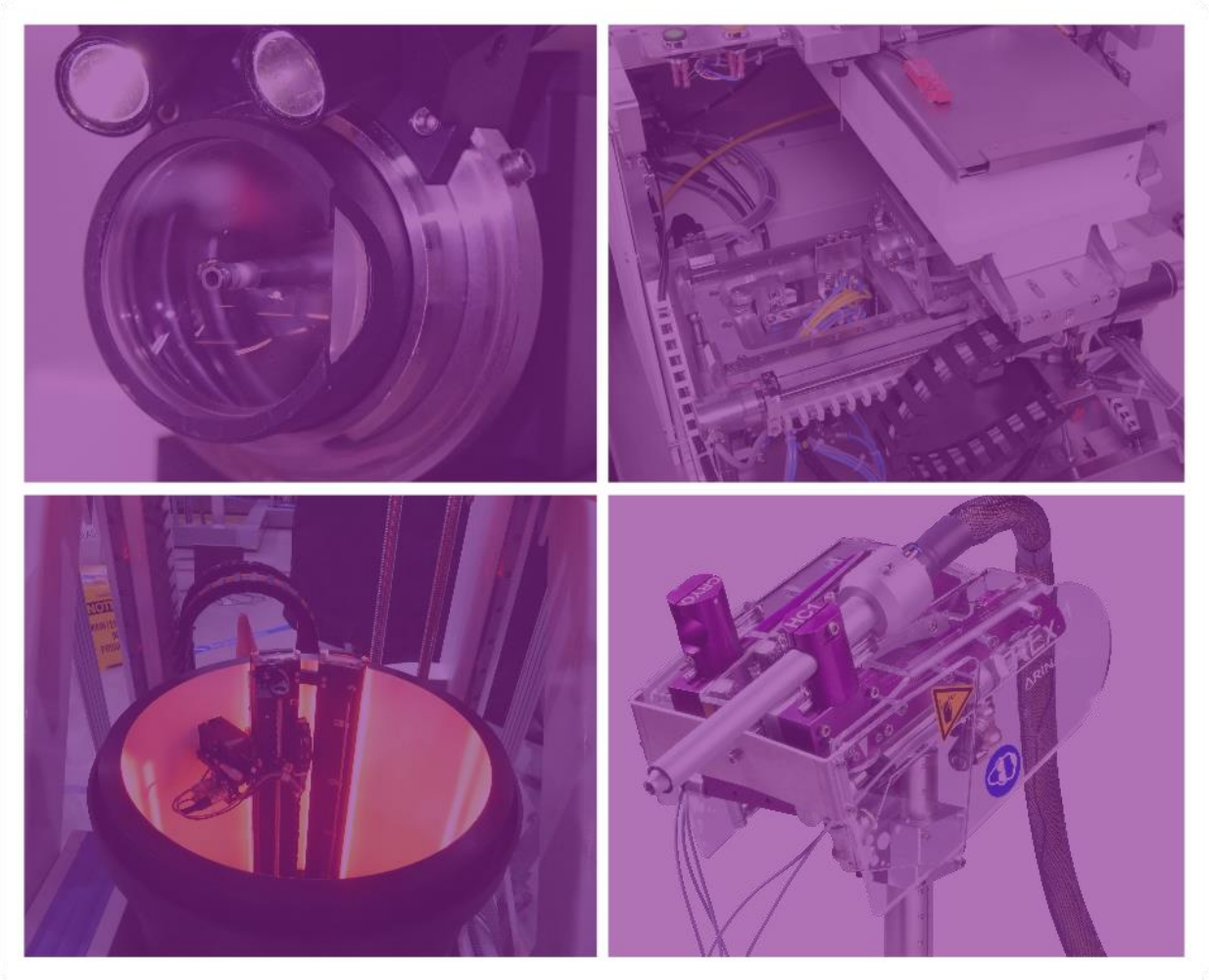
MD3-UP

Specification Overview



Release 02

05 September 2017

ARINAX

Advanced Research Instrumentation for Neutrons & X-rays

1 Specifications

Orientation	
Ω axis	Vertical
Ω Scan axis	
Sphere of confusion (with SmartMagnet Nozzle)	100 nm radius, @ 100 deg/s
Sphere of confusion (with MiniKappa Nozzle)	100 nm radius, @ 100 deg/s
Max. Rotation speed	720 deg/s
Design resolution	0.1 mdeg (full step)
Static accuracy	Below ± 0.3 mdeg
Dynamic accuracy	Below ± 0.7 mdeg @10 deg/s
Sample alignment (AY,AZ): Raster / Grid scans axes	
Design resolution	5 nm
Range	AY: 108 mm AZ: 9 mm
Static accuracy (on load)	Below ± 100 nm
Dynamic accuracy (on load)	Below ± 1µm @ 15 mm/s on AY Below ± 1µm @ 1 mm/s on AZ
Grid U-turn delay	< 300 ms @ 15 mm/s on AY
Centering table (CX,CY): Centering, Helical Scan axes	
Design resolution	5 nm
Range	CX, CY: 5 mm
Static accuracy (on load)	Below ± 100 nm
Dynamic accuracy (on load)	Below ± 1µm @ 0.8 mm/s on CX,CY
Beam aperture	
Diameter range	5 selectable diameters, Min: 5 µm
Resolution	16 nm
Repeatability	Below ± 1µm
Software	
User interface	JAVA Control application
Beamline software integration	Customizable (e.g. MXCube, Blu-Ice)
Multi-device servers	TINE, TANGO, EPICS
Sample changer robot	Robot hardware & software integration
Control features	Parallax-free sample visualization semi-automatic sample centering 4D Data collection strategies Advanced detector synchronization modes Selectable beam shaping tools
On Axis Video microscope	
Design resolution	0.16 µm/pixel
Resolving power	600 lpmm resolved
Video Server bandwidth	>= 20 FPS (depending on network)

Beamstop	
Movable beam-stop	
Beamstop 400-80	Distance to the sample: 28 to 80 mm
Beamstop 400-60	Distance to the sample: 8 to 60mm
Power Supply	
Voltage	110 VAC to 240 VAC
Frequency	50 to 60 Hz
Electric power	1000 W
Dimensions (W,H,D)	
Depth x Width x Height	136,4 x 563 x 572,7 mm^3 (Support Feet can be added)
Weight	
Diffractometer only	90 kg

2 Glossary

SOC: sphere that contains all the measured positions of the centered point during the spindle axis rotation.

Design Resolution: smallest increment that can be commanded to move and/or detect.

Accuracy: range of the deviation errors during a move, with coverage of 95.4% (±2σ)

Static Accuracy: measure of in-position stability, i.e. Accuracy of the control system at null speed.

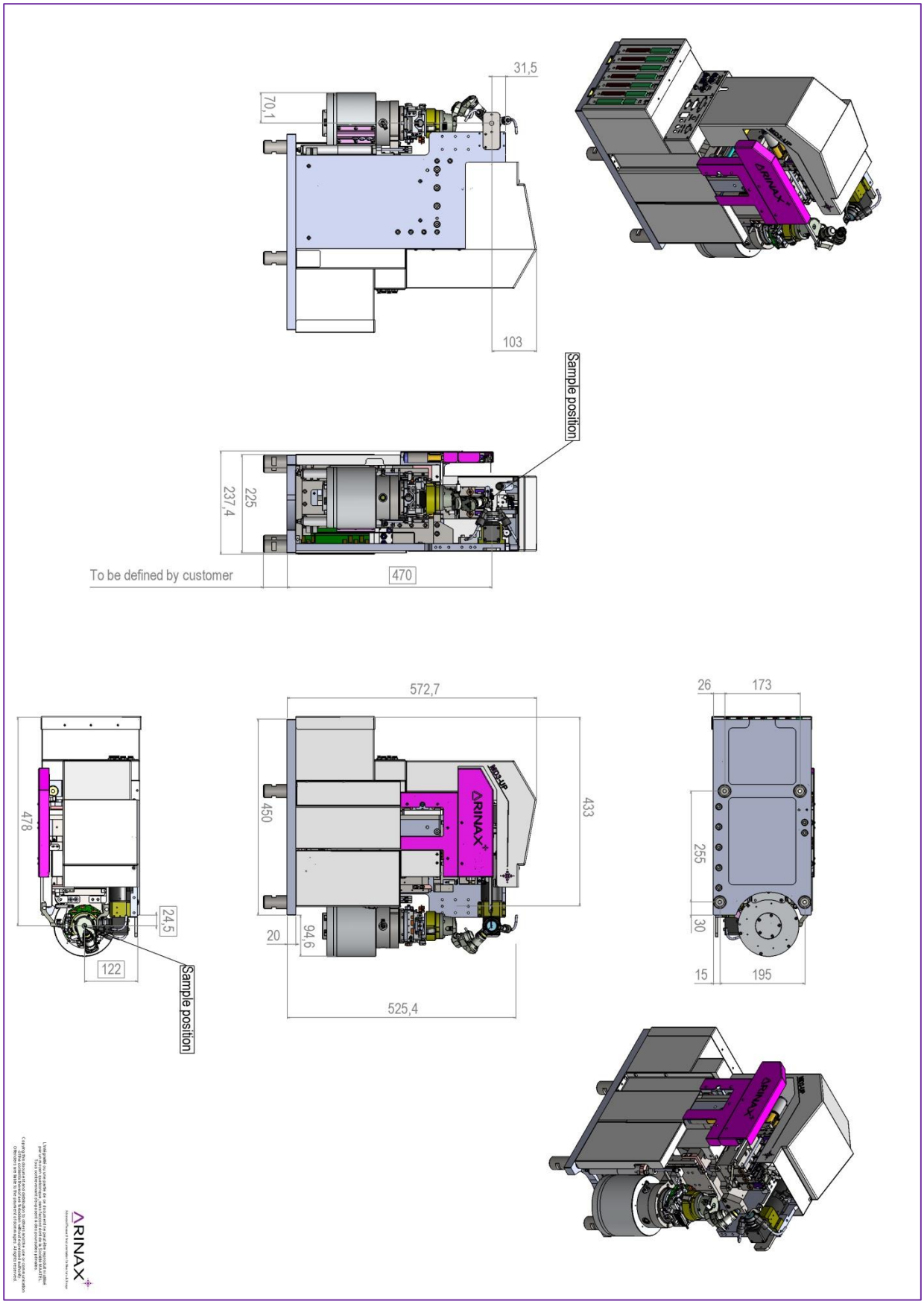
Dynamic Accuracy: Accuracy at a commanded speed.

Repeatability: worst spread in positioning error at any chosen target, calculated upon repeated moves, with a coverage of 95.4% (±2σ)

Grid U-turn: the fastest Grid Scan (with potentially helical scan at the same time) method uses uninterrupted move of the sample to cover the full grid. The U-turn is a synchronized move of Alignment and Centering tables in order to change the move direction of the target without stopping the detector by mean of hardware synchronization.

Grid U-turn delay: time to reach a new line in the grid, .i.e the duration of the U-turn suspending the detector acquisition. At the beginning and at the end of the U-turn the AY motor speed is stable and the other axes are not moving.

3 MD3-UP – dimensions - drawing



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