

Aptitude⁺



APTITUDE⁺ R/F SYSTEM

Remoted Controlled R/F with TRIXELL-FL FPD



Aptitude+ Remote Controlled R/F

System components:

- Remote-controlled R/F with flat tabletop to facilitate patient positioning and transfer
- Angling column with automatic collimator and integrated DAP
- Integrated Trixell 4343 detector with integrated electronics eliminating large system cabinets
- Main console that includes all the controls for the remote controlled R/F, the touch screen interface with the generator, the patient camera and the acquisition console for auto-positioning
- Optional secondary infrared remote console to mirror the main table controls



Patient Support

Motorized variable height, 6 cm/s, from 15 in to 58.25 in (38 cm to 148 cm)

The flat, carbon-fiber tabletop, has patient rails and is weighted for bariatric patients up to 507 lbs (230 kg) without movement limitations. Up to 683 lbs (310 kg) with some movement limitations.

- 88.5 in x 31.9 in (225 cm x 81 cm)
- 23.6 in (60 cm) radiolucent
- 0.55 mm Al eq. maximum
- Patient weight according to IEC 60601-1 standards
- Motorized lateral movement, +/- 7 in (18 cm) at 2.4 in/s (6 cm/s)
- Motorized longitudinal movement, +47.2 in (120 cm) /- 23.6 in (60 cm) (other inferior values on request) at 3.1 in/s (8 cm/s)
- **Tilting of + 90°/- 90°**, motorized at 6°/s



The composite footrest, as a standard accessory, is weight-rated up to 507 lb (230 kg) and its maximum width of 15.7 in (40 cm) permits lateral exams with optimum comfort and safety for the patient. With a radiolucent upper, the 46mm thickness allows visibility of the entire foot including soft tissue.

The lightweight design makes it easy to handle with one hand.

Detector Support

Longitudinal movement of 53.1 in (135 cm), motorized at 5.5 in/s (14 cm/s)

Total patient coverage includes entire table top and all tabletop movements

Removable carbon fiber grids 10:1, FS 49.2 in (125 cm) and 70.9 in (180 cm)



Tube Support

Motorized Angulation

+/- 40° (10°/s maximum) even at the end of table, increases patient coverage

Motorized Source-Image Distance

6 cm/s, variable continuous from 43.3 in (110 cm) to 70.9 in (180 cm)



Motorized Collimator

Fitted with four pairs of mobile lead shutters and two pairs of pre-shutters for maximum collimation flexibility. Minimum inherent filtration 2mm Al eq; additional variable filtration (1mm Al + 0.1mm Cu or 1mm Al + 0.2mm Cu or 2mm Al) can be pre-programmed in each protocol (like pediatrics ...). Equipped with LED light beam (160 lux @ 1m @ 14"x14") and laser indicator, it can be rotated manually by +/-45° (optional).

In automatic mode, shutters are opened depending on the detector format, anatomical region (APR), auto-positioning and selected fluoroscopic field.

Manual refinement of the collimator is possible from the main console, using the joystick, the remote hand switch or the collimator.

For dose reduction, automatic collimation and filters are predetermined in each protocol and a video camera permits to position the patient without irradiation. Touch screen of main table console displays these video images.

Manual Tube Rotation

+/- 180°, electrically assisted, rotation with mechanical stops every 90°. Electromagnetic brake to select any tube angulation. Setting the table in vertical position, allows exposures to be made on a stretcher or the wall bucky at any angle.



Retractable Motorized Compression Device

The compression paddle can apply up to 200 N compression when the column is in the incidences range of -10°/+10°. The factory setting is 130 N. The compression paddle has a minimum distance of 10 cm to the tabletop.

Patient safety systems:

- No tabletop, carriage or angulation movement can occur when compression is in use and superior to 60 N
- Manual disengagement of the compression paddle is possible when the table is switched off from the main supply.



Main Control Console

The main control is made up of capacitive keys and joysticks. A capacitive touch screen permits the selection of table and generator parameters, to display system information and video images on the same page; MOVE button engages auto-positioning of the selected anatomical protocol and table parameters; buttons for Prep and x-ray.

Keys are arranged in functional order: column angulation at 0°, table tilting in park-position, longitudinal & lateral tabletop movements, reverse and reset positions. The automatic collimator light and mode keys are close to the joysticks.

Joysticks control the SID, angulation, table tilting, variable height, carriage, tabletop lateral movement and collimator shutters in continuous mode.



The **secondary console** (optional) is mobile and offers almost identical controls as the main console. It allows exposure, but cannot change generator parameters.

The consoles include an emergency switch and the ability to switch between detectors. The movements can be simultaneous according to the room limitations set by software. Internal computer controls and anti-collision safeties through auto-positioning.

The major functions of the system are available in the room using the infrared remote (standard accessory).



High Frequency Generator

The generator is made of an electronic cabinet and HV tank. Generator application software is integrated in the table console. The generator is microprocessor controlled and uses the Inverter technology with IGBT circuits (Insulated Gate Bipolar Transistor). Available with 65 kW (standard) or 80 kW (optional upgrade).

Nominal output: 65 kW according to EN 60336 standards at 100 kV during 0.1 s, constant potential high frequency generator

Maximum power line impedance: 0.135 Ohm

Inverter frequency: 25 kHz

Ripple rate: < 1 kV at 100 kV

Maximum voltage at the maximum current: 100 kV at 650 mA

Maximum current at maximum voltage: 400 mA at 150 kV

Radiography parameters:

From 40 to 150 kV, by step of 1 kV (or displacement in the range by slider), accuracy $\pm (3\% + 1 \text{ kV})$

From 10 to 650 mA, accuracy $\pm (4\% + 1 \text{ mA})$, 19 values (10, 12.5, 16, 20, 25, 32, 40, 50, 65, 80, 100, 125, 160, 200, 250, 320, 400, 500, 650)

From 1 ms to 10 s, accuracy $\pm (2\% + 0.1 \text{ ms})$, 38 values 1, 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 25, 32, 40, 50, 65, 80, 100, 125, 160, 200, 250, 320, 400, 500, 650, 800 ms and 1, 1.25, 1.6, 2, 2.5, 3.2, 4, 5, 6.5, 8, 10 s

From 0.1 mAs to 500 mAs

Fluoroscopy parameters:

From 40 to 120 kV, by step of 1 kV, accuracy $\pm (3\% + 1 \text{ kV})$

From 0.5 to 5 mA (low dose) and up to 7 mA (higher dose)

Operating modes:

9989 customizable anatomical protocols / 3 points (kV, mA, s) / 2 points (kV, mAs) / 1 point (kV, AEC)

AEC

Installed in the detector tray, the ionization chamber is an x-ray sensor designed for automatic exposure control for selected kV in One-Point Mode. It will optimize image quality with patient dose reduction. The five rectangular fields are composed of solid-state detectors.

Dimensions of active areas: 2 x (90 x 40) mm + 1 x (100 x 40) mm

Sensitivity difference between sensor fields: < 10%

X-ray Tube

Several sizes of X-ray tubes are available. Standard is A 292 with B-147 housing from IAE.

X-ray tube information: high-speed starter and one tube output :

- Pre-setting of x-ray tube features:
 - Loading ratings, cooling ratings, starting voltages, starting times, maximum current limitation
- Safety and protection disposals for x-ray tube:
 - The electronic calculation of load by software indicates limits to the tube with message and forbids x-ray emission
 - Housing temperature control and display of available Heat Units in %
 - Overheated IGBTs detection
 - Housing oil pressure control in series with x-ray tube heat safety

A 292 X-ray Tube

Nominal focal spots values:	0.6 and 1.2 mm
Anode rotation speed:	9,500 rpm
Nominal anode input powers:	40 and 100 kilowatts
Anode diameter:	102 mm
Anode material:	Rhenium - Tungsten - Molybdenum
Anode angle:	12°
X-ray coverage at 1 m:	43 x 43 cm
Inherent filtration:	0.7 mm
Radiation protection:	complies to IEC 60-601-3 standard
Anode heat storage capacity:	400 kHU (285 kJ)
Anode heat dissipation rate:	1,250 W
Housing:	B-147
House heat storage capacity:	2,450 kHU
Housing heat dissipation rate:	1,250 W
Cooling:	Air (with fan)
High Voltage cable length:	12 meters

Dose Area Product Measuring System

Consisting of a transparent ionization chamber and integrated detector electronics, the DAP is installed in the collimator. The acquisition console has a dedicated zone to display Dose Area Product and registration is done in the patient study for each exposure or whole study.

Active area:	146 mm × 146 mm
Measuring range:	up to 99,999,999 Gy ^m ²
Transparency:	> 75%

Pixium 4343 RF-FL Large Field Flat Panel Detector

The Aptitude remote controlled R/F is fitted with HIRIS RF 43 FL digital system that includes one acquisition console and one Flat Panel Detector in Amorphous silicon with Cesium Iodide scintillator. The 43 x 43 large format captures images in radiography and radioscopy allowing for a wide range of procedures.

Matrix dimensions 2,840 x 2,874 pixels, active area 42.6 x 42.6 cm with 148 µm pixel size, for 43 x 43 image, 24 Mo

Continuous Fluoroscopy

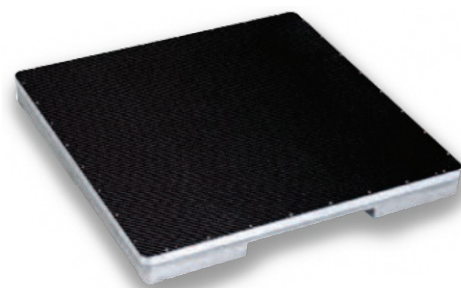
- 43 x 43 cm format, resolution 946 x 958, 30 fps
- 30 x 30 cm format, resolution 1024 x 1024, 29 fps
- 20 x 20 cm format, resolution 672 x 672, 30 fps
- 15 x 15 cm format, resolution 1024 x 1024, 20 fps

Pulsed Fluoroscopy

- 43 x 43 cm format, resolution 946 x 958, from 1 to 15 fps
- 30 x 30 cm format, resolution 1,024 x 1,024, from 1 to 15 fps
- 30 x 30 cm format, resolution 682 x 682, from 1 to 15 fps
- 20 x 20 cm format, resolution 672 x 672, from 1 to 15 fps
- 20 x 20 cm format, resolution 462 x 562, from 1 to 30 fps
- 15 x 15 cm format, resolution 1024 x 1024, from 1 to 15 fps

Digital Radiography

- 43 x 43 cm format, resolution 2,840 x 2,874, from 0.5 to 6 fps
- 43 x 43 cm format, resolution 1,440 x 1,440, from 0.5 to 16 fps



Acquisition Console

The 24" touch screen LCD monitor shows the image display in B&W. With the mouse, you can select the post-processing parameters and patient data with the keyboard or with worklist. Images can be sent to the printer, network and monitor.

DICOM 3.0 Store, Worklist, Print, MPPS, Storage commitment (optional), Q/R (optional), SR (optional).



Image Processing

Sharp spatial filters from 3 x 3 to 11 x 11 pixels (enhancement, kernel, harmonization)

Auto and manual windowing: contrast, brightness grey levels reverse

Auto and manual magnification from 1:1 to 3:1

Multi-image overview display (4, 9, 16, 1+5, 1+7)

Auto and manual electronic collimators (free collimation with automatic image centering)

Measuring software tools; distances, angles

Image presentation: H/V reverse, 90° rotation, true size image editing

Pre-registered and free annotations and tools for indications

Minimum Specifications

Computer Windows 10 OS, 64bits, RAM 32 GB, 2 SSD - 500 GB (OS) and 1 TB for temporary storage

- pulsed fluoroscopy : 512 images / GB

- high resolution radiography : 60 images / GB

- medium resolution radiography : 240 images / GB

Barco Touch screen Colour LCD monitor with a 24" diagonal, optimum resolution 1,200 x 1,920 pixels, contrast

1000:1, brightness 500 cd /m² typically and 500 cd /m² max

The system management includes image processing, temporary archiving on hard disk, image sending on network

Options

Additional portable and wireless Flat Panel Detector 14"x17" or 10"x 12"

Accessories (see accessories)

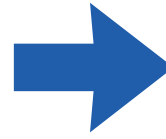
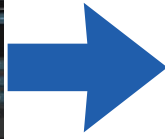
Automatic stitching (image pasting) software to install on acquisition console

DSA, tomosynthesis

Ceiling tubestand

Other options on request

Auto-Positioning



Choice of programmed protocol (where table and generator parameters were determined) on acquisition console

Transmission to table console

Press MOVE button to automatically position the table regarding entered parameters:

- horizontal, vertical or tilted tabletop
- column angulation
- SID
- lateral and longitudinal tabletop position
- collimation
- filters

When the table reaches the position, a message appears and the system is ready for the examination.

Standard Accessories



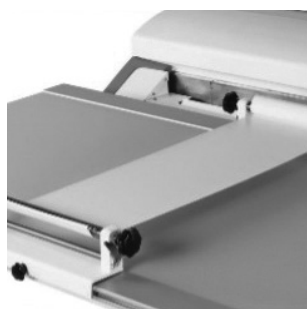
One composite footrest



One adjustable stool



Two patient handles



Two winches & one belt



Two double fluoroscopy pedals



Compression device

Optional Accessories

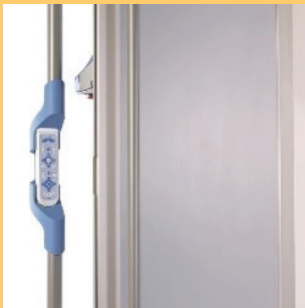
(Others on request)



Cup holder



Multi FPD lateral support



Retaining bar



Pair of shoulder rests



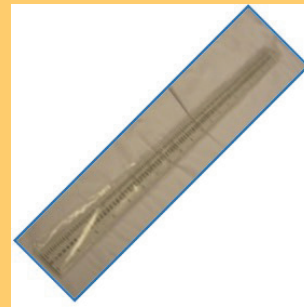
Pair of leg supports



Pair of gynecology stirrups



IV-Pole



1 m ruler for stitching



Ruler support for stitching



10 cm ruler for measuring

Equipment Environment

Dimensions (l x w x h) and weight

Table 226 x 235 x 189 cm minimum, in horizontal position, lower height, minimum SID, column at 0°, 1600 kg

Table cabinet integrated into the table

Table main console 60 x 27 x 12 cm, 15 kg

X-ray tube 49.3 x Ø 190 cm, 31 kg

Generator cabinet 59.2 x 36 x 69 cm, 95 kg

Generator control interface integrated into table console

Flat panel detector: 50 x 49 x 4.5 cm, 14kg

Acquisition console/computer 65 x 52 x 88 cm, 103 kg

Acquisition console/color LCD monitor 63 x 39 x 57 cm, 9.7 kg

Operating environmental conditions

Temperature from 10°C to 35°C (the temperature has to change progressively)

Relative humidity from 30% to 75% (not condensing)

Atmospheric pressure from 760 to 1060 HPa

Power supply

Generator: 400/480 V ac +/- 10%, three phases, 50/60 Hz

Table: 230 V ac +/- 10%, single phase, 50/60 Hz

Digital system by FPD: 120/230 V ac +/- 10%, single phase, 50/60 Hz

For 60 Hz frequency, the power is provided via an optional three-phase transformer 480 V+N/400 V+N, 60 Hz, 12 kVA are provided

Protection

Generator: 63 A circuit breaker, D power line, with 30 mA differential sensitivity

Table: 20 A circuit breaker, D power line, with 30 mA SI differential sensitivity

Digital system by FPD: 2 x 16 A circuit breaker, D power line, with 30 mA differential sensitivity

Support

Anytime, Anywhere



GLOBAL SUPPORT

Summit Industries implements a certified quality management system since 1994 and is one of the first medical device manufacturers in the United States to do so. Summit Industries provides technical support for its products throughout their useful life, wherever they may be used.



REMOTE SUPPORT

Connectivity is native to the APTITUDE PLUS, making remote support as easy as can be, whether you need to perform efficiency tests, software upgrades or maintenance.



LOCAL SUPPORT

Summit Industries runs its own training academy for authorized dealer personnel with a mission to provide the best technical and application support to AMRAD Medical products.

Service engineers from all over the globe are trained by Summit Industries, receiving a certificate of qualification to enable them to effectively and efficiently service the APTITUDE PLUS.



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A NETWORK OF SERVICE + SUPPORT

Enjoy all the advantages of our successful service network. From the first shot to the last managed image, we work to continually improve your imaging performance and patient experience.

Summit Industries' successful service network surrounds you with a dynamic team of exceptional experts. Your organization and your patients will benefit from the experience and best practices that only Summit Industries and its authorized dealer network can offer.



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