NOT READY	NOT CONNECTED
Detector status			
Wired Detector	The detector is correctly connected.		
Wi-Fi Detector	The power of the Wi-FI signal is shown aside the related icon.		

*Attention: When this value falls below a set value, the system **will not be able to acquire new images** (see paragraph 1.5.1.1 in Part 1 of the Technical Manual)**.***
*Check your connection to restore the complete functionality of the equipment.*

2.1.3 LEDS ON THE CANON FDXW WI-FI DETECTOR
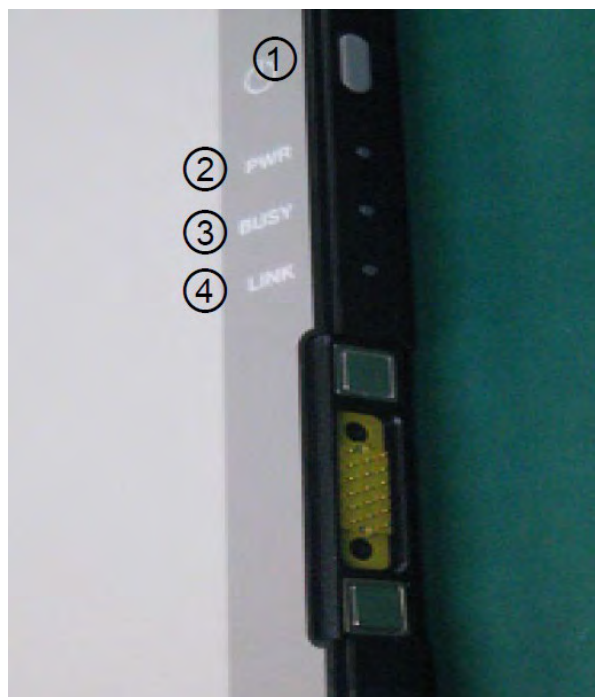
Item	Colour	Description
1	--	Turning on and off the detector (keep the button pressed for at least 2s)
2	Blue	The detector is on
3	Green	It is lit when the detector is busy (usually when turning on)
4	Blue / Green	Blinking blue when the detector is connected via cable. Green when it is connected via WiFi

- Insert the battery in its compartment, as shown in the figure below.
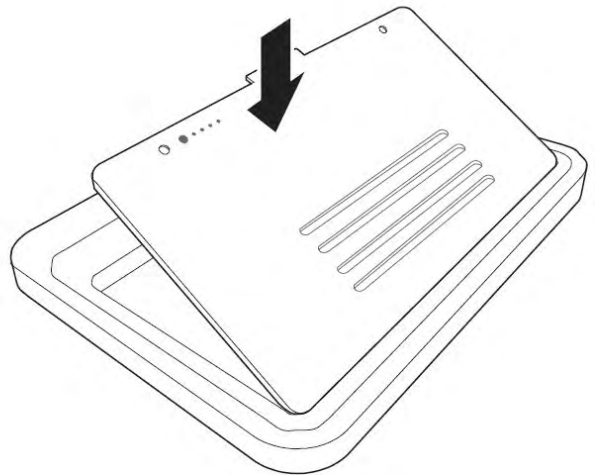
- Make sure that the battery is safely fixed and the two levers, marked with arrows, are in the position shown.

- The battery charge level can be verified every time you need, by pressing the button shown in the following picture.
  The LEDs 1 - 4 will light up for a short moment, according to the battery charge level.
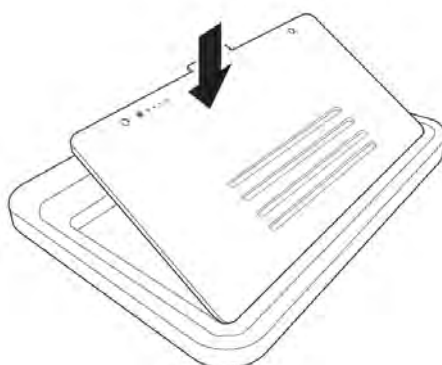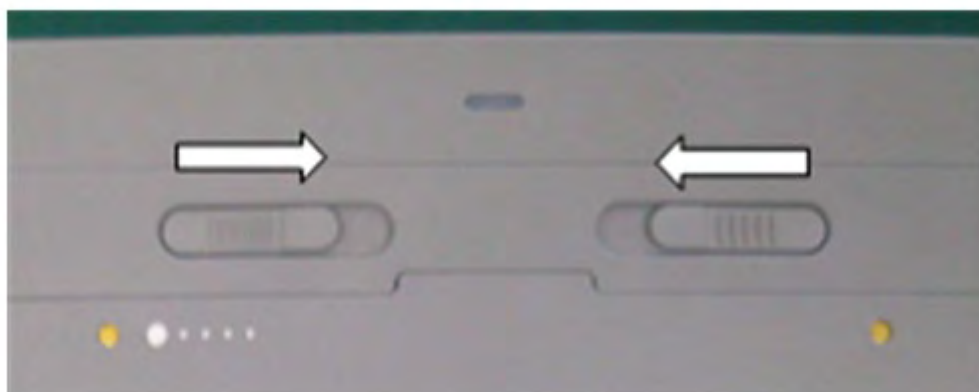
LED	CHARGE LEVEL
LED 1,2,3,4 light on	76 ÷ 100%
LED 1,2,3 light on	51 ÷ 75%
LED 1,2 light on	26 ÷ 50%
LED 1 light on	11 ÷ 25%
LED 1 Dimming (about 0.5sec interval)	< 10%
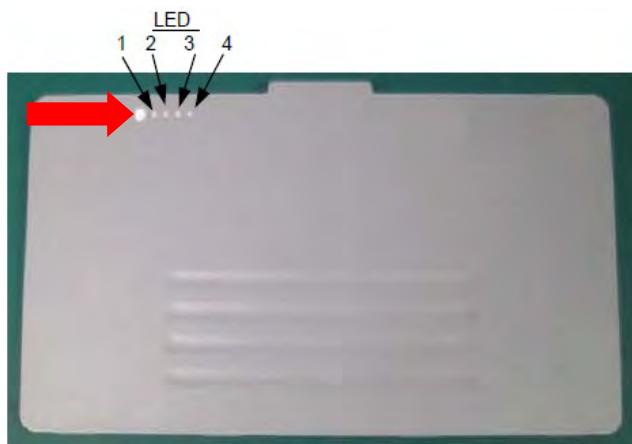
- **Turn ON** the detector by pressing for 2 seconds the power button and wait for the PWR LED to turn on; after then, the BUSY and LINK LEDs will turn on, respectively. After about 1 minute, the detector will be ready to be used.

- **Turn OFF** the detector by pressing the button until the PWR LED turns off. Now, please, remove the battery moving the levers as shown in the figure below (follow the direction of the arrows) and place it in the **battery charger**.

2.1.3.1 LEDs OF THE BATTERY CHARGER OF THE CANON FDXW WI-FI DETECTOR

LEDS	CHARGE LEVEL
Full Charge LED	100 %
LED 1,2,3 light on LED 4 Dimming	76 ÷ 100%
LED 1,2 light on LED 3 Dimming	51 ÷ 75%
LED 1 light on LED 2 Dimming	26 ÷ 50%
LED 1 Dimming	11 ÷ 25%
LED 1 Dimming (about 0.5sec interval)	< 10%

"Full Charge" LED

The status LED can light up in 2 colours:

- **Red:** battery charging

- **Green:** charging completed.

The useful life of a battery may be compromised if you remove it from the charger before the battery has been fully charged.

2.1.3.2 CANON FDX3543RPW DETECTOR FEATURES

A fully charged battery allows the detectors to work for 1300 shots (cycle time: 8 seconds, capturing time 0,5 seconds); in sleep mode, the battery lasts for 4 hours.

The battery gets fully charged in 2.5 hours. It is possible to charge only one battery at time.

The maximum load the <u>entire surface</u> of the FPD could tolerate is approximately 1471N (150 kgf), while the central area (diameter: 40 mm) could tolerate approximately 981N (100 kgf).

Note: For preparation and connection stages, see Chapter 2 in Part 1 of the Technical manual.

2.1.4   LEDS ON THE CANON WHITE-LABEL WI-FI DETECTOR

There are 3 LEDs on the Canon detector, aside the ON/OFF button:

Item	Colour	Description
1	--	Turning on and off the detector (keep the button pressed for at least 0,5 seconds)
2	Blue	The detector is on Blinking if the battery level is low or if there is an error during acquisition
3	Green	Detector is ready to perform an exposition Blinking during exposure preparation
4	Blue green	The detector is connected Blinking during detector registration or image transmission

Insert the battery in its compartment as shown in the figure below:

Lock the battery in position, moving the two levers in the direction shown in the figure:

Press the ON/OFF button for 3 seconds to switch the detector off. You can now remove the battery after turning the battery lock lever (unlock).

⚠️ **Attention:** ONLY remove the battery after switching off the detector (ON/OFF button).

2.1.4.1 CANON WHITE-LABEL BATTERY CHARGER LEDS

The battery charger is provided with two compartments for the batteries and with LEDs that indicate the charging status.
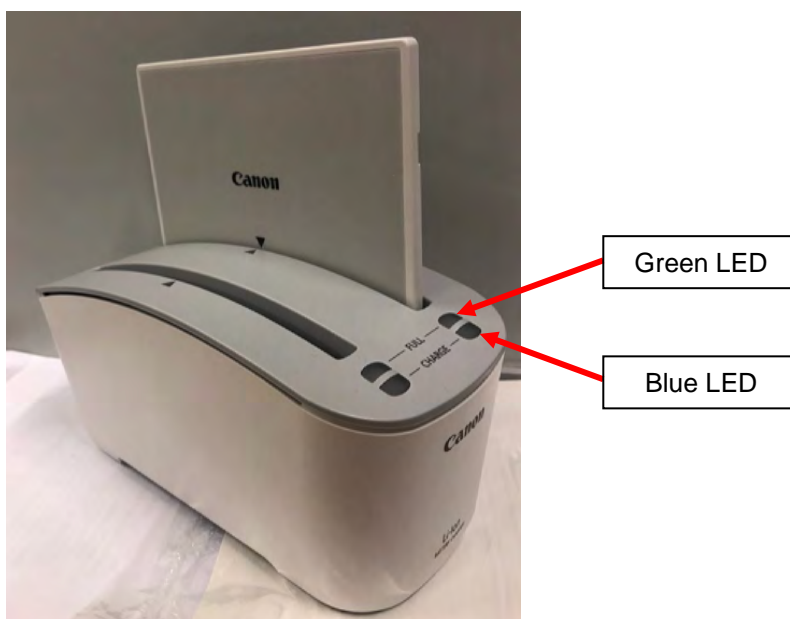
LED NAME	COLOUR	DESCRIPTION
Charging	Blue	Battery charging
	Green	Battery fully charged

⚠️ The useful life of a battery may be compromised if you remove it from the charger before the battery is fully charged.

⚠️ Place the battery charger in a well-ventilated position.

2.1.5 <u>LEDS ON THE CANON FDX4343R DETECTOR</u>

LED	Colour	Description
1	Green	POWER: When +24V is input
2	Green	HEALTHY: FPD retains the normal status
3	Green	NETWORK: Normal communication status
4	Green	IMAGING: - Radiography status, EXP_OK output period; - READOUT

At the very first time the detector is turned on, it presents the settings from the factory; to fit these settings to your requirements, see the Technical manual.
For preparation and connection stages, *see Chapter 2 in Part 1 of the Technical manual.*

2.1.6   LEDS ON THE PIXIUM EZ / DR WIRELESS DETECTOR

There are three LEDs on one side of the PIXIUM 3543EZ / 2430EZ detector, together with an ON/OFF button.

BUTTON   WIFI   STATUS
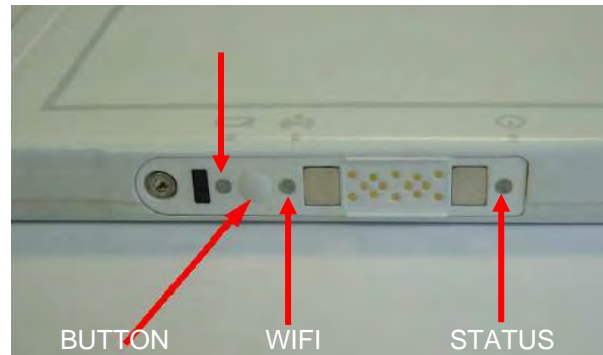
LED NAME	LOGO	COLOUR	DESCRIPTION
Battery		Off	No battery FPD off Detector starting up
		Orange: fast flashing	Battery level less than 5% its full charge
		Orange	Battery level less between 5% and 10% its full charge
		Green	Battery level more than 10% its full charge
WIFI		Off	WIFI disabled Detector switched off Detector starting up
		Orange	Detector not connected to the Access Point
		Green	Detector connected to the Access Point
Status		Off	Detector switched off
		Orange: slow flashing	Internal error
		Orange	Operating mode: OFFLINE
		Green: slow flashing	Operating mode: LISTEN
		Green	Operating mode: READY

Insert the battery in its compartment, as shown in the figure below.
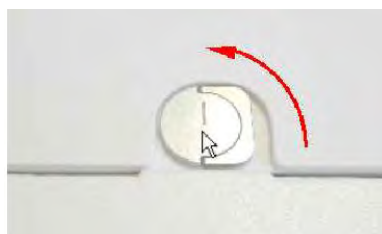Turn the battery lock clockwise (lock):
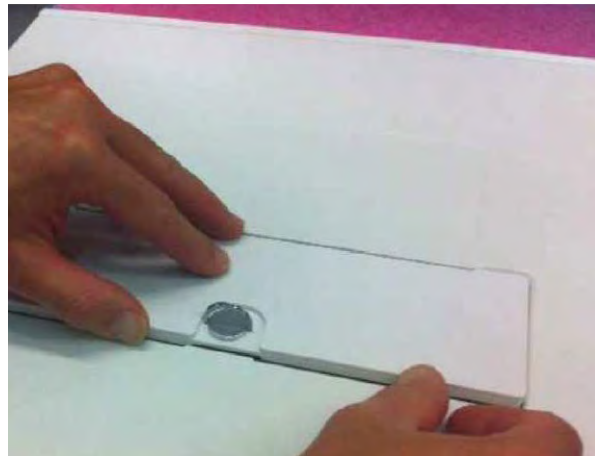
Press the ON/OFF button shown below (for about 1s) until the STATUS LED starts flashing (orange).

BUTTON

Wait until all 3 LEDs light up.

Press the ON/OFF button until the STATUS LED starts flashing orange (after about 5s) to switch the detector off.

You can now remove the battery after turning the battery lock anti-clockwise (unlock).

⚠️ **Attention:** ONLY remove the battery after switching off the detector (ON/OFF button).

2.1.6.1 PIXIUM EZ / DR BATTERY CHARGER LEDS

alignments
marks

Green LED

Red LED
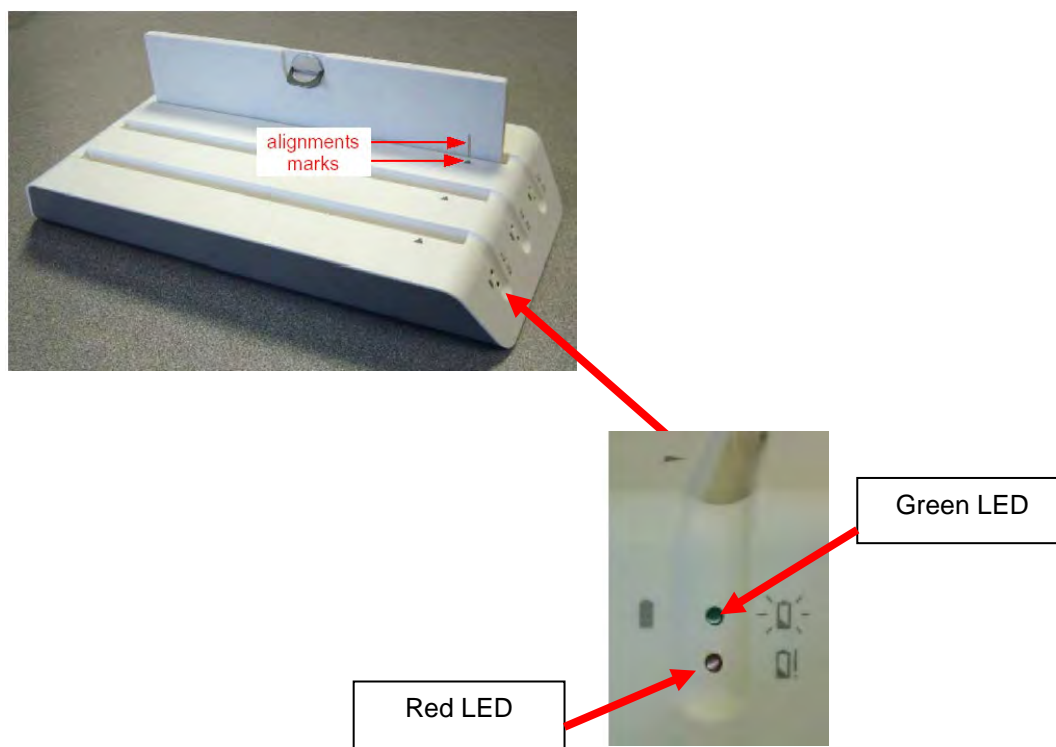
LED NAME	COLOUR	DESCRIPTION
Charging	Green, flashing	Battery charging
	Green	Battery fully charged
Charging status	Red	Battery charging not possible

The useful life of a battery may be compromised if you remove it from the charger before the battery is fully charged.

Place the battery charger in a well-ventilated position.

2.1.7   <u>LEDS ON THE PIXIUM 4143 / 4343 DETECTOR</u>

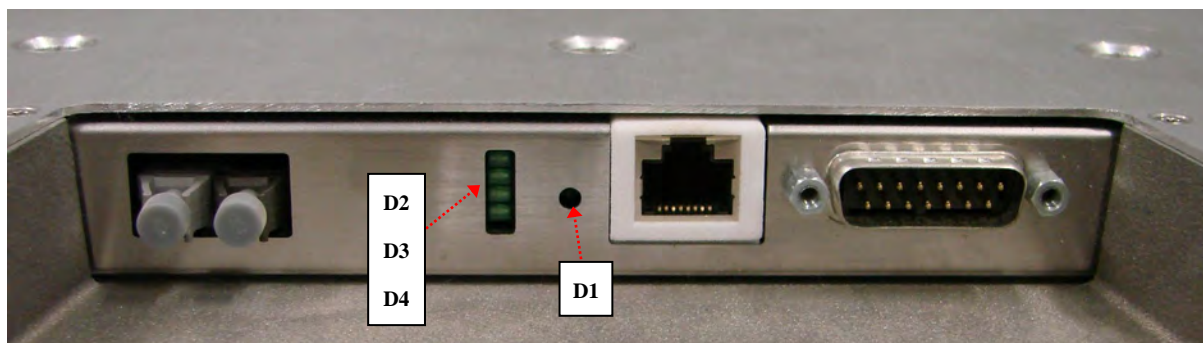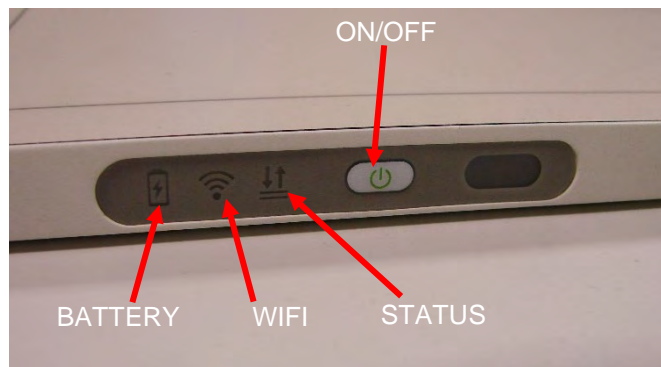There are 5 LEDs on the PIXIUM 4143 detector, as described in Table 6:

| table 6		
LED	**NAME**	**DESCRIPTION**
D1	POW_OK	**ON** = Detector powered up. **OFF** = Error in external power supply for the detector.
D2	DET_OK	**ON** = Microcontroller initialising successful. **OFF** = Microcontroller initialising failed.
D3	COM_OK	**ON** = Communication between video processor and detector established. **OFF** = Communication problem found.
D4	FREQ_OK	**ON** = In standby. **OFF** = During the acquisition of an image.
D5	XRAY_OK	**ON** = During appearance of the X-ray window. **OFF** = Between two X-ray windows.

2.1.8   LEDS ON THE IRAY DETECTOR

There are three LEDs on IRay detector, aside the ON/OFF button.

LED NAME	LOGO	COLOUR	DESCRIPTION
Battery		Off	No battery Power off
		Orange: blinking	Battery charge level lower than 10% DC input
		Orange	Battery charge level lower than 10% No DC input
		Green: blinking	Battery level higher than 10% DC input
		Green	Battery level higher than 10% No DC input
WIFI		Off	WIFI disabled Detector switched off Detector starting up
		Blue: blinking	Wireless connection ready Detector not connected to the Access Point
		Blue	Wireless connection ready Wireless Access Point is ready
		Green	Detector connected to the Access Point
		Green: blinking	Detector initialization
Status		Off	Detector switched off
		Orange: blinking	Internal error (to reset this error *see Paragraph 4.1.8.2 in Part 1 of the Technical Manual)*
		Orange	Operating mode: initialization
		Green	Operating mode: ready

Insert the battery in its compartment and then slide the battery lock lever, as shown in the figure below:
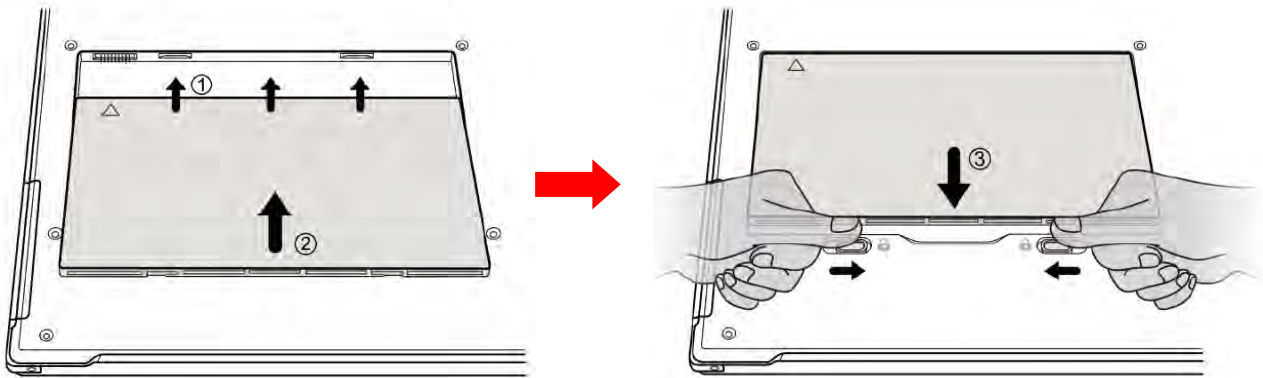
Press the ON/OFF button for about 4 seconds until the STATUS LED starts flashing (green). Wait until LEDs light up.

Press the ON/OFF button for 4 seconds to switch the detector off. You can now remove the battery after turning the battery lock lever (unlock).
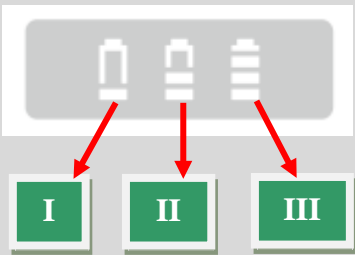
  Attention: ONLY remove the battery after switching off the detector (ON/OFF button).

2.1.8.1 IRAY BATTERY CHARGER LEDS

The battery charger is provided with two compartments for the batteries of the detector.

On the battery charger **power and status LEDs** are present:

LED NAME	LOGO	COLOUR	DESCRIPTION
Power	POWER	Off	No external DC adaptor input
		Green	External DC adaptor input
Status	I II III	I, II and III off	No battery insert
		I blinking, II and III off	Battery charging ≤ 30%
		II blinking, I and III off	Battery charging between 30% and 60%
		III blinking, I and II off	Battery charging between 60% and 95%
		I and II off, III on	Battery charging > 95%
		I, II and III on	Full charge

The useful life of a battery may be compromised if you remove it from the charger before the battery is fully charged.

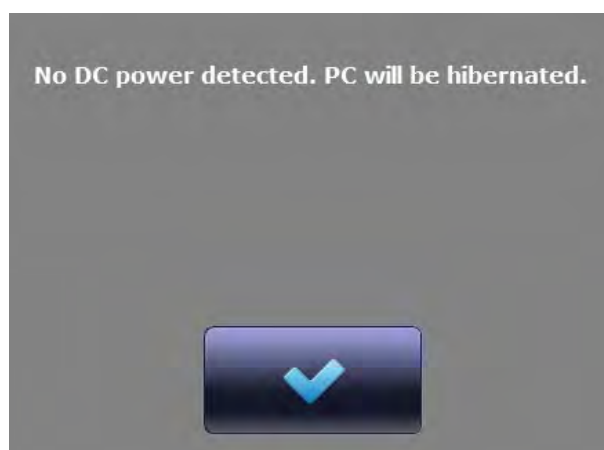Place the battery charger in a well-ventilated position.

2.2 MESSAGES ON MOVING UNITS

The following messages are **only** present on Mobile units or Portable Units.

2.2.1 MESSAGE ON PORTABLE UNIT

Status message	Meaning
No DC power detected. PC will be hibernated	Every time the device is not connected to the mains, it automatically turns to hibernation state.

2.2.2   MESSAGES ON MOBILE UNIT

Status message	Meaning
CRITICAL BATTERY LEVEL. **Operation is not allowed.** **Connect the unit to a power source.** **Time remaining before shutdown: xxx**	Battery level is too low to grant x-ray emission and it is required to plug the device to mains power supply.
The X ray unit has not been used for 30 minutes and will be shut down in 15 minutes unless you connect it to the power source or you click here.	After 30 minutes of inactivity, the device prepares to shut down in 15 minutes. To avoid the automatic shutdown, plug the device to the mains or press the Confirm key.

2.3   ETHERNET SETUP

This procedure is only needed when the equipment is supplied with DICOM functions (optional).

The Responsible Organization is accountable for changing settings to suit the network to which the EM equipment is connected.

Connecting the equipment to the IT-network, the Responsible Organization should also consider that:

• connection of the equipment to an IT-NETWORK that includes other equipment could result in previously unidentified risks to **patients**, **operators** or **third parties**;

• Subsequent changes to the IT-network could introduce new risks and require additional analysis; changes to the IT-network include:

- changes in the IT-network configuration,
- connection of additional items to the IT-network,
- disconnecting items from the IT-network,
- update of equipment connected to the IT-network,
- upgrade of equipment connected to the IT-network.

*Warning: The Responsible Organization should identify, analyze, evaluate and control these risks in compliance with **IEC 80001-1:2010** standard.*

2.4   NETWORK SAFETY

The manufacturer provides the Software free of malwares and viruses; this is assured by the continuous updating of an antivirus that check the software.

⚠️   *The Installer shall configurate the system to be protected by a Firewall.*

⚠️   *The Installer shall create a backup copy of the system, when the installation procedure has been completed in order to restore it in case of problems.*
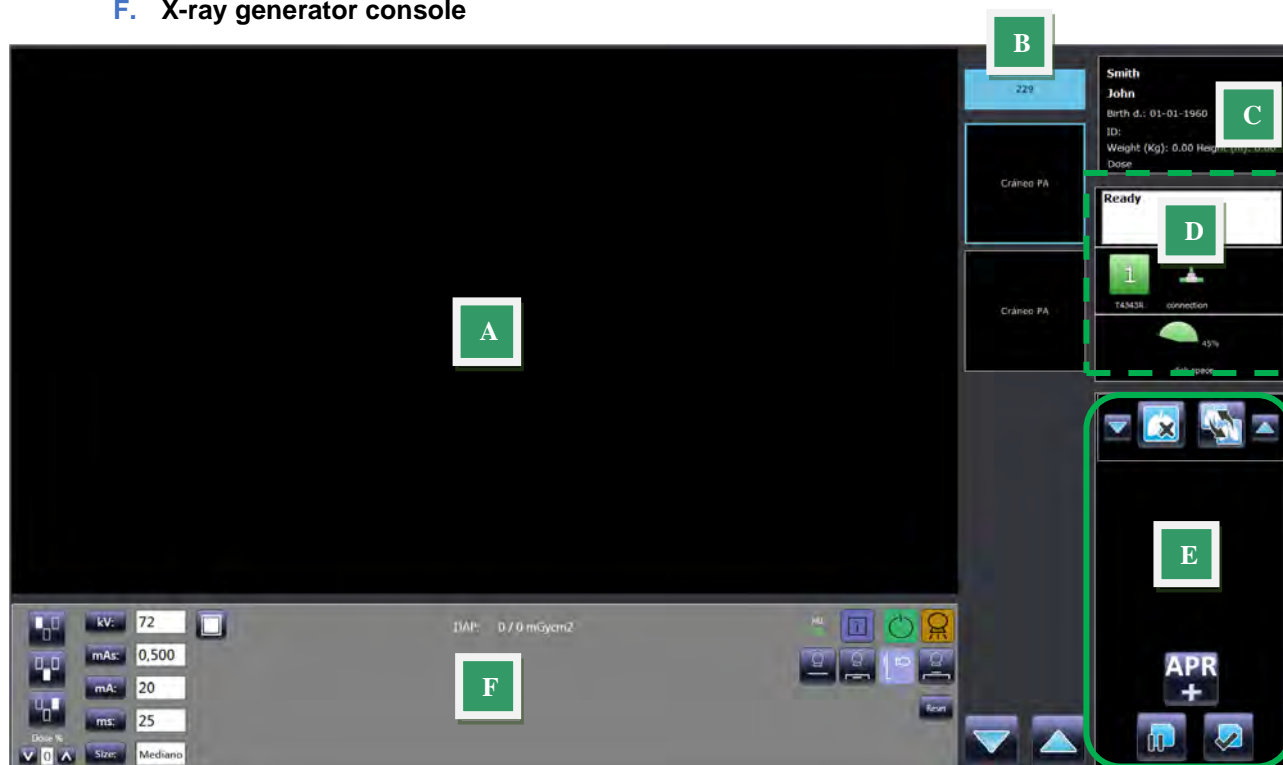
Part 2 : USE

CONTENTS

1   WORKING FRAME AND IMAGE ACQUISITION

1.1   WORKING FRAME

The Working frame is split into the following sections:

- **A. Image area**
- **B. Exam List / Preview List**
- **C. Patient data**
- **D. Detector and HD messages area**
- **E. Exam management area**
- **F. X-ray generator console**

A) **Image area:** This area shows the image of the exam selected in the preview list.

B) **Exam List / Preview List:** When you add a new exam to your study, a black box with the name of the procedure chosen is created. When you acquire the image associated to a certain procedure, in the black box will be displayed a preview of the acquired image.   1.1.75

C) **Patient data:** This section shows the patient's personal data:

- Patient's name (or Emergency number if you are using the emergency mode),
- Birth date,
- Patient ID,
- Weight (Kg) and Height (m),
- Dose given to the patient   1.1.53

D) **Detector and HD messages area:** This area shows messages concerning the detector connections, the amount of free storage space on the archive disk and messages or alarms about the equipment status.   1.1.74

E) **Exam management area:** This area contains keys to delete, move or add procedure to your study, and to suspend or close the study.

- Delete the selected projection using the left key

- Change the selected projection using the right key

- Move the selected projection within the list, using up and down tips.

Add new projections

Suspend or Close the study.

Note: After an exam has been acquired, in this area will be shown keys to Reject or Retake the image. See Paragraph 1.1.2 below for further details.

F) **X-ray generator console:** 1.1.74

The x-ray generator console is displayed with different options and functions depending on the EM equipment in use.

- This is the typical console available on radiographic rooms.
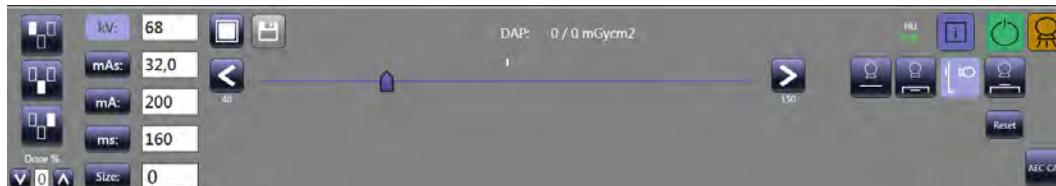
- This is the typical console available on mobile and portable units.
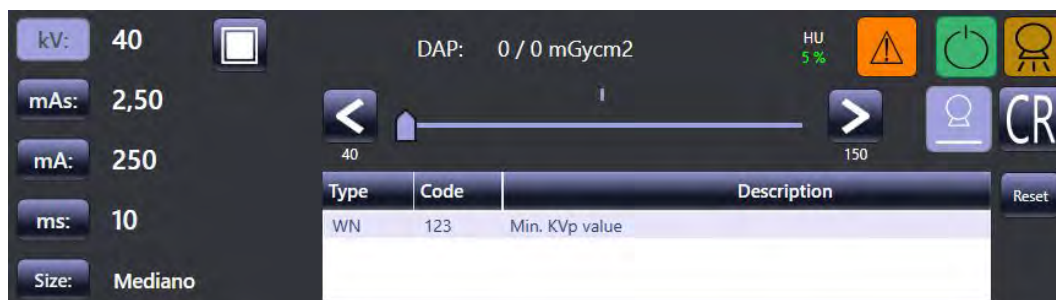
For further details, *see paragraph 1.1.2 below.*

The X-ray generator parameters are already set, by the manufacturer, for each kind of exam present; the parameters can be adjusted, according with the operator, during the installation.

Anyway, you can change the parameters of the exam in use on the console, while carrying it out (*See Paragraph 1.1.2 below for further details*).

When a new study is created (manually or received by Worklist), the **Working Frame** is automatically opened:

WORKING FRAME

The Working Frame will show the exam selection window. It is meant to choose the anatomical region required, then the anatomical part and finally the right exam.

It is possible to select more exams between those provided; for every projection added to the list, the corresponding (empty) thumbnail is created on the right-hand side of the Working Frame.

Pressing the relevant key, it is possible to select one or more procedures within those created in the **Procedures** setup.

Once all the needed projections have been added to the **Exam / Preview List,** press the relevant key to exit **APR** selection menu and begin your exam.

If you want to change the order of projections in the Exam List, select the projection and move it using the tips: the corresponding empty thumbnail moves as well.

To delete a projection (not acquired, yet) from the list, use the key on the left.

To change a projection (not acquired, yet) from the list, use the key on the right.


Delete   *Change*

1.1.1   PROCEDURES

You can set a **Procedure** to guide you through the performance of the exposures required for a study. Procedures define the exam/projection types needed for the study.

Procedures are created during installation of the system, in accordance with the operators and depending on the type of work required in the radiological theatre.
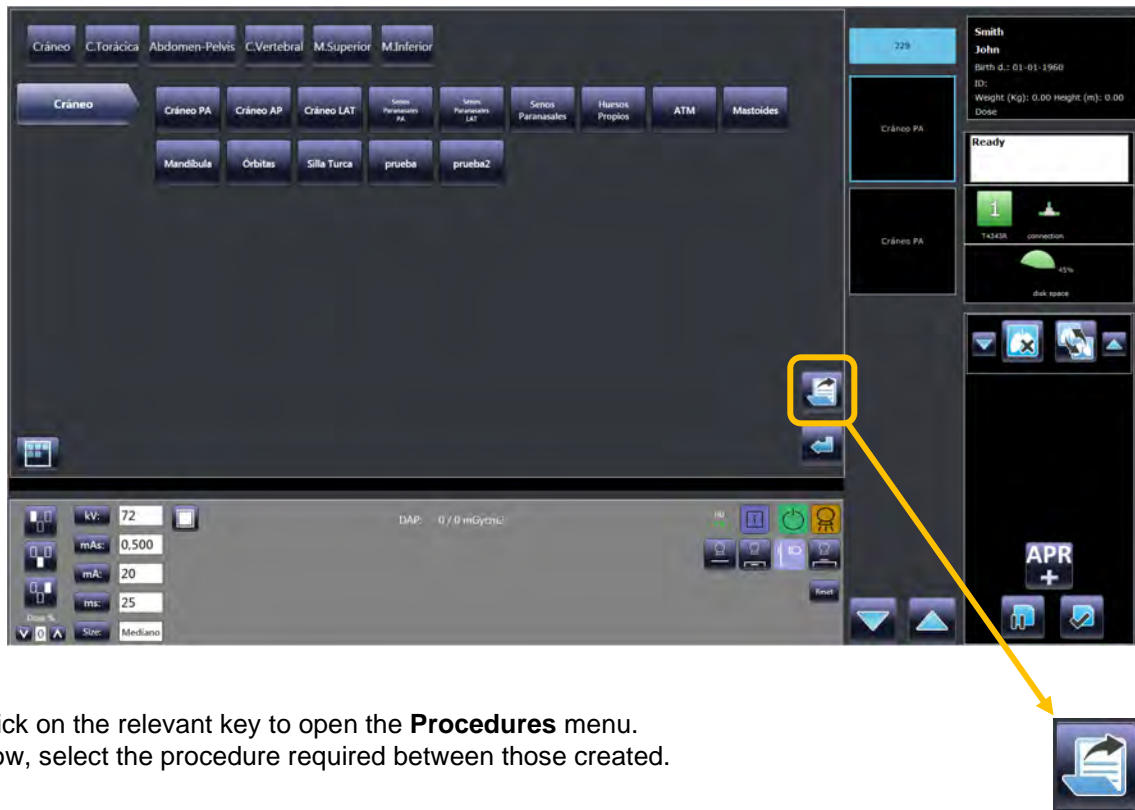
Click on the relevant key to open the **Procedures** menu.
Now, select the procedure required between those created.
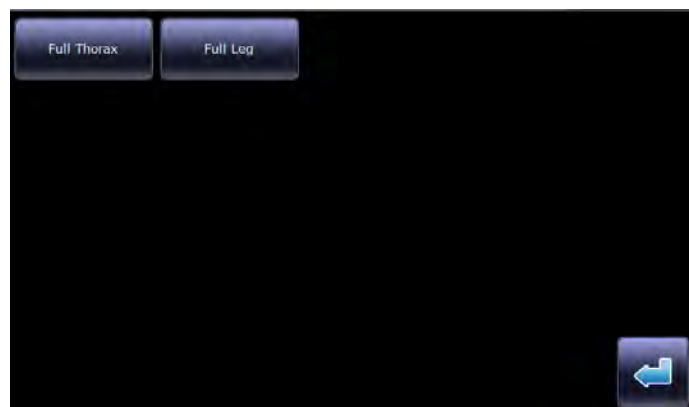
A procedure can be associated to:

- a single exam (projection),

- or several exams (projections).

The projection associated to the procedure are now shown in the **exam list**.

When a procedure is associated to a study, the system guides you during image acquisition and presents the exams required.

You can either choose it manually, (e.g. when creating a new study manually) or receive the **Procedure** from RIS via the **Worklist** function.

During installation of the system, it can be associated to each **Procedure**, a specific RIS code (*see Paragraph 1.7 in Part 1 of the Technical Manual* for further details).
When a study received from the **Worklist** contains that code, the relevant Procedure will be automatically associated to the study and loaded at the acquisition, making faster to carry the study out.

1.1.1.1 STITCHING PROCEDURES

Within the procedures list it is possible to find Stitching procedures, if enabled.
See paragraph 1.1.3 below for further information about Stitching workflow.

Note: *Stitching features are **NOT** available on Mobile and Portable units.*

1.1.2   IMAGE ACQUISITION

Once you selected the exam to place, you are ready to acquire images.

- The **acquiring parameters** for the exam are already set *(in Exam Setup, see Paragraph 1.6 in Part 1 of the Technical Manual)*:
    - *kV, mA, mAs, ms,*
    - *Patient Size,*
    - *Focus,*
    - *AEC position*
    - *Target Dose %*
    - *Workstation.*

- Anyway, you can adjust them, if required. Click on the relevant **Parameter Box** and change the value using the **Adjusting Bar.**
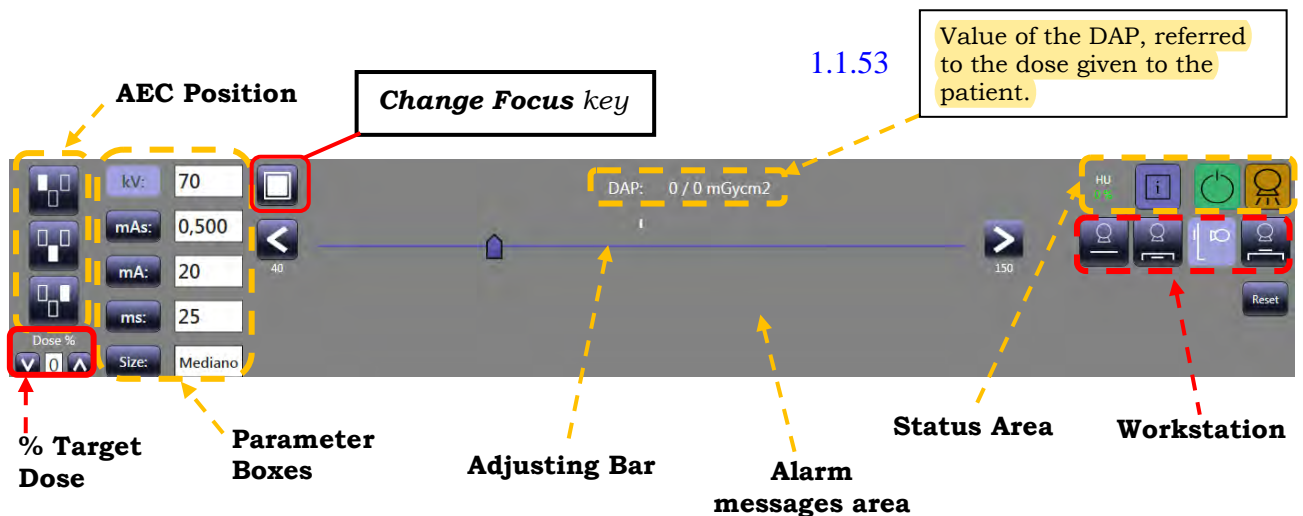
- In the **Status Area**, you can check the EM equipment status:

Icon	Meaning	Note
HU 6%	The equipment automatically counts and shows the Heat Unit of the x-ray tube.	
⚠	When an alarm message appears in the relevant area, this icon should be red (error) or orange (specific message). Once you solved the problem (or reset the alarm message), the icon turns green.	If there are no warnings, the icon shown will be:
⏻	Ready icon. It lights up at the x-ray button first click.	
	Acquiring icon. It lights up at the x-ray emission.	
CR	Cassette modality, available on mobile and portable units	See paragraph 1.1.2.2 below

- If you need to **add a new projection (or a new procedure)** to the current study, press the relevant button.
  The projections selection menu appears. Choose the type of exam required: it will be added to the **Exam list** and an empty box to content the relevant image is created in the thumbnail column. Press on the relevant procedure to carry it out.

Ready for acquisition

**Exam /
Preview List**

- Once you set the required parameters, use the exposure command to start an exposure. The X-ray preparation and emission stages are indicated by messages in the relevant area of the Working frame (**Acquisition Preparation** and then **Ready for Acquisition** at the first click, **Image Acquisition** at the second one).

- The acquired image appears on the monitor a few seconds after you release the exposure command. The following message appears during this process:


Image acquisition

*Attention: when you are using a **Wi-Fi detector**, if the **battery charge falls below 10%** or if the **power of Wi-Fi signal falls below a set percentage, the system will not be able to acquire new images.**
Change the battery or check your connection to restore the system complete functionality.
To set minimum Wi-Fi percentage, see Paragraph 1.5.1.1 in Part 1 of the Technical Manual.

1. After the image has been acquired, it is shown in the center of your screen and its preview appears on the left-hand side of the screen.

2. It is possible to change the W/L values of the acquired image, before you decide to accept or refuse it.
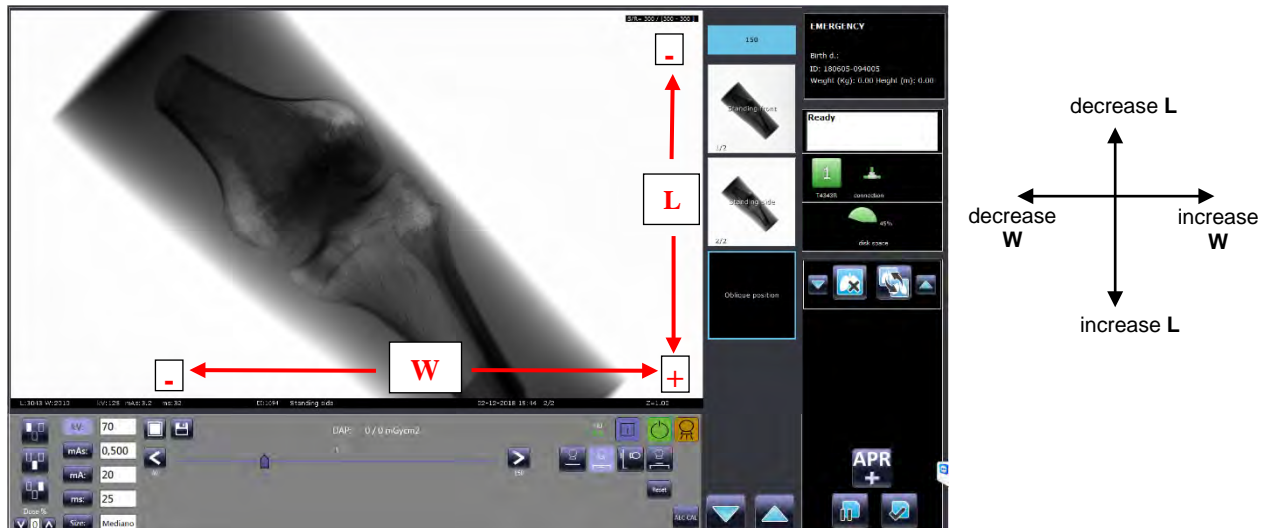
3. Use your finger, on the edge of the image to increase or decrease W/L values, as shown in the figure above.
    Swipe horizontally to change the window value or swipe vertically to change the level one.

4. Once you acquire an image, the system automatically selects the next projection in the list, if present. If the image does not meet your quality standards, it is possible to reject or retake it.
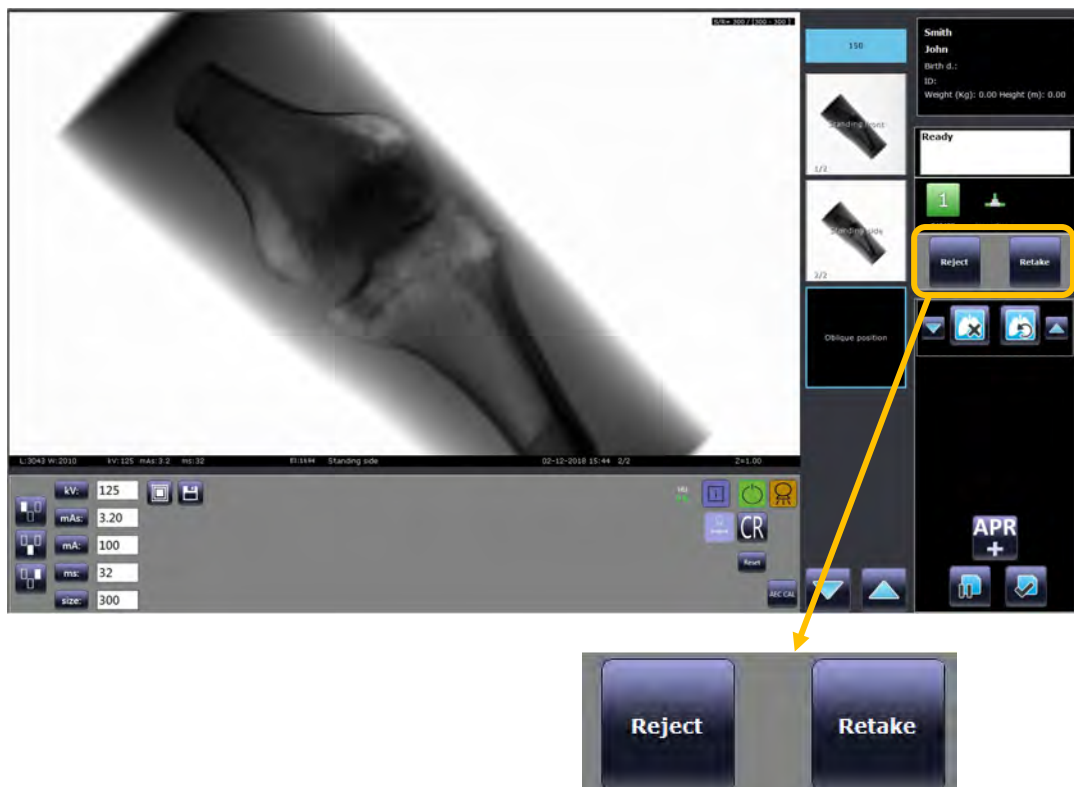
5. If you want to refuse the acquired image and take it again, press the **Retake** key: you will be asked to select the reason of the rejection.
    On the preview of the image will appear a red cross and the text "**REJECTED**".
    The exam you were performing is duplicated right below the rejected one and it is automatically selected as the next to be performed.

6. If you want to refuse the acquired image, but you do not want to retake it, press the **Reject** key: you will be asked to select the reason of the rejection.
    On the preview of the image will appear a red cross and the text "**REJECTED**".
    The user has to select the next exam, if any, in the list to proceed.

7. In the Study list frame, you can refer to the **Rejected image statistics**, using the relevant key (*see Paragraph 1.3 below*).

8. Until the study status is "**Suspended",** it is possible to add new projections (thus acquiring new images), **reject** or **retake** already acquired images.

If you select an image already acquired from the Exam list, the Post-processing frame is automatically opened (*see chapter 3 in this Part of the Manual* for full details).

1.1.2.1 ORPHAN IMAGE RECOVERY

*The function is available with **THALES** and **CANON FDX** wi-fi detectors, only.*

If the detector loses the connection during the image transmission, the image is saved anyway, and the following message is shown.
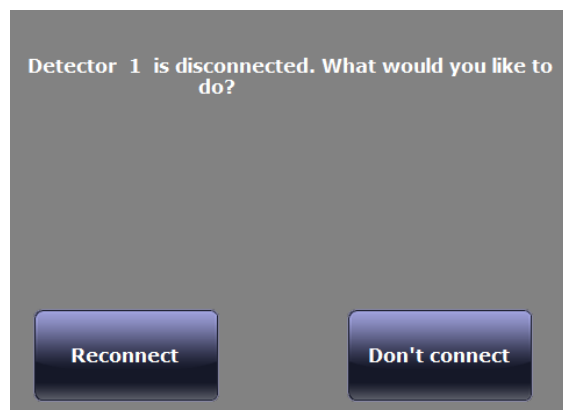
To restore the connection, press the **Reconnect** key.
If the connection is successfully established, the system automatically recovers the last image acquired and saves it in the study.

*Note: this function is no longer available if the related study is closed after the disconnection or if the user presses the **Don't connect** key.*

1.1.2.2 CASSETTE MODALITY

It is possible to acquire an image using a radiographic cassette instead of the detector.
Place the cassette and change the acquiring modality pressing the relevant key: in the detector status area, will appear the text "**Cassette modality**".

In this case, Primo S application will not save the image acquired and neither the related post-exposure statistics.
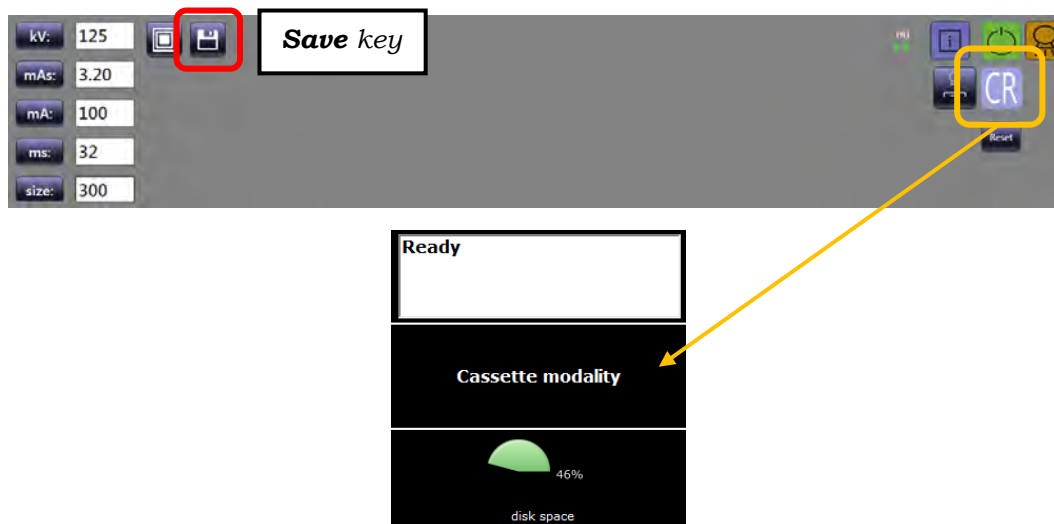
It is even possible to make Cassette modality the default modality for a projection, pressing the **Save** key. To undo the change, press the **Detector modality** key and the **Save** button.

1.1.3 STITCHING WORKFLOW

*Note: Stitching features are **NOT** available on Mobile and Portable units.*

The Stitching procedure creates an image of great length by "sticking" some images which were acquired during a longitudinal scan of the patient.

A study could contain one or more Stitching procedures, manually selected from the APR or received from the WorkList.

When the operator starts a stitching procedure, it must be completed: no projections outside this procedure could be performed.
If you are required to perform single exams too, it is possible to carry them out before or after the Stitching procedure, depending on the operator needs.

It is not possible to change the projections order or replace a projection within a stitching procedure: in fact, the relevant keys are disabled (see figure below).

When a Stitching procedure is selected, it appears a specific panel containing the procedure name, the Abort key and a counter.
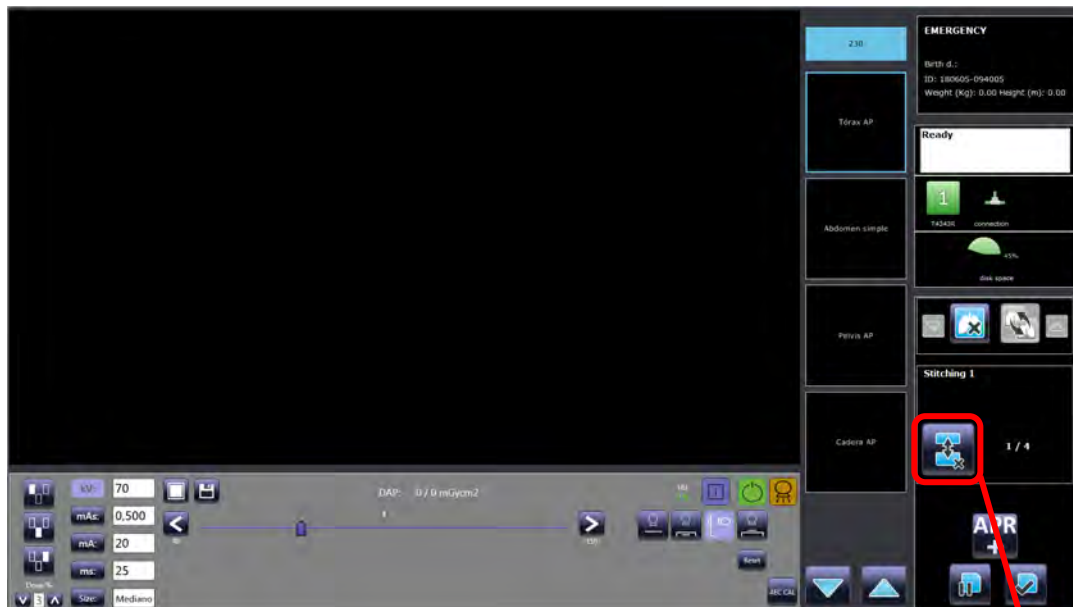
The operator can abort a stitching procedure using the relevant button.

Note: if at least two images have been acquired, the reconstruction will be carried out anyway.

Aside this key, a counter shows the progression of the procedure. (REJECT and RETAKE key are never shown during a stitching procedure).

Note: The alert message: "Default post-processing has been associated to the acquired image." will never be shown for stitching images.
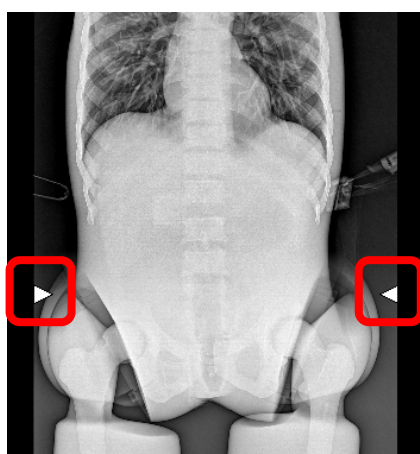
1.1.4   STITCHING IMAGE RECONSTRUCTION

When the procedure has been completed, or if it has been aborted after acquiring at least two images, the **Stitching Window** is opened in post-processing menu where the stitched image is shown reconstructed in **Automatic modality.**
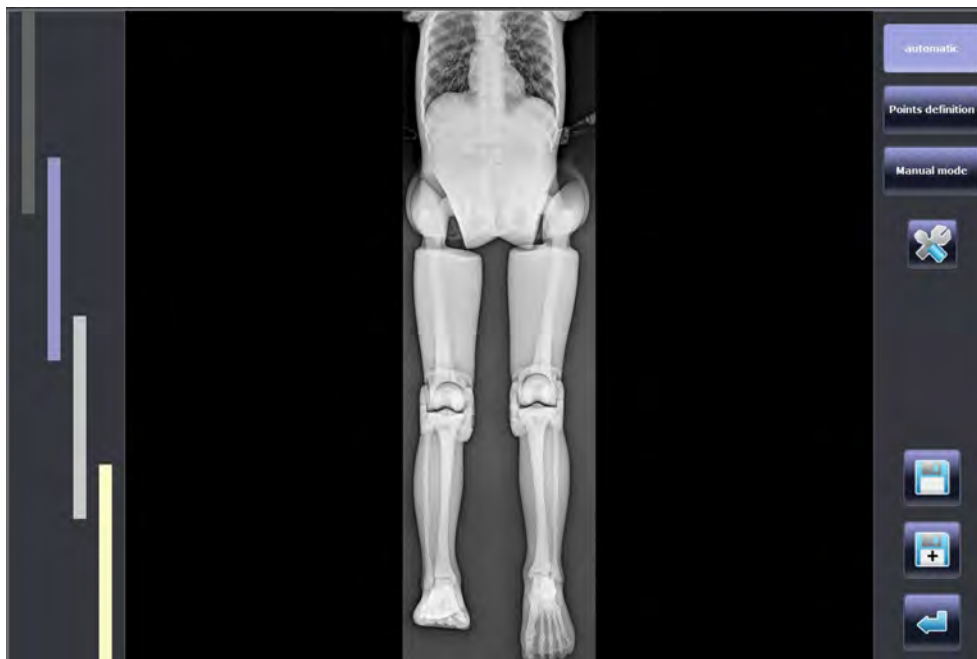
The STITCHING function evaluates the quality of the performed reconstruction by verifying the result in the areas of overlapping.
If the reconstruction is correct, the stitching lines will be highlighted with a couple of triangles, like in the image below.
Instead, if the function considers the reconstruction to not be reliable enough, the stitching lines are highlighted with a couple of rectangles.

If the stitched image looks incorrect, it will be possible to use one of the manual stitching modalities, available in the top-right of the stitching window (see below):

- **Point Definition** reconstruction,
- **Manual Mode** reconstruction.

In this case the stitching lines are indicated by rhombus.
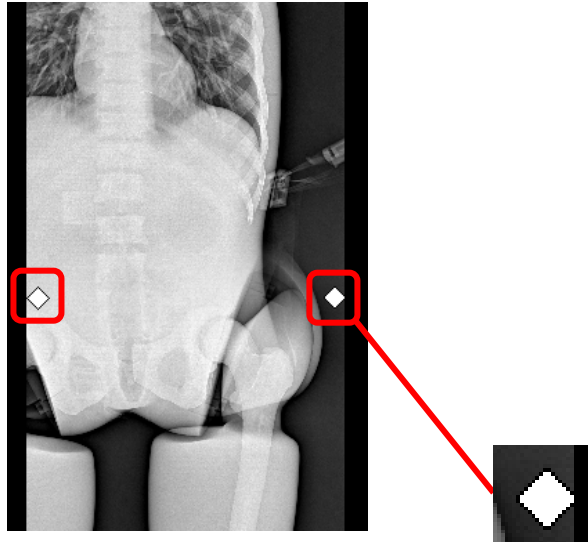
Note: symbols used to highlight the stitching lines are only shown in post-processing frame.

On the bottom-right of the stitching window, there are also the keys:

1   **Save**, that appears only if the image selected is a stitched one. Pressing this button, after confirming to save, the current stitched image overwrites the original one. Then, the Stitching Window is closed.
2   **Save and Create**, that is always present and adds the current stitched image to the preview list. Then, the Stitching Window is closed.
3   **Exit**.

The **Stitching Window** can be open also when the stitching image has already been created and the operator needs to repeat the reconstruction procedure.

In this case:
-   Select a stitched image (the result of a previous stitching procedure) and press the indicated button; the **Stitching Window** will be opened in the **modality of Reconstruction** previously used**.**

Otherwise, it is possible to repeat the **Automatic reconstruction** procedure by:
-   selecting one of the images within the stitching procedure and pressing the indicated button.
    The **Stitching Window** will be opened in **Automatic modality of Reconstruction**.
   The stitched image (the result of the stitching procedure) is shown.

1.1.4.1 AUTOMATIC RECONSTRUCTION

The window shows the entire image automatically stitched.
On the left of the image, the overlapping regions are shown using bands of different colors.
The **Windows and Level** values and **Zoom** factor are adjusted on the whole image at the same time (using the relevant post-processing menus).
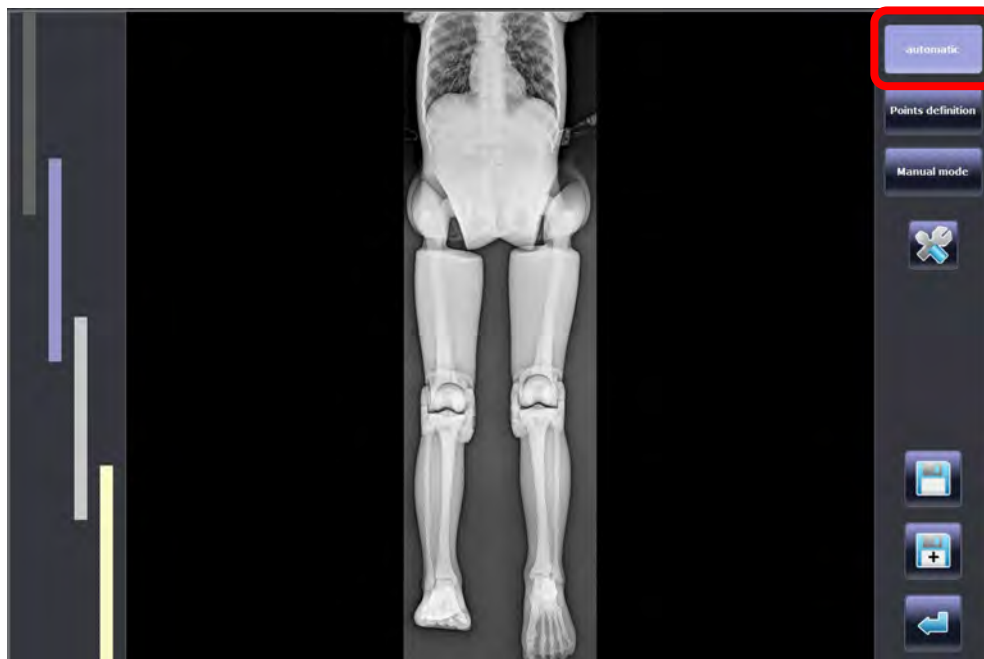
Logging in as **Administrator**, it is available a specific **Stitching Post-Processing menu**, too. In this menu it is possible to change the settings of the **Stitching Profile** applied to the procedure used. Press the relevant key to open the **Stitching Profile** menu and adjust the parameters (for further information about these parameters, *see Paragraph 1.15, Part 1 of the Technical Manual*).
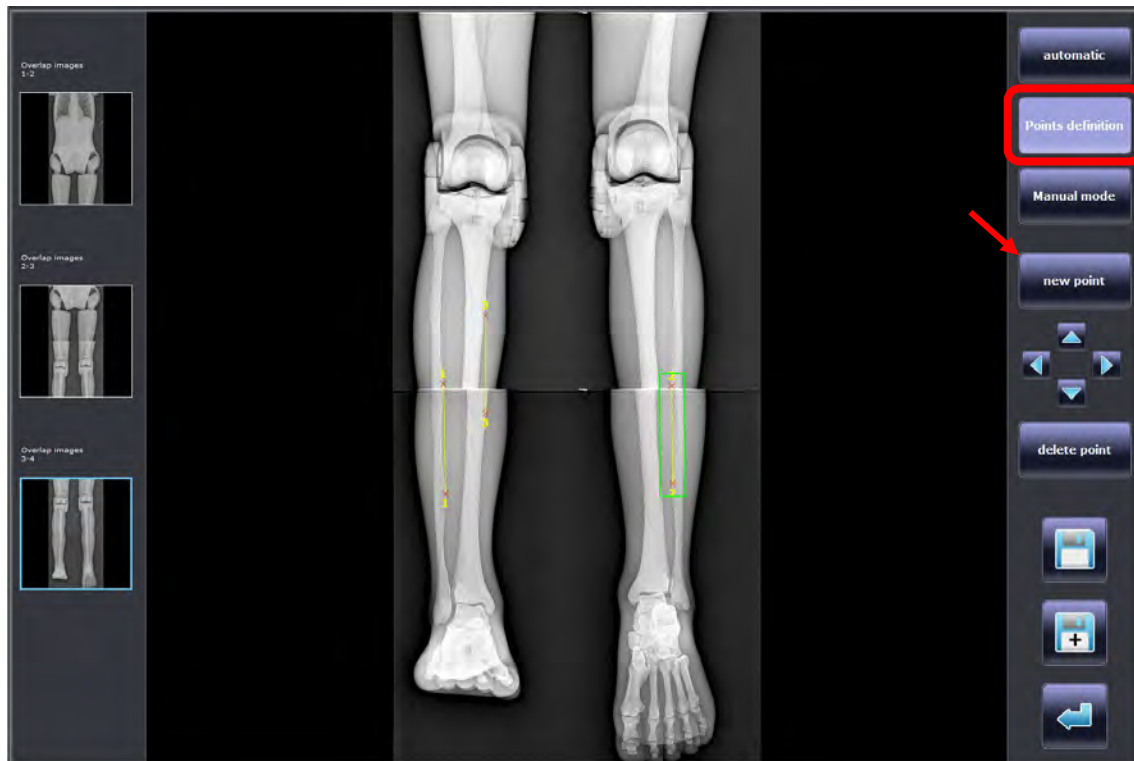
To complete the procedure, the user can:

- **Save the stitched image:** in this case the system shows a preview of the stitched image and asks to confirm or cancel the saving.

- **Select a different stitching mode** (the stitched image is built again).

- **Exit** without stitching the images.

1.1.4.2 POINTS DEFINITION RECONSTRUCTION

This modality is based on the identification of a same anatomical point in two consecutive images.

The user selects one of the thumbnails on the left (each one shows the overlapping area between two consecutive images).

To identify the points of reconstruction:

1) Press the **New point** button**.**

2) Place the ends of the shown segment on the same anatomical detail in the two images:

    - Use the **Directional** tips to move the segment or the **Delete** button to remove it.
    - It is required to draw at least one segment for each one of the overlap images.
   The function works at its best when more than 3 points for each overlap are placed.

In this modality **Windows and Level** values can be adjusted on each single image, one by one, while the **Zoom** factor is changed on the whole image.
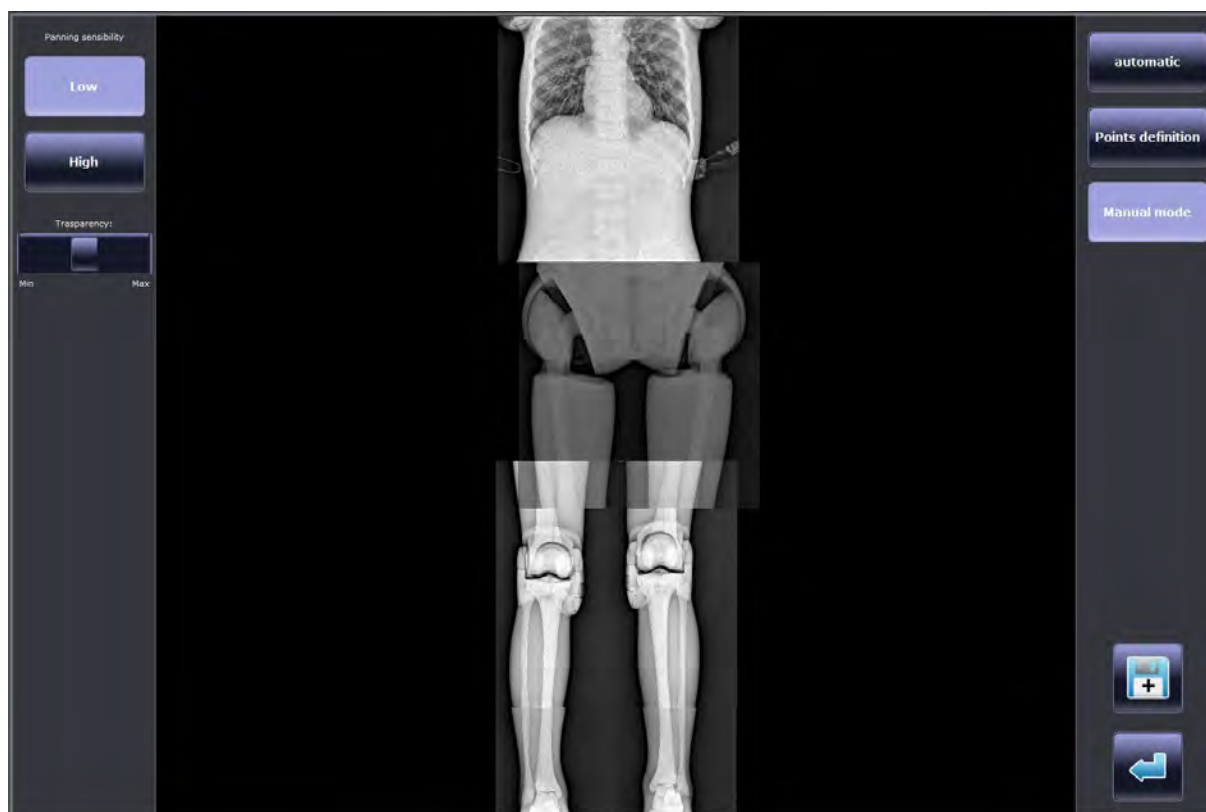
To complete the procedure, the user can:

- **Save the stitched image:** in this case the system shows a preview of the stitched image and asks to confirm or cancel the saving.

- **Select a different stitching mode** (the stitched image is built again).

- **Exit** without stitching the images.

1.1.4.3 MANUAL RECONSTRUCTION

Press the **Manual mode** key:
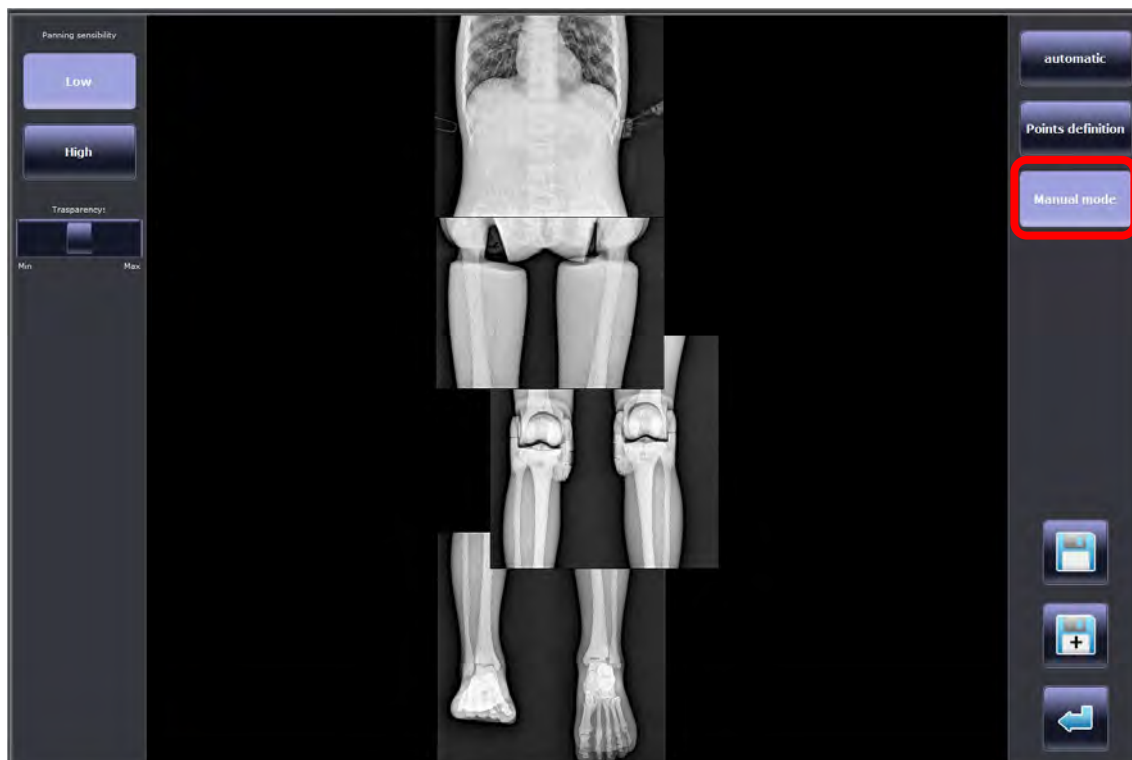
This function shows all the images acquired in the procedure.

The user selects one of the images, and move it respect to the previous / next one (the image is shown with a **transparent default value of 50%**).
It is possible to **overlap two consecutive images up to 90%**.

On the left, the tool panel makes possible to manage the following features:
- accuracy of the image movement: **Low** or **High**,
- **transparence** value

For each image, it is possible to adjust the zoom and the W/L value.

To complete the procedure, the user can:

- **Save the stitched image:** in this case the system shows a preview of the stitched image and asks to confirm or cancel the saving.

- **Select a different stitching mode** (the stitched image is built again).

- **Exit** without stitching the images.

### 1.2   DETECTOR RECONNECTION

To save a wireless FP detector battery, it is possible to set an interval after which it turns in **Sleep** mode, then in **Deep Sleep** mode, and finally in **Power Off** mode.
See Paragraph 1.5.1 in Part 1 of the Technical Manual for details about setup.

Each time the detector status changes, for example it turns in Sleep mode, the related message will be shown. The user will be required to reactivate or not the FP detector.

***Note:*** *the detector will be waking up only when the acquisition panel is opened.*

When the detector turns off (once reached the Power Off interval), the detector is disconnected, and the Reconnection window is shown. It is necessary to manually turn the FPD on before to select the **Reconnect** key.
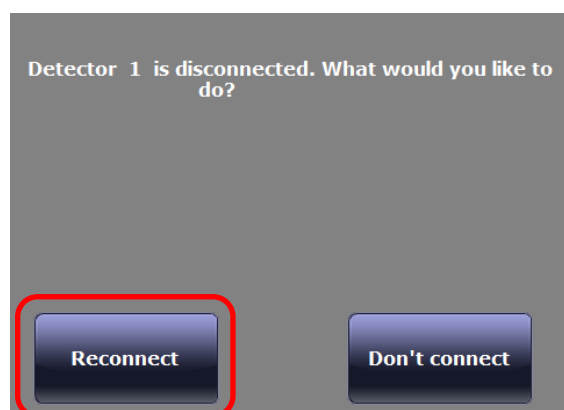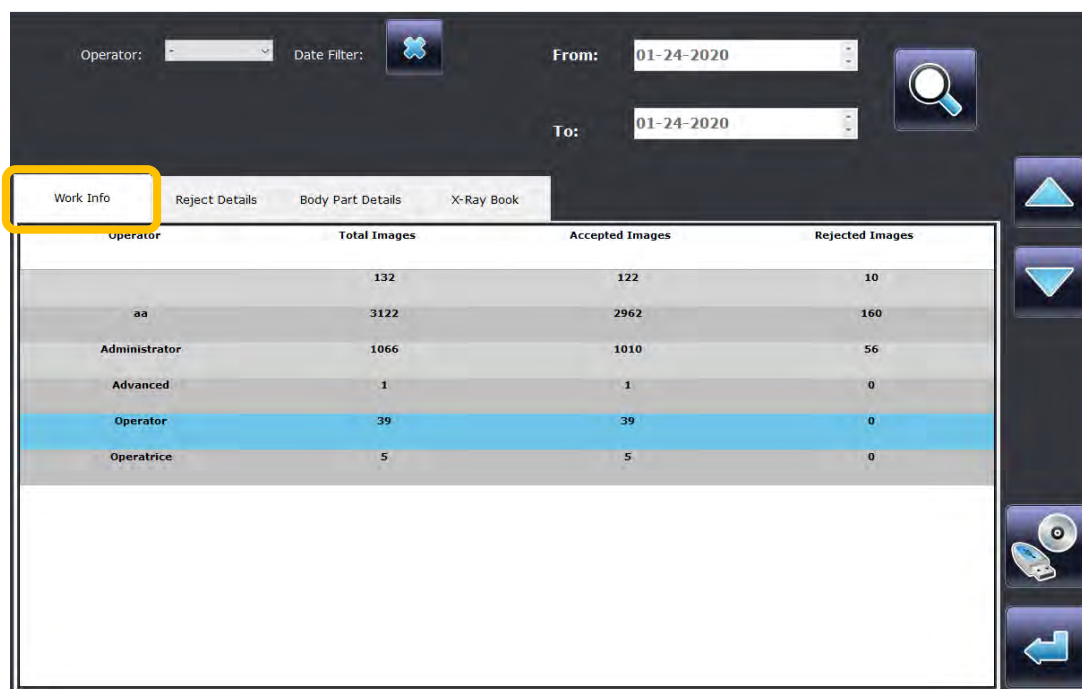
1.3   REJECTED IMAGES STATISTICS

*Note: this function is available only for **Advanced** and **Administrator** users.*

If you need to refer to the statistics on the rejected images, from the **Study List** frame, you can open the relevant menu, pressing the indicated key:
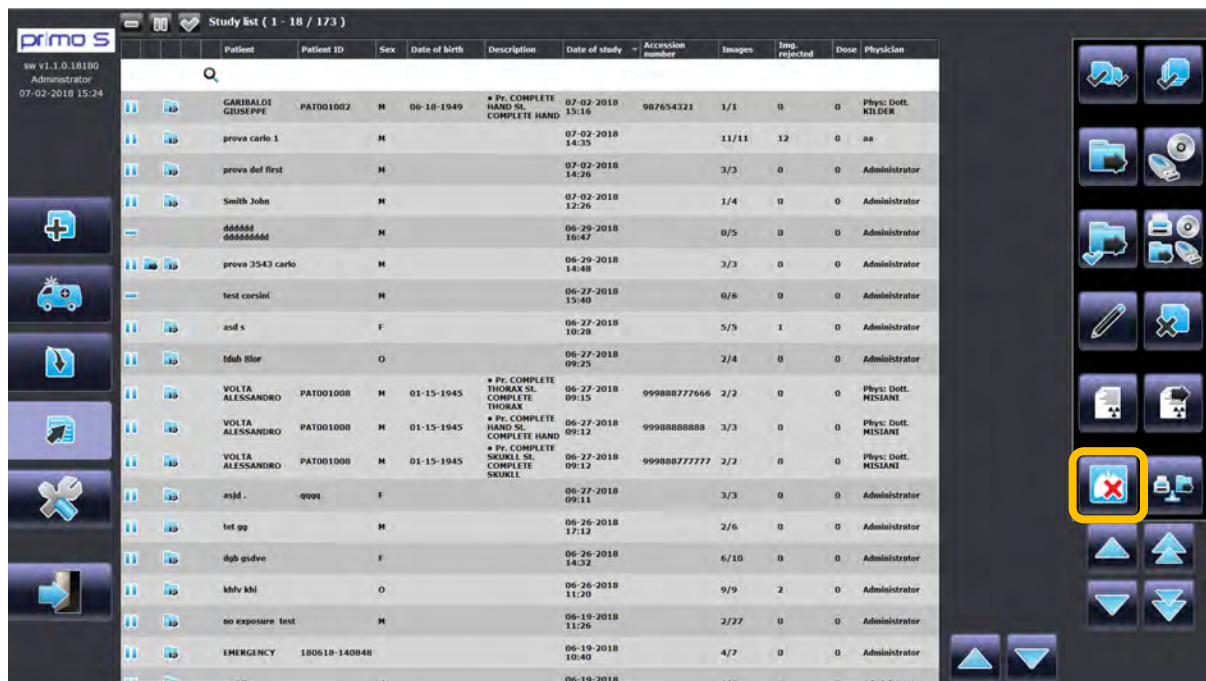
In the window that opens you can select:
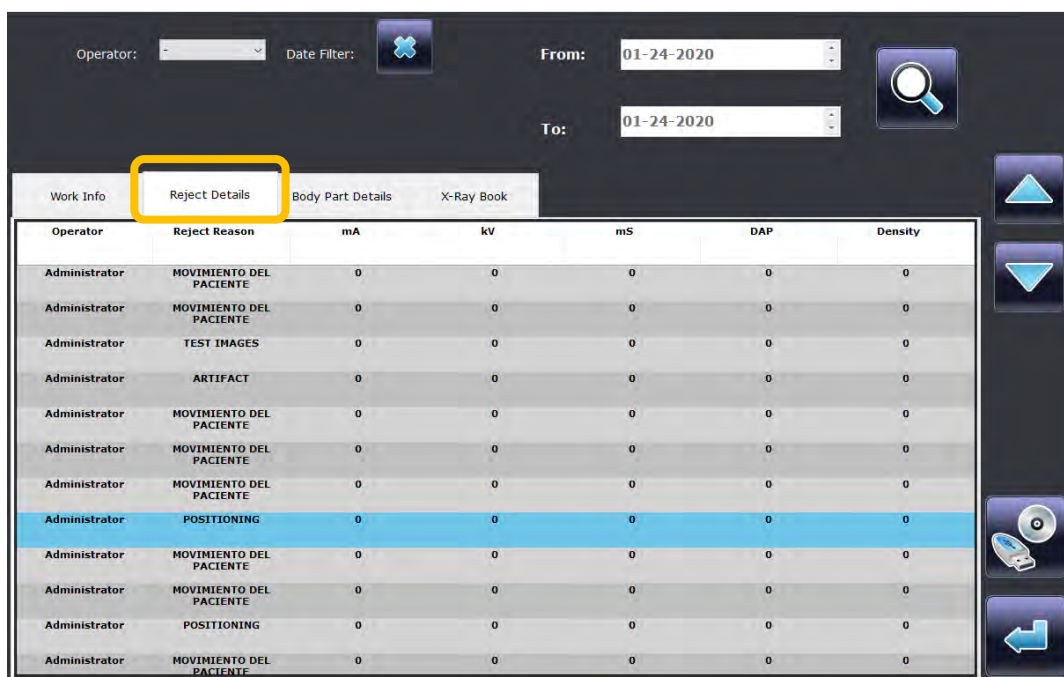
1.   Work info:

This frame contains the following information:
- **Operator** that acquired the images
- **Total Images** acquired by the operator
- Total number of **accepted images**
- Total number of **rejected images**

It is possible to:
- Set the **Operator** and press the glass key in order to find the rejected images acquired by *Administrator, Advanced* or *Operator* user.
- Enable/disable the **Data filter**
- If the Data filter is enabled, set the **From** and **To** dates and press the glass key to find the images of the set period.

2. Reject Details:
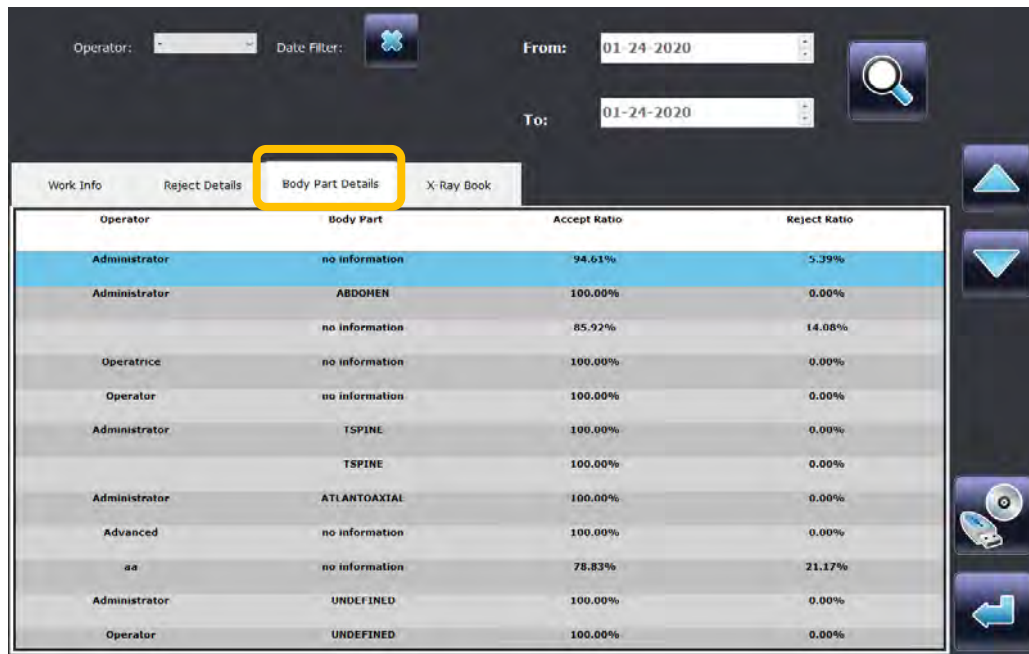
This frame contains the following details:
- **Operator** that acquired a specific rejected image
- **Reject Reasons**
- Exposure parameters: **mA, kv, mS, DAP, Density**

It is possible to:
- Set the **Operator** and press the glass key in order to find the images acquired by *Administrator, Advanced* or *Operator* user.
- Enable/disable the **Data filter**
- If the Data filter is enabled, set the **From** and **To** dates and press the glass key to find the rejected images of the set period.

3. Body Part Details:

This frame contains the following details:
- **Operator** that acquired a specific image
- **Body part** of the rejected image
- **Accept Ratio** (%)
- **Reject Ratio** (%)

It is possible to:
- Set the **Operator** and press the glass key in order to find the images acquired by *Administrator, Advanced* or *Operator* user.
- Enable/disable the **Data filter**
- If the Data filter is enabled, set the **From** and **To** dates and press the glass key to find the rejected images of the set period.

4. X-ray Book:

This frame contains the following information:
- **Patient Name**
- **Patient ID**
- **Image Status** (Accepted or Rejected)
- **View**
- **Date**
- Exposure parameters: **mA, kV, mS, DAP, Density**
- **Operator** that acquire the image

It is possible to:
- Set the **Operator** and press the glass key in order to find the images acquired by *Administrator, Advanced* or *Operator* user.
- Set the **Patient ID** and press the glass key to find images of a specific patient.
- Set the **Body Part** and press the glass key to find images of a specific body part.
- Enable/disable the **Data filter**
- If the Data filter is enabled, set the **From** and **To** dates and press the glass key in order to find the rejected images of the set period.

If you need to export the **Statistics of rejection**, select the required study (or image) and press the **Export** key; the following frame appears:

Here you can print the statistics or export them to a folder on your hard disk (in Excel or HTML format).

1.4 CLOSING THE STUDY

After you accomplished the study, you can:

- **Complete** the study, touching the relevant button:
  This command closes the study, considering it completed.
  It is not possible to acquire new images within a completed study.
  However, you can post-process the images already acquired.

- **Suspend** the study, touching the relevant button:
  This command closes the study as a **Suspended** study: you can acquire images within this study at any time.

  You can use the post-process functions on the images already acquired.

After closing the study, you return to the Study List. Here you can see the updated status of your study:

- Suspended study:

- Completed study:

Note: *The image disk (hard disk) in the EM equipment must not be considered a permanent archive: we recommend to transfer all the images to an external archive (e.g. using the STORE DICOM function) before closing the application and switching the system off.*

1.5 END OF USE

To close the application and switch off the system:

Touch the **Exit** command in the Study List and **Confirm** the exit:
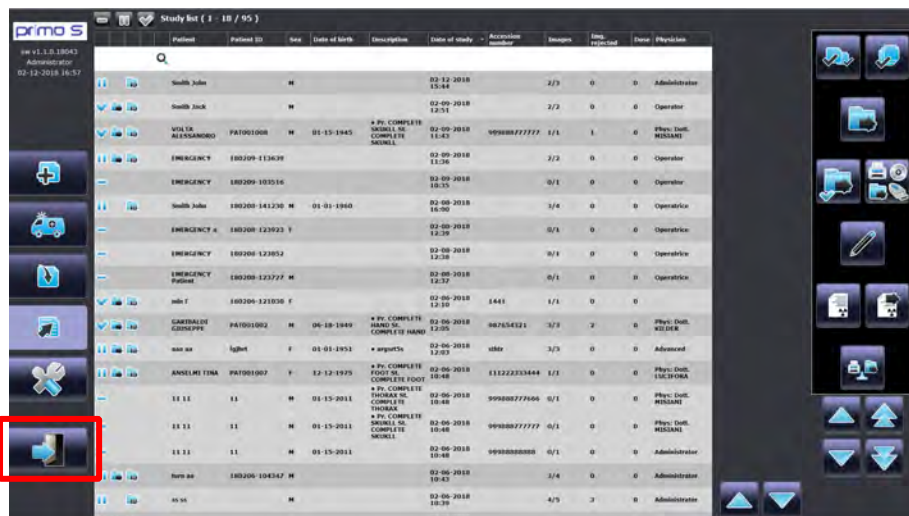
Press the **Shutdown** icon in the Login page:

Now press **Turn off** in the window that appeared:
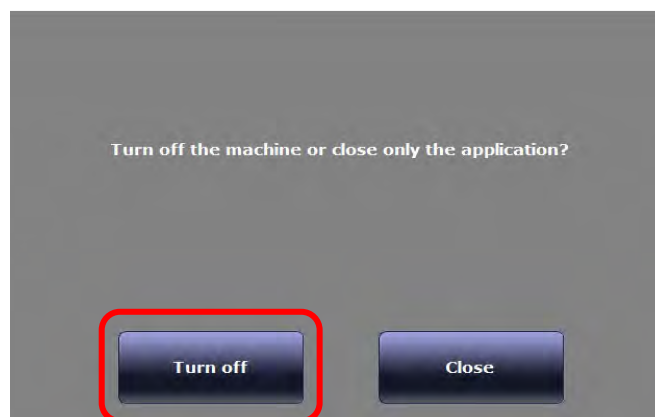
*Note: The **Close** key, shuts the **primo S**, but does not switch the video processor off.
Use this command **for servicing purpose only**.*

2   IMAGE PROCESSING

2.1   IMAGE MANAGEMENT

2.1.1   FINDING IMAGES

After selecting (tap once) a study in the **Study List**, a preview of the images present in that study is shown:

If there are more than 5 images in the study, use the up/down tips to browse within the images list.

In order to process an image, tap on its preview and the **Image Processing Frame** will open.

2.1.2   IMAGE PROCESSING FRAME

The Image Processing frame is split into the following sections:
- **A.   Previews / Exams List**
- **B.   Image area**
- **C.   Patient data**
- **D.   Image Processing commands**
- **E.   Study commands**

A)   Previews: This area contains the images acquired during the study in preview (thumbnail) mode and a black box for each procedure to be carried out.

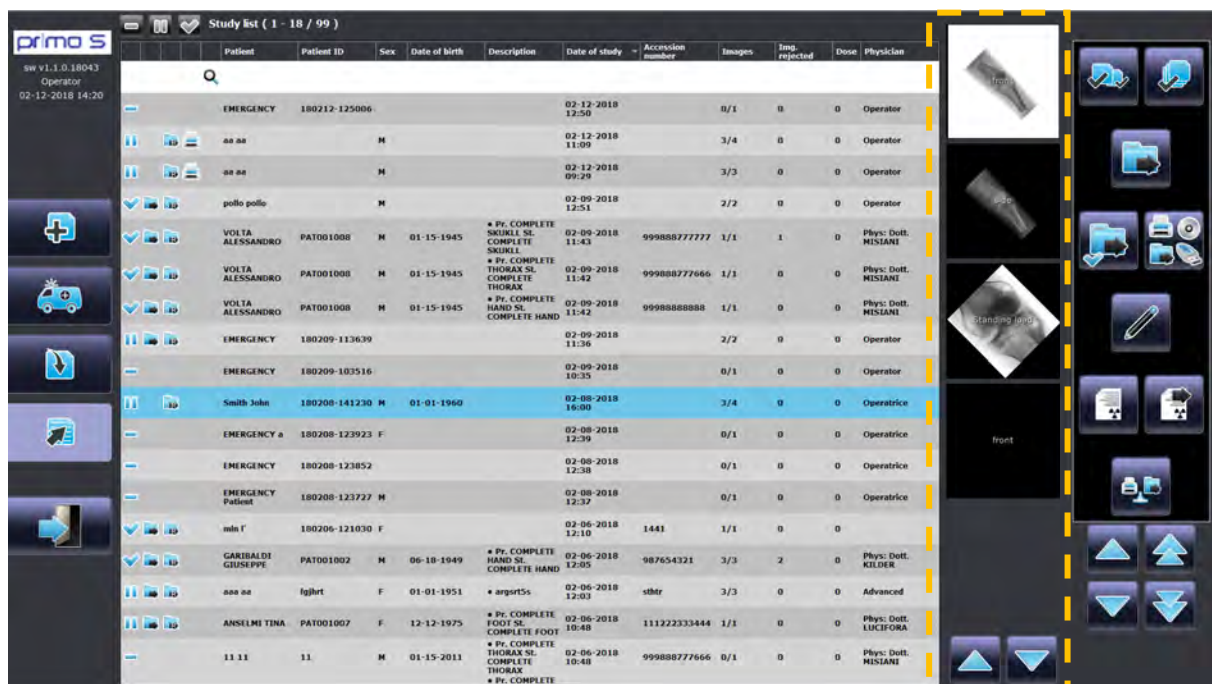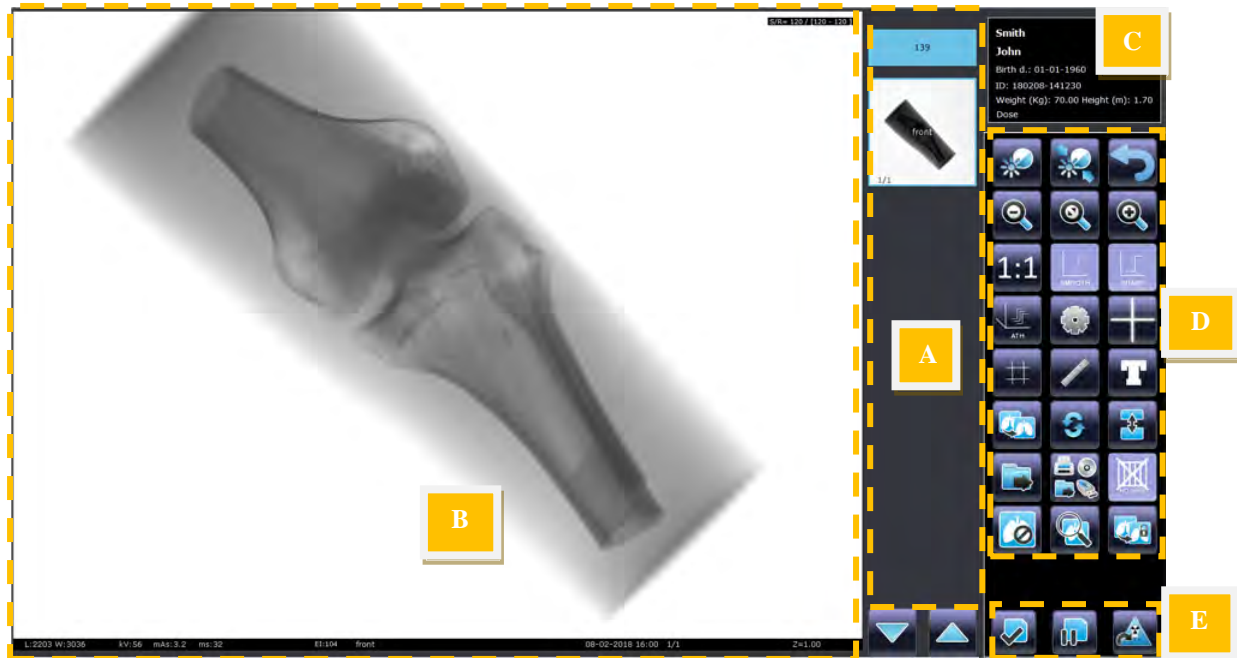**B)   Image area:** The image you select in the Preview area is shown here with its own data. The data are split into groups, as shown in the figure and table below:

Information	Example	Notes / Meaning
Grey scale	**L: 3140**	*Image Level value*
	W: 3421	*Image Window value*
Exposure Values	*kV 56 mAs 3.2 ms 32*	
Exposure index	*EI: 104*	*Exposure index detected in the acquired image*
Target Dose		
Deviation Index		
Exam Projection	*Front*	*Exam type used for image acquisition*
Acquisition date - time	**08-02-2018 16:00**	*Automatically added by the system*
Image number	**1/1**	*1st of 1 image contained in the study*
Digital zoom	**Z = 1.00**	*Image enlargement factor on the monitor*
Stitching procedure Image		*The image belongs to a Stitching Procedure*
Stitched Image		*The image is the result of the Stitching function*

C) <u>**Patient data:**</u> This section shows the patient personal data:

- Patient's name (or Emergency number if you are using the emergency mode),
- Birth date,
- Patient ID,
- Weight (Kg) and Height (m)
- Total Dose

D) <u>**Image Processing commands:**</u>

E) <u>**Study commands:**</u>

 Complete study: This function closes the study: no further images could be added to this study.
You can post-process the images present in the study, anyway.

 Suspend the study: This function lets you suspend the study in order to manage it (and acquire images) later.

 Return to working frame: Press this key if you need to acquire further images within this study.

The **post-processing panel** presents the following keys:

| Label	Description
L and W correction (see paragraph 2.2)	
Digital zoom (see paragraph 2.3)	
True size on monitor (see paragraph 2.3.2)	
Harmonization (ATH) (see paragraph 2.5)	
Image Cropping (see para**g**raph 2.3.1)	
Measurements (see paragraph 2.8)	
Duplicate images (see paragraph	
Image Orientation (see paragraph 2.11)	
Store DICOM (see paragraph 3.1.1)	
Reject an image (see paragraph 2.14) **Restore images** (It is enabled only when a rejected image is selected)	
Restore original Image (see paragraph 2.2.1)	
Spatial filters (see paragraph 2.4)	
Image multiview (see paragraph 2.10)	
Change Image Process (see paragraph 2.6)	
Add objects and text (see paragraph 2.9)	
Stitching function (see paragraph 1.1.5)	
No Grid function (see paragraph 2.17)	
Report Tool (see paragraph 2.16)	
Protect an image (see paragraph 2.13)	
Magnifying Glass (see paragraph 2.18)	

Note: *Stitching features are* **NOT** *available on Mobile and Portable units.*

2.2   LEVEL AND WINDOW CORRECTION

You can change the appearance of an image in terms of its brightness and contrast by changing the **W** (Window) and **L** (Level) parameters.

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- It is possible to change the **W** and **L** values, by swiping your finger along the image edges, as shown in figure below (both in the post-processing panel and in the acquisition one).
  Swipe horizontally to change the **Window** value or swipe vertically to change the **Level** one.
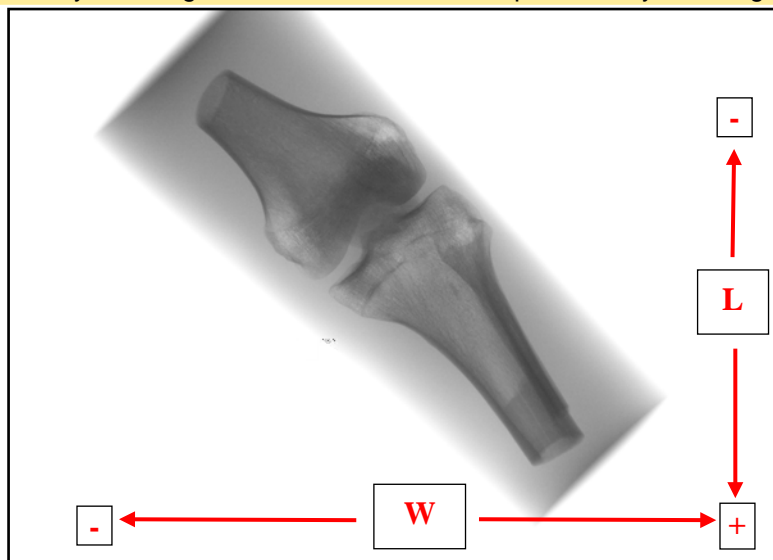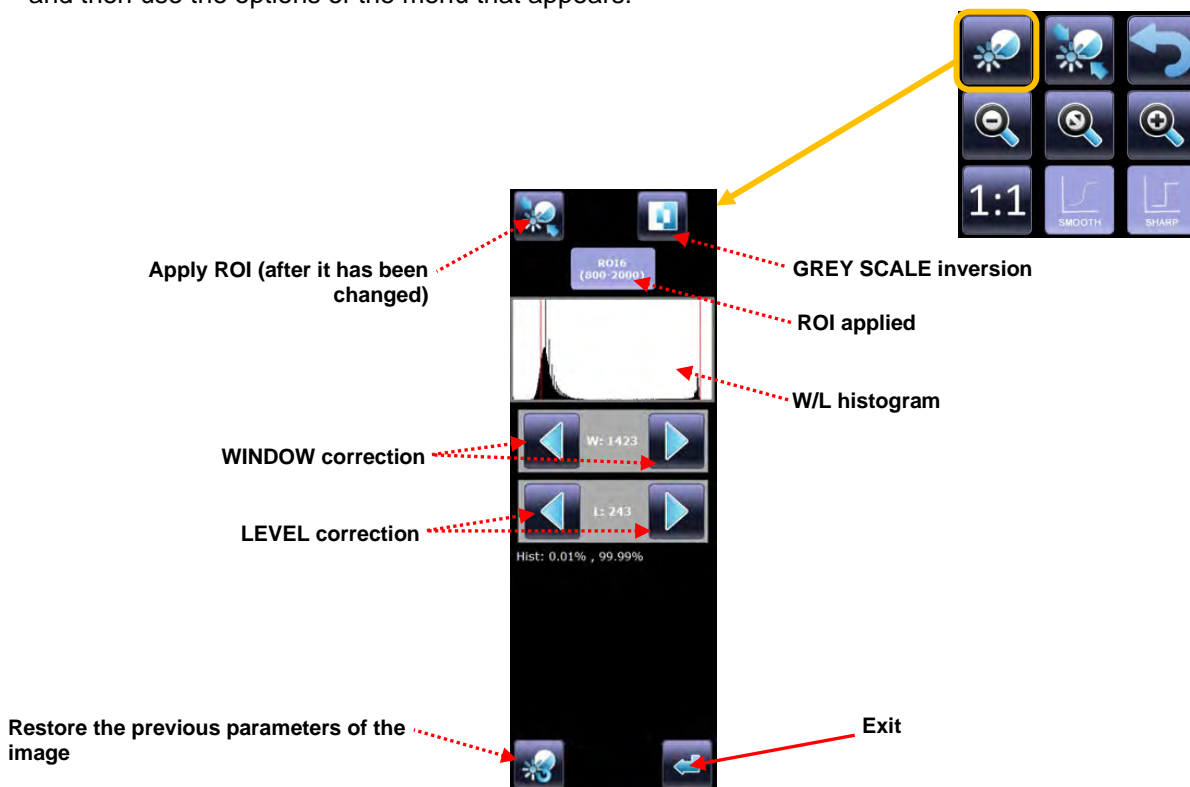

If the equipment is provided with a mouse, by pressing:

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- the **Left** key it is possible to pan the image, grabbing it by its center or to change the W/L values (as shown above);
- the **Right** key it is possible to change the W/L values in every point of the image.

You can even open the **W/L correction** frame in order to apply more functions. Press the relevant key and then use the options of the menu that appears:

Apply ROI (after it has been changed)

GREY SCALE inversion

ROI applied

W/L histogram

WINDOW correction

LEVEL correction

Restore the previous parameters of the image

Exit

This menu lets you:

- Select the ROI to apply to the image, using the relevant key. It can have 8 dimensions (choose the one that better cover the important area of your image):

    - **ROI 1**:   640x768   pixels
    - **ROI 2**: 1120x1344 pixels
    - **ROI 3**: 1600x1920 pixels
    - **ROI 4**: 2080x2496 pixels
    - **ROI 5**: 2750x2800 pixels
    - **ROI 6**:   800x2000 pixels
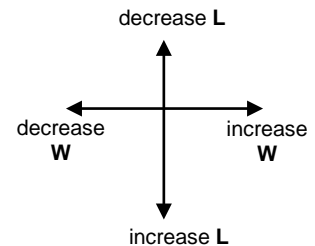   - **ROI 7**: 2000x800   pixels
    - **ROI 8**: 1500x2800 pixels

1. Press the key to apply the new **ROI area** to the image; W and L values will be recalculated automatically.

2. Reverse the grey scale.

3. Correct the Window and Level values, manually, using the dedicated tips or directly on the image by swiping your finger on a side of the image.

decrease **L**

decrease **W**   increase **W**

increase **L**

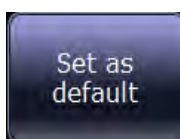- Use the relevant command to **reset W and L values** the image had before you opened this menu.

- Press **Exit** to quit the menu, thus returning to the Image Processing menu.

The functions described below are available for **Administrator** and **Advanced** users, only.

- Once you find optimal W and L values, you can decide to:

- Set the parameters currently used to calculate W/L values as Default parameters, for this type of exam. Every time you will use this type of exam, the images will be shown up with these settings.
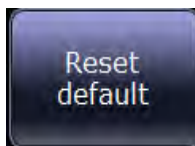
	• If you change your mind, you can reset the Default parameters of calculation, pressing the relevant key.

	• This function allows to change some of the image postprocessing parameters **(ROI, W/L calculation parameters, image positive or negative)** applied to the image at its acquisition. • In order to make these changes effective, press the **Save Processing Changes** key (aside). From now on, the image acquired using this type of projection, will be shown up with your new set of parameters.

• Touch **Exit** to quit the menu, thus returning to the Image Processing menu.

2.2.1   RESTORE TO ORIGINAL VALUES

In the Post processing menu, it is possible to change some of the Image Process parameters applied when an image is acquired, according to user's privileges.

This function allows to restore the original Image Process parameters (W/L, ROI, zoom and rotation factor, spatial filter, ATH and LUT curve applied, etc.).
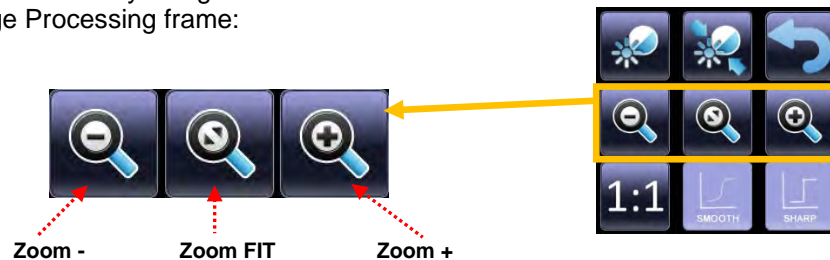
Press the relevant key to restore the image to original IP parameters.

2.3   DIGITAL ZOOM FUNCTIONS

The zoom factor can be set within this range:

➢ Full image on the detector (minimum zoom level) to two times the **True Size** of the image (max zoom level, **Z = 2.0**).

➢ You can change the zoom level by using the zoom commands in the Image Processing frame:

Zoom -   Zoom FIT   Zoom +

Zoom + :   to zoom into the image (it increases the **Z value**).

Zoom FIT :   to adapt the image to the display window (or restore the initial zoom factor).

Zoom - :   to zoom out of the image (it decreases the **Z value**).

Drag the image to shift the enlarged image and so centre the specific area of interest.

 The zoom factor **Z** is shown in the image footer.

Note: *The FP detector always acquires images with a full matrix.*
*For each exam, it is possible to enable or disable the **Fit to Screen** function.*

*When **enabled**, the image you are acquiring will be presented with a zoom factor as little as required to show the whole image on the monitor.*

*When **disabled**, the image you are acquiring will be presented with the max zoom factor.*

*(It is possible to enable or disable the function in the **Exam Setup** menu; see Paragraph 1.6.2 in Part 1 of the Technical Manual for further details).*
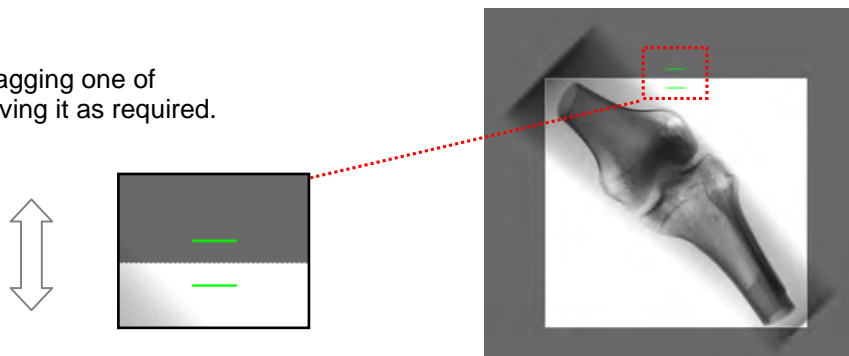
2.3.1 IMAGE CROPPING

When you need to enlarge a specific area of the image, you can use the **Crop** function.
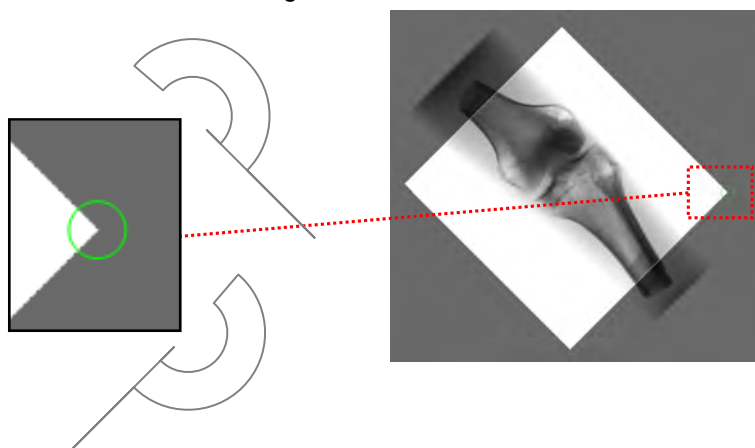

To use this function, press the relevant key and draw the diagonal of the rectangle that contains the part of the image you want to crop.

1. After selecting the rectangle, you can:

- Change its size by dragging one of its sides and then moving it as required.


1. Rotate it by dragging one of its corners and then rotating and moving it as required.

- To confirm the function, press again the relevant key and you will see the cropped part magnified to the highest zoom factor possible; the rest of the image will be hidden.
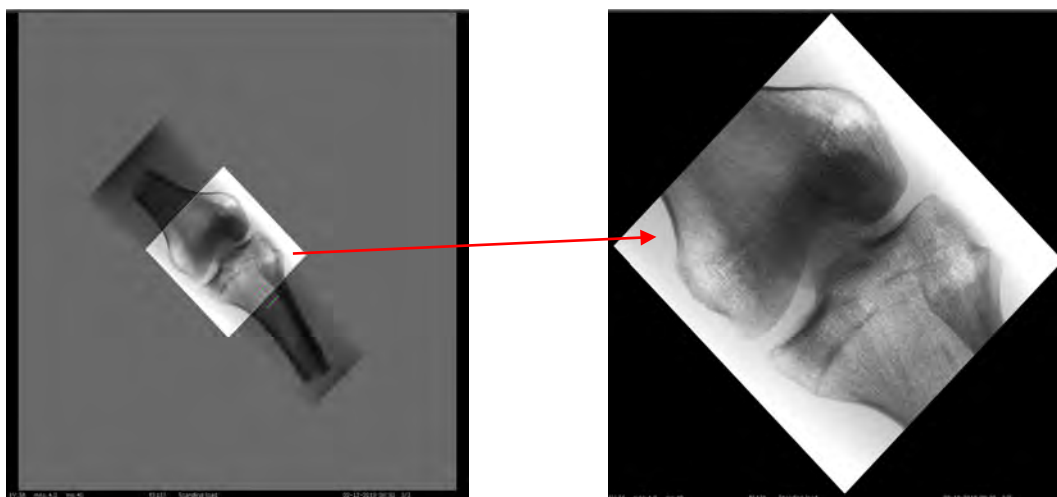
If the exam is already set to be acquired using the **AutoCrop** function, when you click the **Crop** key, the **AutoCrop** button is shown.
Now, you can change the crop area, as shown above, or restore the area at the acquisition size by pressing the **AutoCrop** key.

Crop	*Auto Crop*
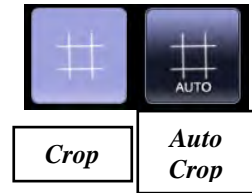
2.3.2   TRUE SIZE ON MONITOR

It is even possible to see on the screen, the real size of what you are examining.
Press the relevant key in order to enable the **True size on monitor** function.

It is required to set, in the **General Setup,** your monitor width and height.
(*See paragraph 1.5.1 in Part 1 of the Technical Manual for further details*).

Monitor settings

Monitor Width   475

Monitor Height   270

Note: *it is even possible to directly acquire an image in True Size: see paragraph 1.6.2 in Part 1 of the Technical Manual for further details.*

2.4   SPATIAL FILTERS

You can apply 2 different types of spatial filters (smooth or sharp). Use the commands in the Image Processing frame to select which one you want to use:
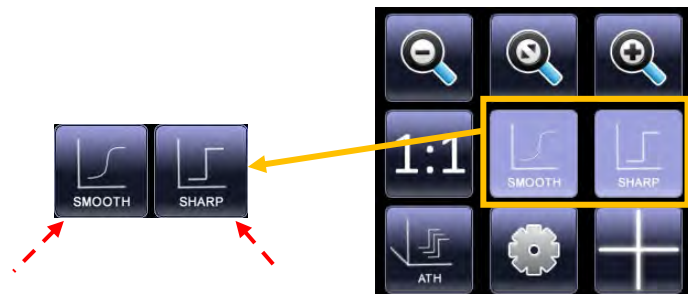

The image is automatically corrected when you select a spatial filter:

- SMOOTH filter: it softens the edges of the image

- **SHARP filter**:   it enhances the edges of the image

- SMOOTH filter + SHARP filter: both types of correction are applied

For **Administrator** and **Advanced** users, it is possible to change **Kernel** and **Weight** filter values, directly from the post processing frame.

If you press the filter key, when it is disabled, this selection window opens.
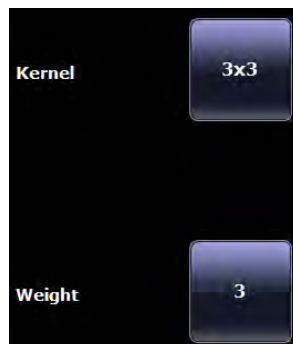
- In order to make these changes permanent, press the **Save Processing Changes** key.
 From now on, the image acquired using this type of projection, will be shown up with your new set of parameters.

2.5   ANATOMICAL TISSUE HARMONIZATION CURVES (ATH)

Harmonization algorithms (**A**natomical **T**issue **H**armonization) are used to optimise the dynamics of an image on the monitor. You can choose between different algorithms, in order to enhance an image quality.
These algorithms are associated with the exam mainly on the basis of the anatomical part to be studied.

You can apply a different algorithm to an image, by selecting the relevant command in the Image Processing frame:
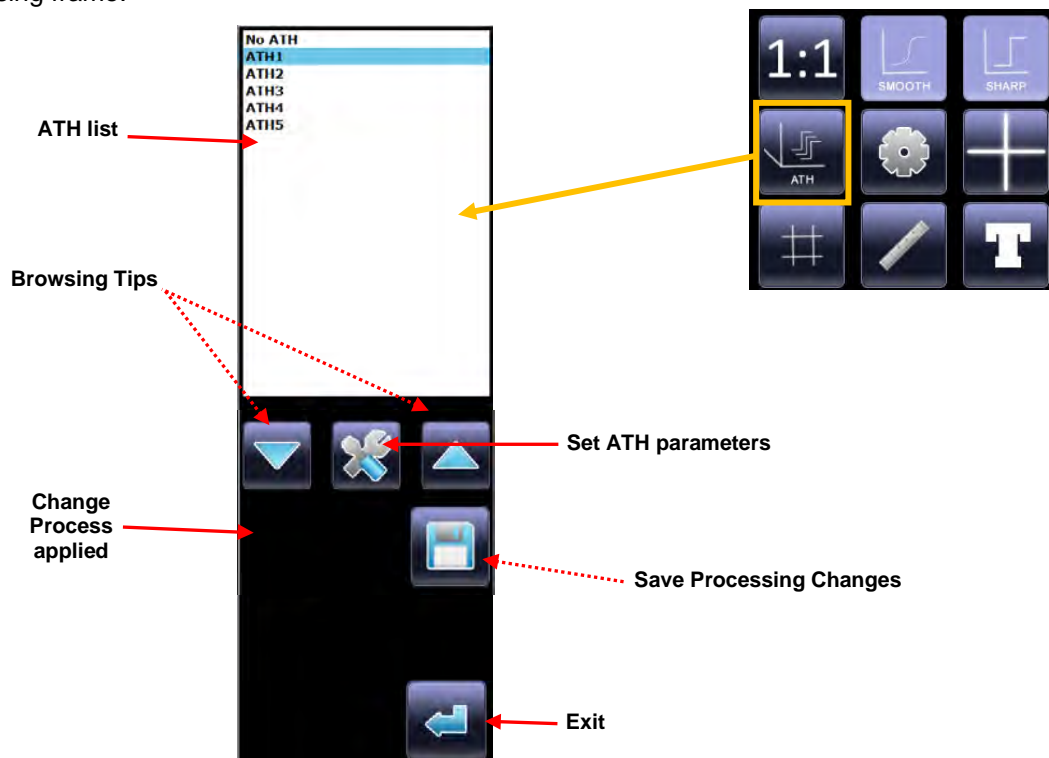
- There are different ATH algorithms available. The image is immediately corrected when you select one of them.
  The example in the figure above shows that the **ATH 1** algorithm has been applied (command highlighted).

- Only for **Administrator** and **Advanced** users, it is possible to adjust the parameters of the ATH applied, pressing the relevant key. The following window appears:
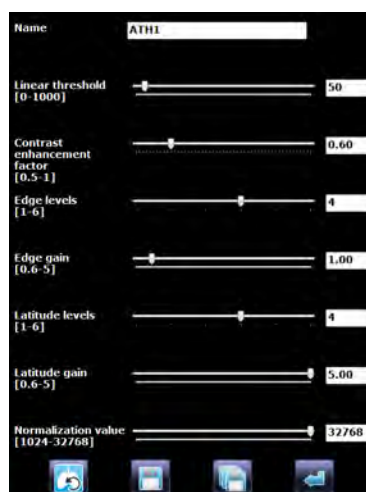
Set the needed value of the parameters by moving the cursor along the bar: changes are immediately applied on the image. Now, you can:

- **Apply changes** to the selected ATH, pressing the relevant key.

- **Create a new ATH profile**, pressing the relevant key (you will be required to change the profile current name).

- **Restore Previous values**, pressing the relevant key.

- **Cancel and close**, pressing the relevant key.
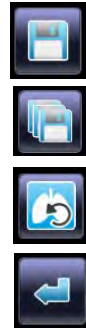
Only for **Administrator** and **Advanced** users, it is available the **Save ATH-Change** function:

- This function allows to change the **ATH curve** applied to the image at its acquisition.

- Select the preferred curve in the list: the curve is immediately applied on the image. In order to make these changes effective, press the **Save ATH-change** key.
  From now on, the selected ATH curve will be applied to images acquired using this type of exam.

Press **Exit** to quit the menu, thus returning to the Image Processing menu.

2.6 CHANGE IMAGE PROCESS

It is possible to change the process applied to the image.

To use this function, press the relevant key in the post-processing menu.

- The process already applied to the current image is highlighted in yellow.

- Select from the list the new process to be applied to the image and press the indicated button to confirm the choice.

- At this point this key will be enabled: it is possible to save the new process applied as the default one, in the **Exam Setup**. You can apply the process only to the current patient size or to all sizes related to the projection.
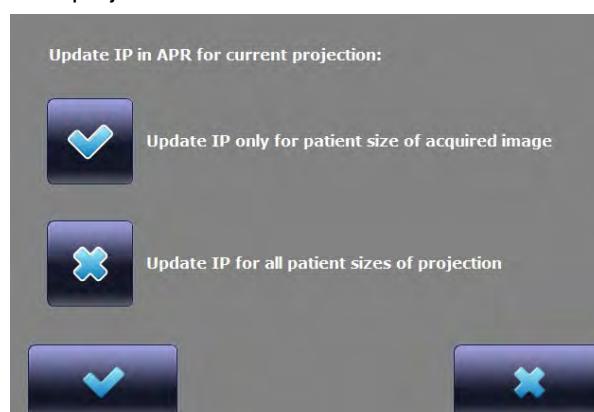
- Press this key to create a new process and to insert it into the list.
  The process is automatically defined, considering the filters and corrections applied during post-processing phase.

- Press this button to quit the menu, thus returning to the Image Processing menu.

2.7   LUT CURVES

The **Administrator** and **Advanced** users have the possibility to change even the **LUT curve** applied to the image. The relevant key opens the selection menu:

- It is possible to choose different parameters to apply: **LUT1, LUT2, LUT3, NO LUT.**

- The **Save Processing Changes** function is available for **LUT curve** selection, too.
  If required, select the correct LUT curve and press the **Save Processing Changes** key.

- In order to make these changes effective, press the **Save Processing Changes** key.
  From now on, the image acquired using this type of projection, will be shown up with your new set of parameters.
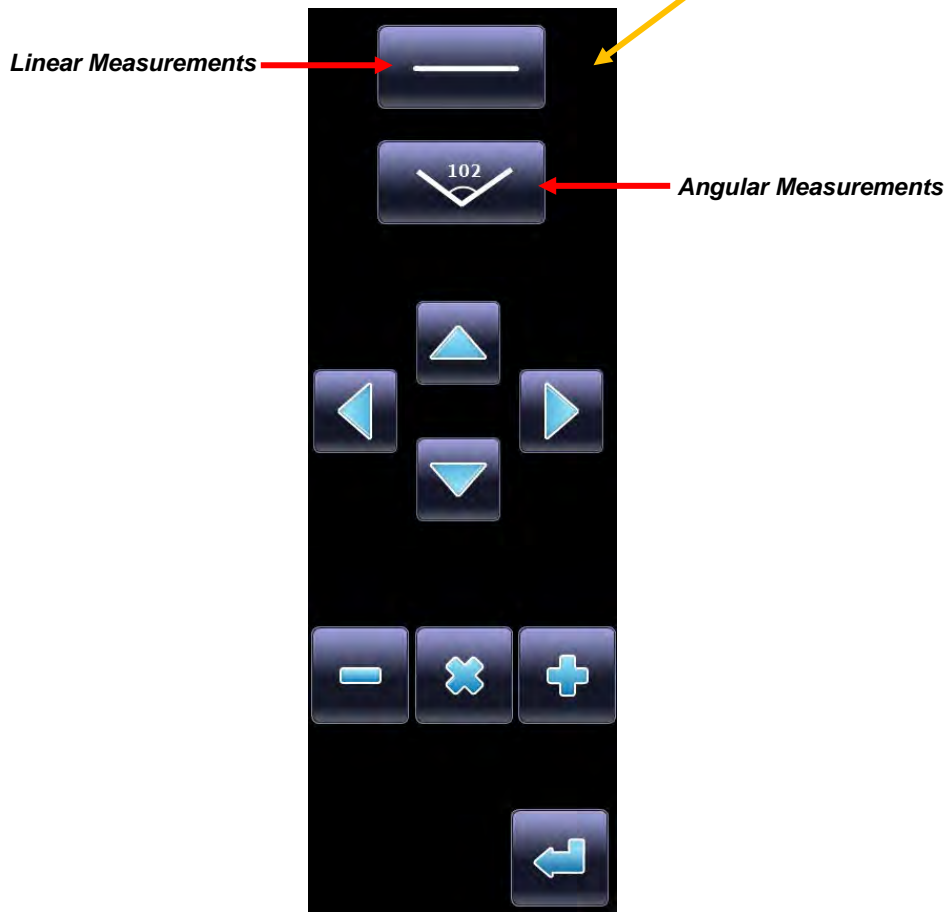
Touch **Exit** to quit the menu, thus returning to the Image Processing menu.

2.8   MEASUREMENTS

The software makes available two measurements tools.

Select the **Measure** function in the Image Processing frame and the **tool bar** appears; now it is possible to select the **Linear Measurements tool** or the **Angular Measurements** one.

Linear Measurements →

Angular Measurements

Note: these measurements are not affected by zoom factors or any rotation of the image, whether applied beforehand or afterwards.

Note: the maximum error without calibration is 3%; for further details about calibration procedure, see Paragraph 2.8.1 below.

2.8.1   CALIBRATION AND LINEAR MEASUREMENTS

In order to make measurements the most accurate, it is suggested to use the calibration function, if possible.

It is required a known-length object within the image:

- Press the relevant button

- Draw a line over the known-length object, using your finger or mouse.

- Enter the known length of the calibration object (in mm) in the relevant field and then touch the **Measure Set button**.

Note: *All the measurements on the image will be calculated depending on the calibration.*

The **Distance** function lets you measure linear segments in the image.

To measure a segment, press the relevant button and then:

- Use your finger or mouse to draw a segment between the two points you want to measure the distance of. A line automatically appears, with the distance expressed in mm.

- You can correct the position by moving:

  1. the ends of the segment: click on one of its ends and then drag it to the required position or use the 4-directions tips.

  2. the entire segment: click on a central part of the line and then drag it to the required position or use the 4 direction keys.
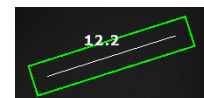
  Note: The direction keys move the object of 1-pixel steps.

  Now, you can:

  - decrease or increase the font size of the measurement:

  - delete the segment using the relevant key:

- Press **Exit** to save the measurements and quit the function, thus returning to the Image Processing menu.

2.8.2   ANGULAR MEASUREMENT

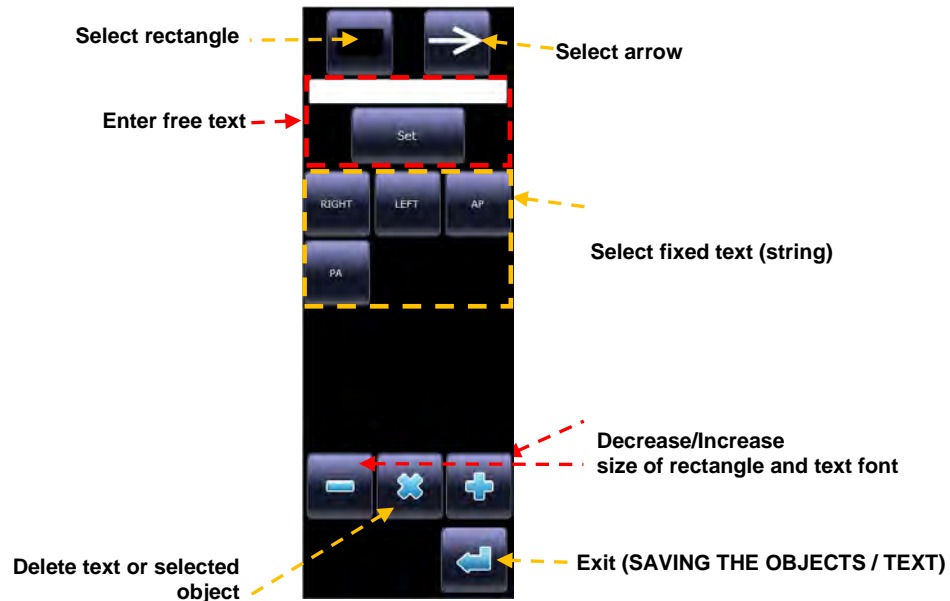This function lets you measure angles in the image. After selecting this function:

- Draw the 1st edge, the vertex (the point where the first edge finishes) and then the 2nd edge on the image. The angle is automatically drawn and its value is shown.

    Note: The angle measurement always refers to the smaller angle (i.e. less than 180°).

- You can correct the position by moving:

    1. the edges or the vertex of the angle: touch one of these and then drag it to the required position or use the 4 direction keys.

    2. the entire angle: touch a central part of one of the two edges and then drag it or use the 4 direction keys.
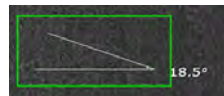
        Note: The direction keys move the object of 1-pixel steps.

    Now, you can:

    - decrease or increase the font size of the measurement:

    - delete the angle using the relevant key:

- Press **Exit** to save the measurements and quit the function thus returning to the Image Processing menu.

2.9   ADDING OBJECTS AND TEXT   1.1.79

It is possible to add graphic objects and texts to the image.

Press the relevant key, in the post-processing menu, in order to use these functions.

It is possible to set the following parameters:

Select rectangle

Enter free text

Select arrow

Select fixed text (string)

Decrease/Increase size of rectangle and text font

Delete text or selected object

Exit (SAVING THE OBJECTS / TEXT)

2.9.1   RECTANGLE

This function lets you cover parts of the image you would like to hide. Press the relevant button to enable this function.

- Draw a diagonal line (which represents the diagonal of your rectangle) over the part of the image you wish to hide. A black rectangle is automatically drawn on the image.

- If required, by clicking the rectangle, you can also:

  - drag and drop it using your finger or mouse;

  - increase/decrease its size with these commands:
    If you want to increase/decrease only one of its sides, drag the relevant one to the required position.

  - delete it, with the relevant key.

2.9.2   ARROW

This function allows to draw an arrow on the image. Press the relevant button to enable the function.

- Draw a line on the image to create an arrow (the end of this line will be its pointed side).

- Touch the arrow again to:

  - drag and drop it using your finger or mouse;

  - move its extremities: press one of its ends and then drag it to the required position.

  - delete it, with the relevant key.
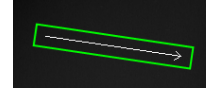
2.9.3   ENTERING A TEXT

This function allows to add comments over the image. The EM equipment has some default strings you can use (they have to be set in **Fixed String setup,** *see Paragraph 1.12 in part 1 of the Technical Manual*); alternatively, you can enter a free text.

- After selecting the required Fixed Text option, select the point on the image where you want to add the text.

- Alternatively, enter a free text:

  - type the text in the relevant field;

  - touch the position on the image where you want to add this text.

- If required, by clicking on the text you can also:

  - drag and drop it using your finger,

  - increase/decrease its size with these commands,

  - delete it, with this command.

Once you added the required objects and text, touch **Exit** to save the changes and quit the function, thus returning to the Image Processing menu.

2.10 IMAGE MULTIVIEW

Press the relevant key in order to enable the simultaneous view of more images.

- It is possible to choose between three different views:

  - Two images at the same time (vertical screen split);

  - Two images at the same time (horizontal screen split);

  - Four images at the same time.

  Drag and drop the preferred image in a box.
  If required, you can move each image within its box, in order to better view the needed part.
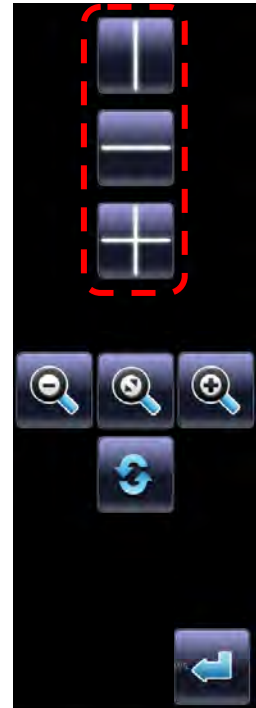
- Press keys aside to change the **zoom level** of a selected image. Press the central **Magnifier** key in order to bring back the selected image to its initial zoom factor.
  If no images are selected, when you press the zoom keys, all the images present will change as a result.

- Press this key to change the **orientation** of the selected image (*see paragraph 2.11 below*).

- Press the **Exit** key to quit the function, thus returning to the Image Processing menu.

2.11 IMAGE ORIENTATION

You can change the orientation of the acquired images. From the Image Processing frame, open the relevant menu, using this key:
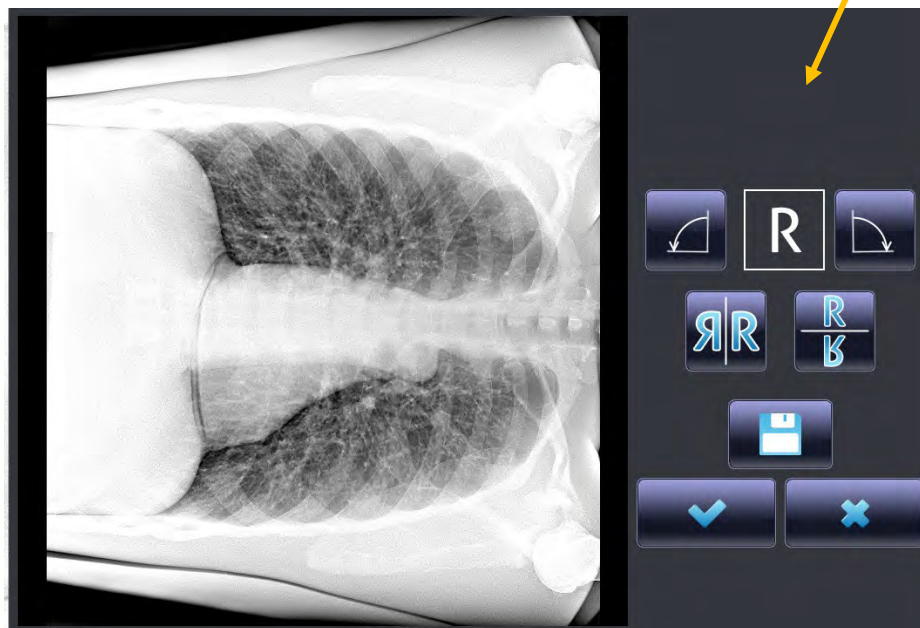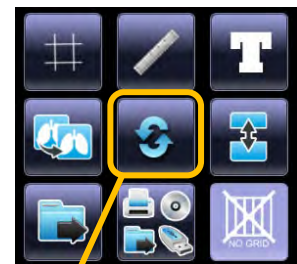
- Rotate the image clockwise or anti-clockwise by 90 degrees.

- Vertical flip.

- invert the image with respect to the vertical or horizontal axis.

- Grabbing the image by one of its corners with your finger or mouse, it is possible to freely rotate it.

- In order to make these changes effective, press the **Save Rotation Changes** key. From now on, the image acquired using this projection, will be shown up with your new set of parameters.

- Confirm or delete changes.

2.12 DUPLICATE AN IMAGE

This is a useful function because allows to apply to an image all the post-process operations you need, preserving, meanwhile, an original version of the image.
Select within the preview list the image required; now press the relevant button and you are asked to confirm the creation.
A copy of the selected image appears in the preview list; it is marked with the text "COPY".
You could have no more than three copies of an image.
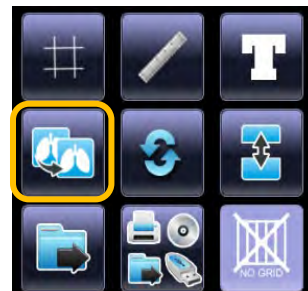
2.13 PROTECT AN IMAGE

- In order to avoid an image to be altered by other users, you can **create a locked copy** of that image. Press the relevant button and a copy will be created; it is identified by the text "**Locked Copy**".
  No one should alter the locked copy, anyway the user who created it, should decide to unlock the copy, pressing the same key. He will be asked to confirm, or cancel, the choice.

2.14 REJECT / RESTORE AN IMAGE

- Every user (**Operator**, **Advanced** or **Administrator**) can **Reject** a single image in the study. To reject an image, use the relevant key and a window appears:
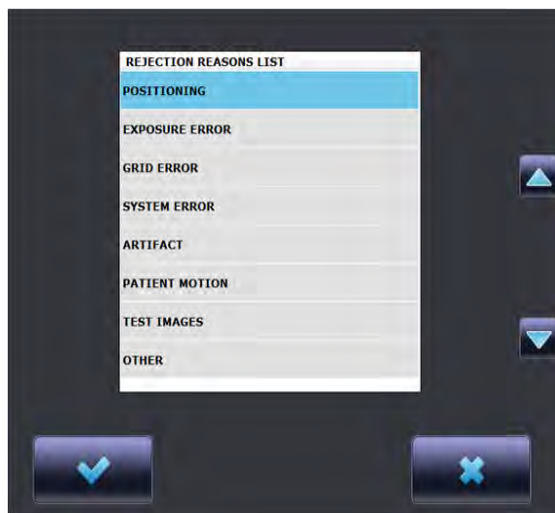
Select the rejection reason from the list and finally confirm your choice or cancel this operation.

If you need to take back a rejected image, you will use the **Restore** button; you are asked to confirm (or cancel) your choice.
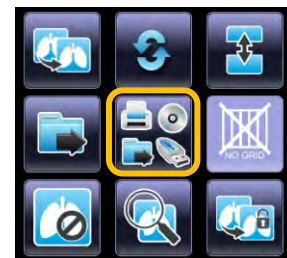
2.15   DELETE AN IMAGE

*Only the **Administrator** can **Delete** a single image within the study or a whole study, if required; he will be asked to confirm (or cancel) his choice.
He can delete a **Locked Copy**, too**.***

2.16   REPORT TOOL

Once you completed the post-processing operations, you can save the needed images within the study on a memory device, store or print them.

Note: you find the same key in the Study List frame, too.

Press the relevant key to open the Report tools menu. It opens the following window:

All the images in the study are now shown in this grid. If the study has more than 9 images, you can browse within the images with the dedicated tip buttons.
(They appear, aside the images previews, only when more than 9 images are present).

Note: in case of a multi-study patient, the images will be presented in frames of different colors, depending on the study they belong to.

You can manually select the images required; otherwise, with the relevant keys, you can:

Select all the images in the study

Deselect all the images in the study

Reverse the selection (all the selected images get unselected and vice

2.16.1 SAVING IMAGES

Once you select the needed images, you can:

- Send them to the default DICOM store (first key) or select between the DICOM store present in the list (second key). The same key is also present in the post-processing frame.

- Export the selected images on a memory device (CD or USB pen drive); *this function is enabled only for* **Advanced** *and* **Administrator** *users.*
  When you press it, the following window appears on the monitor:
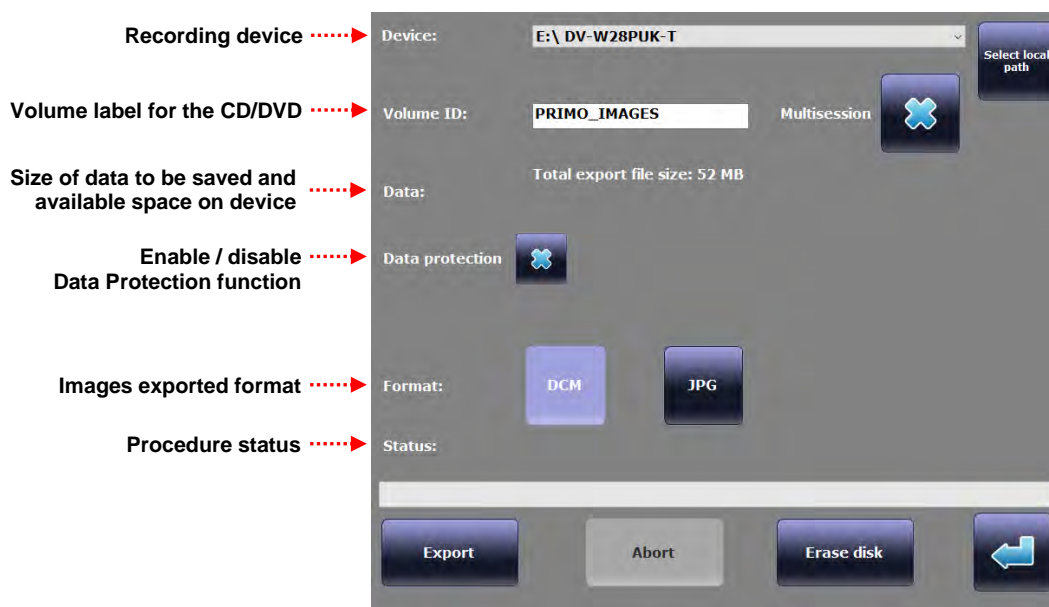
2.16.1.1 DATA PROTECTION

The **Data Protection** function allows to export a study anonymizing the patient data.
Furthermore, to consult the images is required a password, in order to protect patient privacy.

It is possible to enable the data protection in DICOM Media setup, *see Paragraph 1.9.6 in Part 1 of the Technical Manual*. Even if not enabled in setup, it will be possible to activate the function during the export procedure using the relevant key.
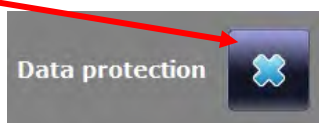
If enabled, the following panel will be shown:

When **Data Protection** function is enabled, a default password is suggested. It is possible to change it, anyway. In this case, it is required to select the file format (**Dicom** or **Jpeg**), again.

Press the **Export** key to complete the procedure or the **Go Back** key to cancel and quit the panel.
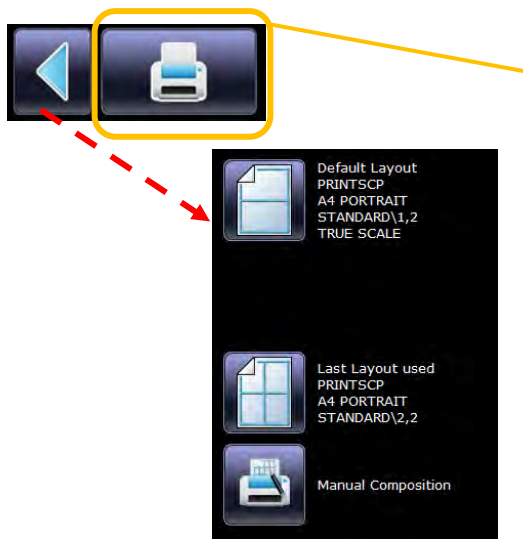
When the procedure has been terminated successfully, it will be indicated aside the **Status**.

The study will be named by date and time of export. To refer the images saved, it will be required to enter the password created during the export procedure.
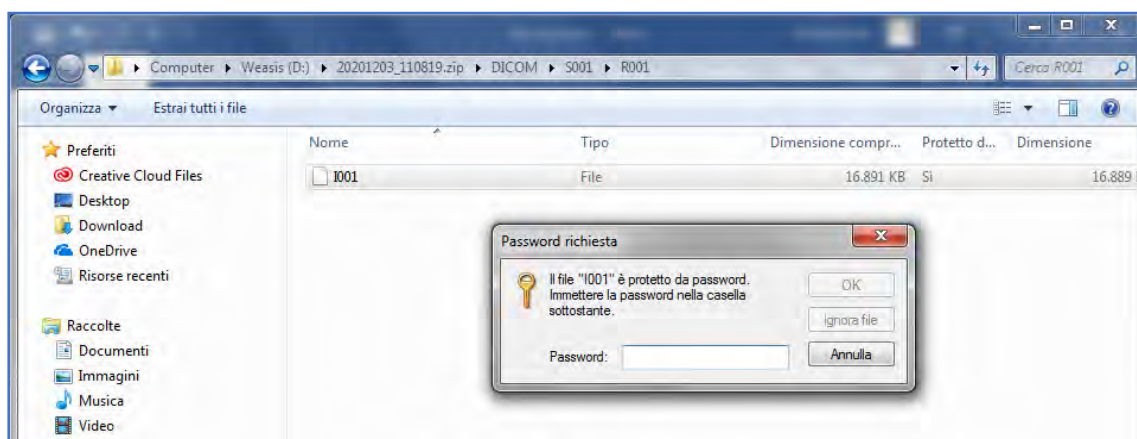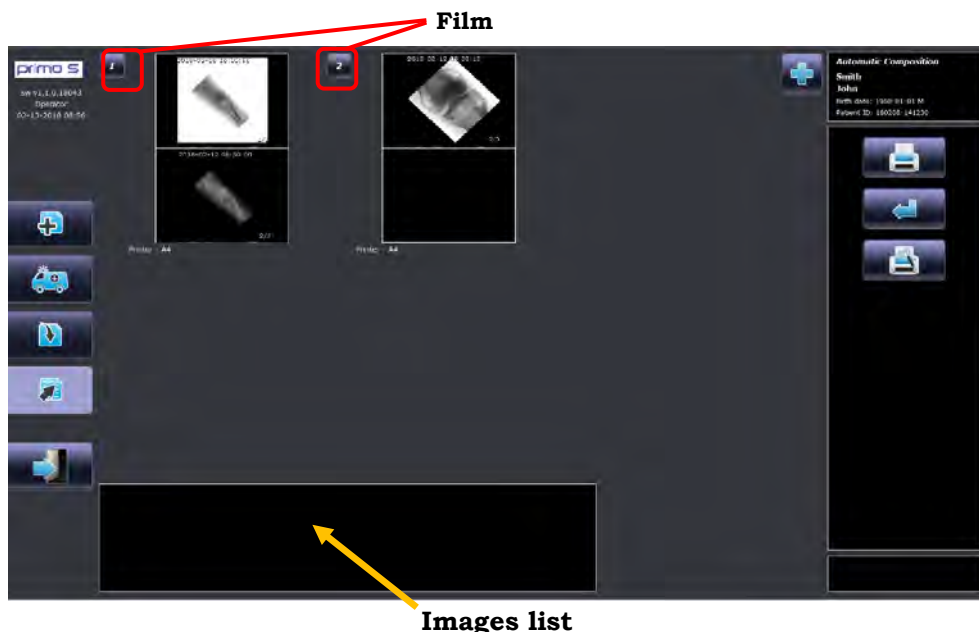
2.16.2 DICOM PRINT

To open the **Print menu**, press the relevant key; you can even press the **tip** button, that is a shortcut to print using the **default layout** or the **last print layout used**.
You can skip to the **manual composition**, too.

When you press the relevant key, the **Print menu** window opens.

If you click on an image of the automatic layout composition, it opens the following window; here you can read a little report about image and study data. On the right-hand side, there are three keys:

Duplicate the image in the images list at the bottom of the page.

Move the image to modify the layout of the image to be printed.

Delete the image from the print layout. (It is possible to make the same operation, by double-clicking with the mouse, directly on the image).

Go back to the **Print menu** frame.

 While if you click on the **film number**, appears a window giving details about print layout and settings:

- - - ▶ Duplicate the same layout, without the images.

- - - ▶ Delete the selected layout.

- - - ▶ Only for *Administrator* user: set the **True Size Correction Factor** (which must be between 70% and 130%)

- - - ▶ Go back to the **Print menu** frame

Note: with the True Scale function enabled, trying to pan the image, it will be shown the whole image. So, it is possible to print the part required.

Now you can:

- print the composition suggested,

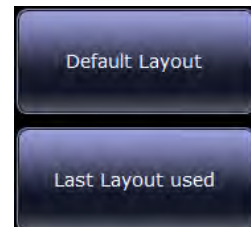- add a new film,

- go to the manual composition menu.

2.16.2.1 ADD A NEW FILM

Press the relevant key in the **Print menu**, to open this window; here you can create a new print layout, to add to the already existing ones.

Note: If you need to recall the **Default Layout**, or the **Last Layout used**, press the relevant button. Now, you can keep it as it is or use it as a basis to be adjusted.

You can set:

- The film orientation:
    - **Landscape** (horizontal),
    - **Portrait** (vertical);

- **True Size** or **True Scale:**
    - **True size** function prints the real dimension of an image (you can move it into its frame in order to view the required part of the image);
    - **True scale** function, instead, print the image adapted to its frame in order to show the whole image into it.

- Number of copies;

- Add annotations;

- The film format (A4, A3, etc.) depending on what has been set in **DICOM PRINT Setup** (*see Paragraph 1.9.3.2 in Part 1 of the Technical Manual*).

Now, you can:

- Save the layout you created and go back to **Print menu** window.

- Undo the layout and go back to **Print menu** window.

If you save the layout, in the **Print menu** window, two new keys will appear, below the **Add** one.

- Press the relevant key to add the same layout you created,

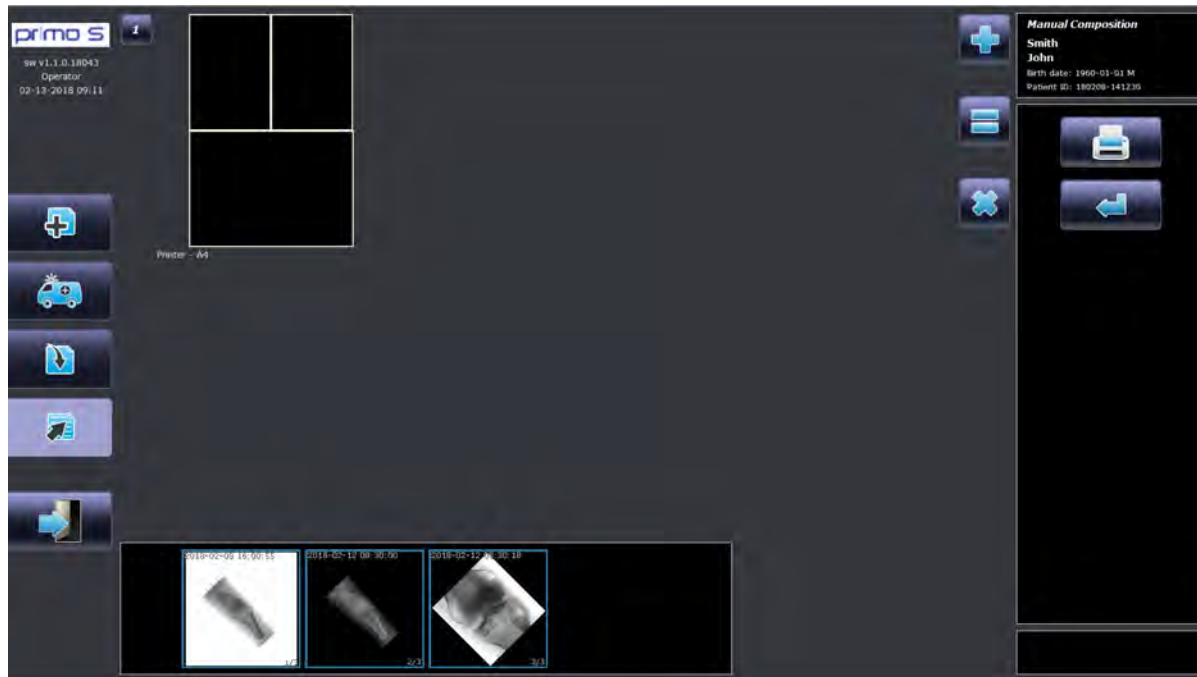- Press the relevant key to delete layouts in the **Print menu** window.

2.16.2.2   MANUAL COMPOSITION

To create a manual-composed print layout, press the relevant key.

It will open a window (the same as "add new" one); follow the steps in the previous paragraph in order to create your film model.
Once you save it, the **Print menu** window is opened:

Now compose your layout dragging an image in the appropriate box.

Once you created the needed film(s), touch the **Print** key in order to send it (them) to the DICOM printer.

Transmission of the film(s) to the print queue (Spooler) now starts. The **"Images sent to spooler"** message appears on the monitor.

2.17   NO GRID FUNCTION

If the exam is set to be acquired using an anti-scatter grid, the system will automatically remove the typical effect, using this function (the relevant key appears highlighted).

The system automatically recognizes the grid orientation (horizontal or vertical).

The grid feature (lines per mm) has to be set in **General setup**: it is possible to set up to 3 grids. (*see Paragraph 1.5.4 in Part 1 of the Technical Manual*).
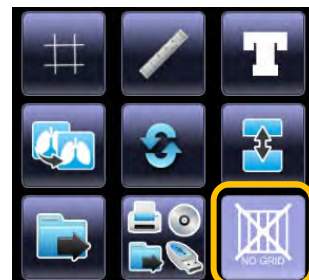
If the exam is set to be acquired without a grid, the relevant key is off. Anyway, if you are required to carry the exam out using a grid, it is possible to remove the typical effects in any case.
Press the relevant button, in the **Post-processing** frame, a menu appears: pick the correct grid between those suggested and confirm to apply the **No Grid** function.

2.18   MAGNIFYING GLASS

This is a useful tool when you need to temporarily magnify a part of your image.

Press the relevant key and then touch the required point: it immediately appears enlarged.
Move the glass over the image and the part falling into its field, will be shown enlarged (as in the figure below).

Press again the relevant key to turn off the function.
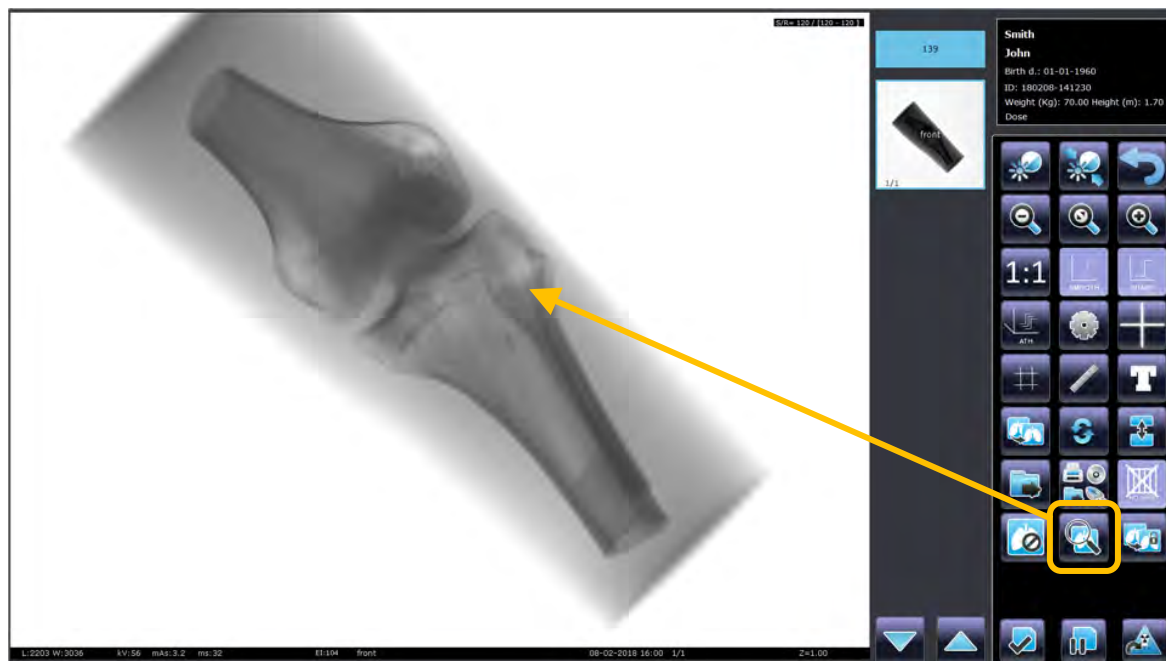
Note: in case of malfunction, please enable the Special Glass function in General Setup. see Paragraph 1.5.1 in Part 1 of the Technical Manual.

3   <u>ANNEXES</u>

3.1   TRANSFERRING IMAGES VIA DICOM

You can send images via the DICOM protocol network:

- to a DICOM Store server in order to save them (*see paragraph 3.1.1*).

- to a <u>workstation</u> by using the STORE DICOM function

- to a <u>printer</u> using the PRINT DICOM function (*see paragraph 3.1.2*).

It is possible to:

1) send a single image from the **Image Processing frame**,

2) send an entire study from the **Study List frame**,

3) send one or more images in a study using the **Report Tool menu**.

You can send one or more <u>manually or automatically</u> composed images in one or more films using the Report Tool (*see paragraph 3.1.2 below*).

You can check if the transfer has been successfully accomplished via the DICOM SPOOLER (*see paragraph 3.1.3*).

Note: images, together with the related dose report, are automatically saved in the hard disk of the device. If the connection with DICOM server is temporarily lost, they can be sent when the connection is restored.

3.1.1   <u>DICOM STORE</u>

You can decide to store a single image, some images within the study, a whole study or more studies.

1) Use the relevant key in the **Image Processing frame** to transfer the single image currently shown on the monitor:
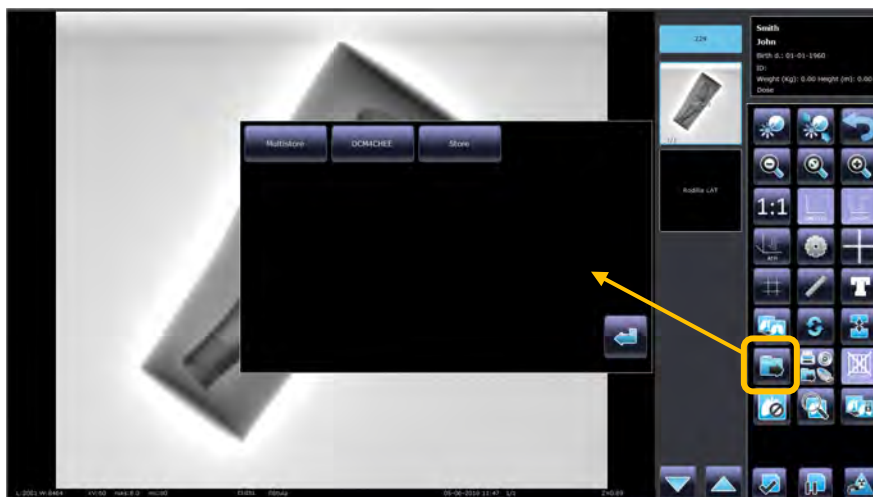
Now choose to which node send the image and touch its key. A message appears to confirm the send has been successfully accomplished ("Image sent to store").
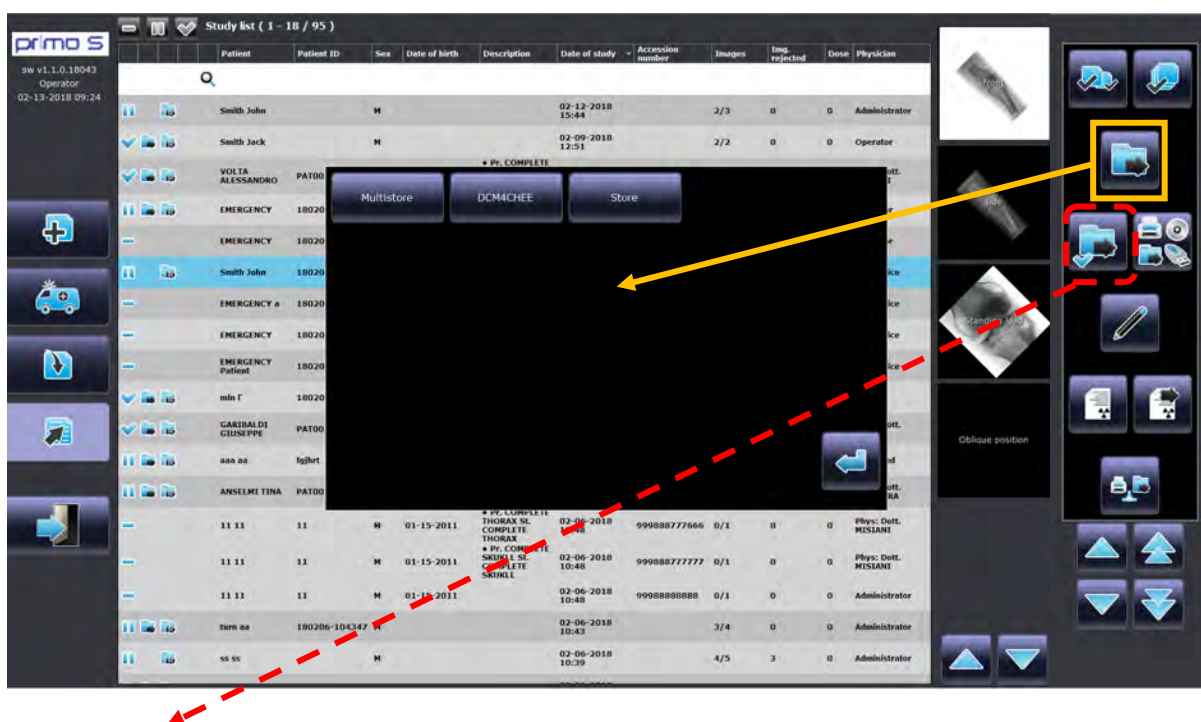
When an image has successfully been sent to Store, it is marked with this icon.

The same icon is shown on the study, the image you send belongs to.

2) Use the relevant command in the **Study List** to store one or more selected studies (using the button in the yellow square, you are asked to choose the DICOM server between those you set):

This button directly sends the selected study to the server you set as the default one (in **DICOM setup**, *see Paragraph 1.9.4 in Part 1 of the Technical Manual*).
A window appears to confirm the send has been successfully accomplished ("Study sent to store").

3) From the Study List frame, after you select a study, it is possible to open the Report Tool menu to choose the images, within the study, you want to transfer:

- The Report Tool menu shows all the images in the study. You can select manually, one by one, the needed images, or:
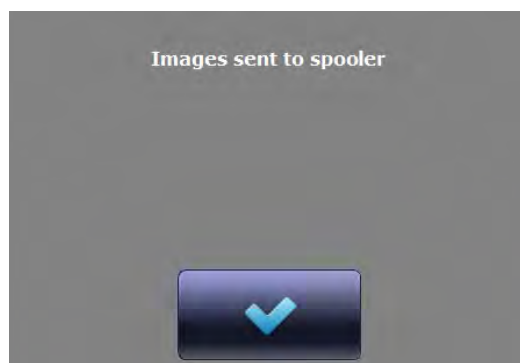
    - Select all images

    - Undo the images selection

    - Reverse selection

- Touch the first **Store** key to send the selected images to the default DICOM server or the second one to choose the server you want to send the images to.
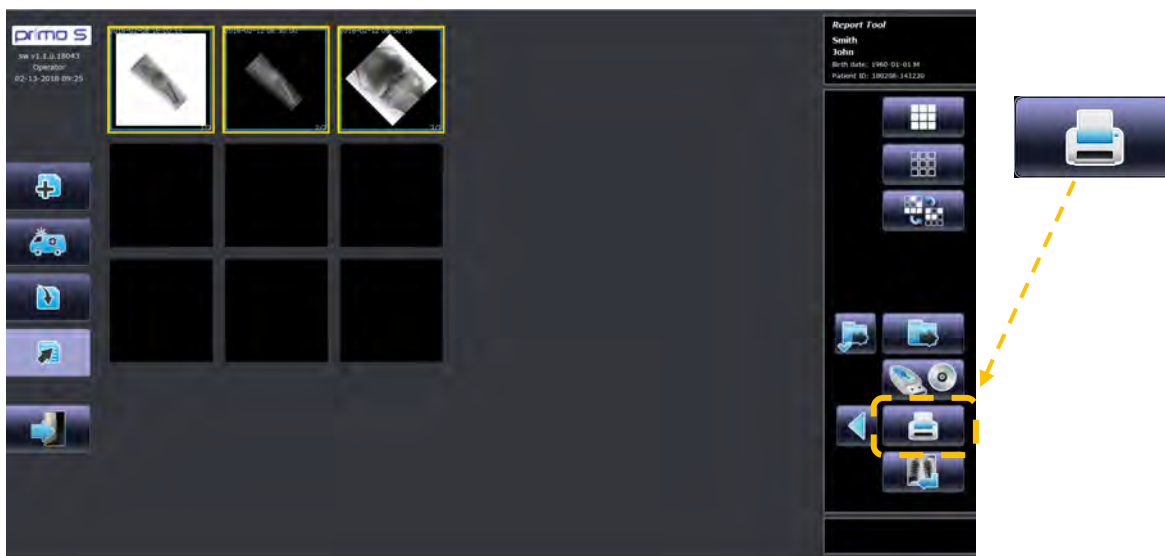

- A window appears to confirm the sending procedure has been launched. The message: **"Images sent to spooler"** will appear (*see paragraph 3.1.3 below*).

3.1.2   DICOM PRINT

In the **Report Tool** menu, you can also print the images using the PRINT DICOM function (*see Paragraph 2.16.2, in Part 2 of this manual* for further information):
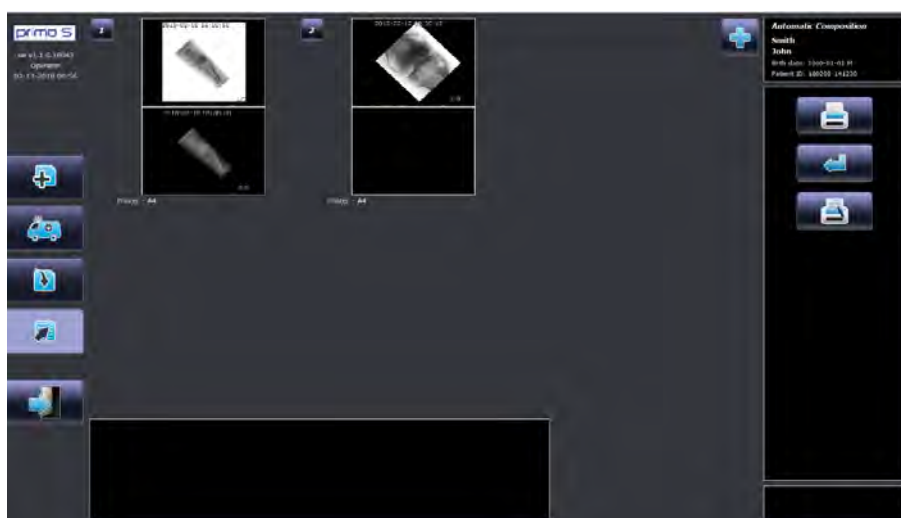

- The Report Tool menu shows all the images in the study. You can select manually, one by one, the needed images, or:

    - Select all images

    - Select no images

    - Reverse selection

- Click on the **Print** key to open the Automatic Composition screen; the images selected before are now automatically composed in film(s), according to the previously set print layout.

- Here you can:

    - **Print** all the films shown:

    - **Delete** the composition and return to the previous page:

    - Switch to **Manual** mode and manually compose a new film layout
   (*see Paragraph 2.16.2.2, in Part 2 of this manual* for further information).

3.1.3 DICOM SPOOLER

The **DICOM Spooler** function manages the transmission of images to the DICOM nodes via a buffer memory (on the Hard Disk) where the images to be transmitted are stored in a queue.

You can access the menu for this function by using the relevant command in the Study List frame:

Warning Message Area   **Spooler status legend**   **Settings**

The **Status** panel shows the status of the images and their transmission in real time. It contains the following details:
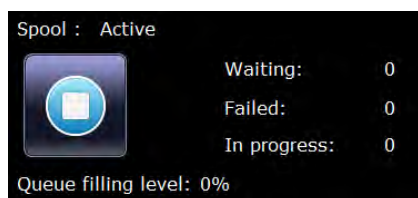
| Spool	Spooler status (active / disabled)
Waiting	Number of images in the queue
Failed	Number of images not sent (error or system malfunction)
In progress	Number of images currently being sent
Queue filling level	Filling level (in %) of the transmission queue

The status of each image in the transmission queue is also shown in the **St** (Status) column in the main panel:

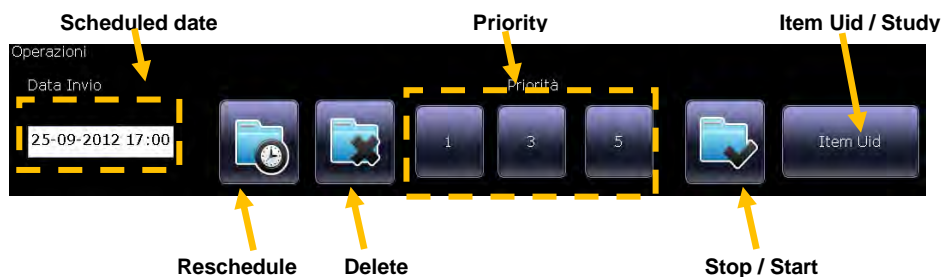 This key shows a legend about symbols you could see near the images in queue.
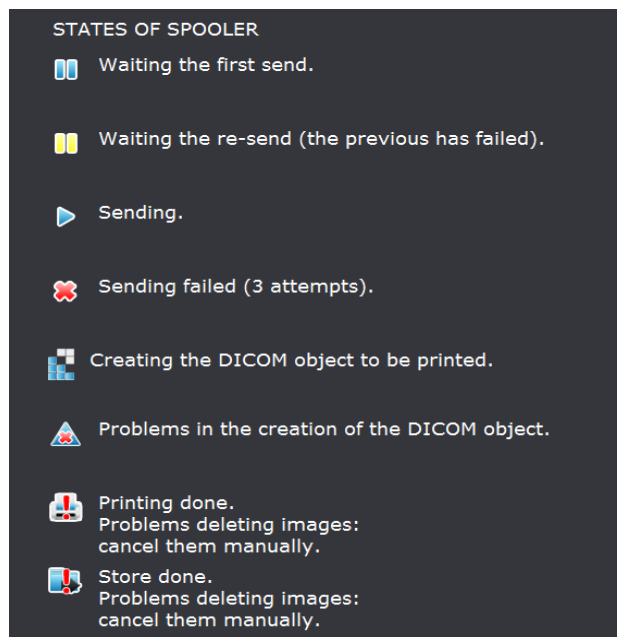
Click on the **Stop** key to stop the transmission (**Spool: Disabled**). This also enables the Operations commands:

To manage an image still in the transmission queue, use the functions in the **Operations** panel:

You can now:

- **Delete** one or more selected images in the transmission queue by touching the **Delete** command:

- **Set the re-transmission date** for a selected image using the **Scheduled date** command and then order the new transmission request using the **Reschedule** command:
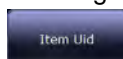
Note: this function is meant to be used when a first attempt to store an image failed.

- **Set the transmission priority** for the selected images using these commands:

    1 = low priority, **3** = normal priority, **5** = high priority
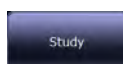
- Change the description field of an image in the Spooler. The options are:
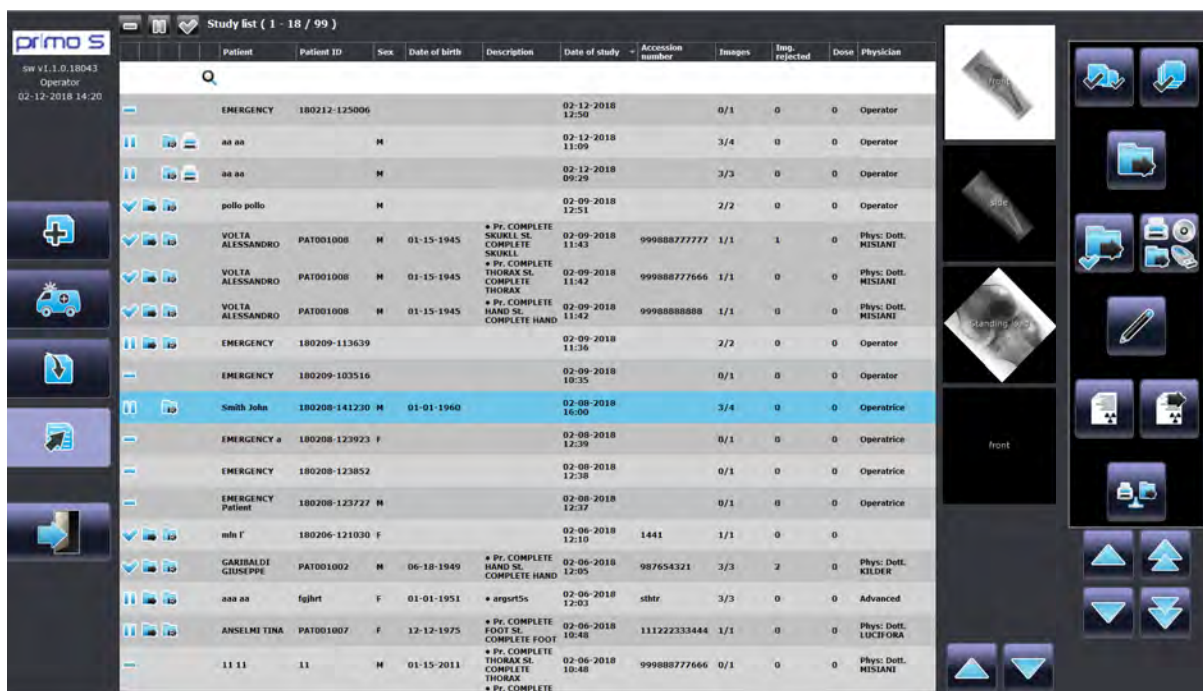
    - **Item Uid**

    - **Study description**

Use the **Start** command to restore the Spooler to normal operation:

The transmission now restarts (**Spool: Active**) and the commands in the Operations panel are disabled.

You can check the **Spooler** status from the Study List frame, too.

The Spooler key changes depending on the status:

- There are images to be transmitted in the spooler

- The system is sending images,

- The Spooler is in **warning** status (*E.g.: the spooler filling level has been exceeded*).
  Press the Spooler button to display the warning in the relevant Spooler box.
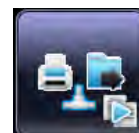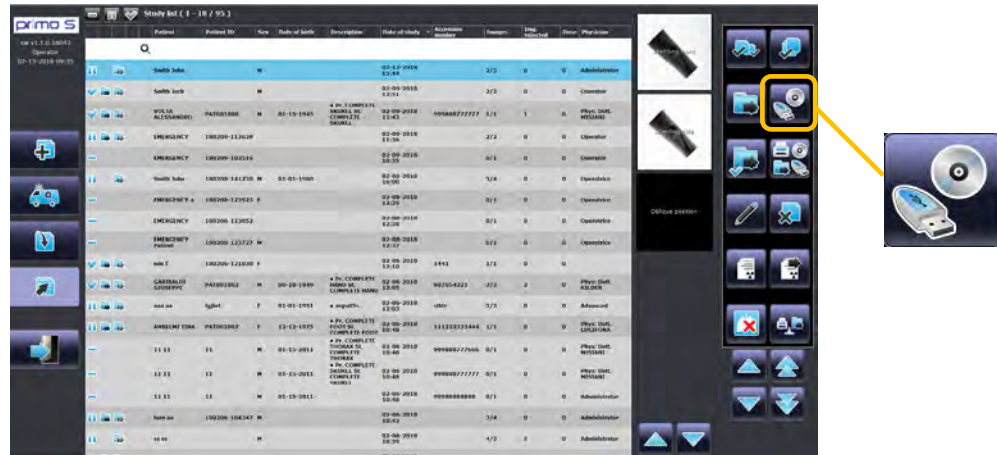
3.2 SAVING IMAGES ON CD/DVD OR USB DEVICE

It is possible to save images in **DICOM** format (or the required one between **JPEG**, **PNG**, **BMP**) on a CD/DVD, on a USB memory device or on your pc, too. It is possible to:

1) Save a whole study:
Select the study in the Study List and then copy to CD/DVD or USB using the relevant key:

*Note: this function is available for Administrator and Advanced Users, only.*

2) Save selected images in a study:
Open the **Report Tool** menu. This lets you select and copy the images you require onto a CD/DVD or a USB memory device:

The Report Tool menu shows all the images within the study. You can select the required images manually, clicking on their preview.

- Both in case 1) and 2), in order to save the images, select the relevant key and this window opens:
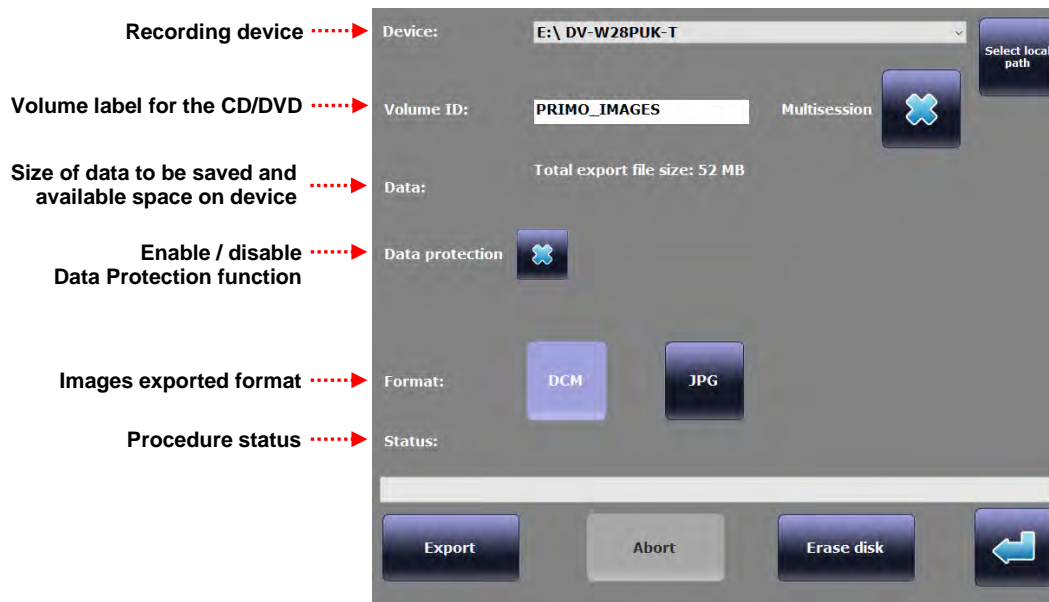
- Enable or disable the Data Protection function (*see Paragraph 2.16.1.1 in Part 2 of this Manual*).

- Select the format (the default one is already selected, you can pick a different one if required) and start saving the files onto CD or USB device using the **Export** key**.**

- Once the images have been saved, you will read **"Process completed"** in the **Status** field; the saving procedure has been successfully accomplished.

- It is even possible to save the images directly on your computer, using the **Select Local Path** button. Press the key and a window to choose where to save images appears.
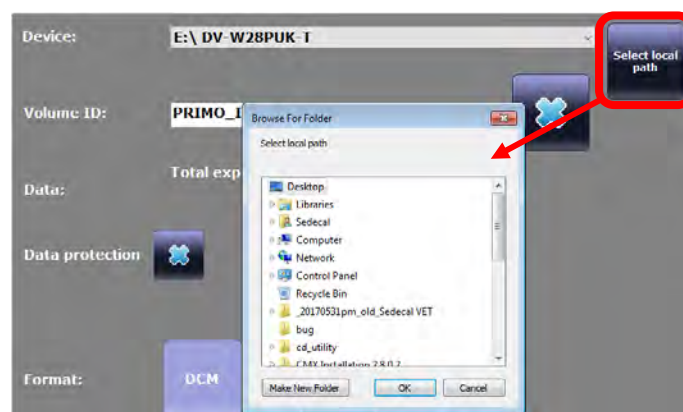
- Once the saving operation has been accomplished, press this key to close the procedure.

Note: Erase disk key is meant to delete data on a rewritable disk (only for Advanced User and Administrator).