



### Electrical Characteristics

Voltage	230 Vac $\pm 10\%$ monophase standard 105 / 115 / 125 / 220 / 240 Vac $\pm 10\%$ monophase on request
Frequency	50 Hz standard 60 Hz on request
Absorbed current on Stationary Anode Unit	4,5A @ 230Vac and 7,5A @ 115Vac in fluoro mode 20A @ 230Vac and 28A @ 115Vac in radiography mode
Stand-by current	1,0A @ 230Vac 1,7A @ 115Vac
Line compensation	Automatic
Line resistance	< 0.4 $\Omega$ (supply at 230V) < 0.2 $\Omega$ (supply at 115V)
Standard mains plug	16 A (for supply at 230Vac)
Isolating class	Class I with applied parts type B
Use conditions	Continuous functioning with intermittent loading

### Radiological datas

Generator power in DC current	Max 3.5kW (100Kv, 35mA, 100ms) mAs <4 at nominal voltage 230Vac
High frequency inverter	40 kHz
Max. Ripple	<2% @ 100 kV
Max high voltage (radiography and fluoroscopy)	110 kVp
Max current in continuous fluoroscopy	8 mA
Max current in fluoroscopy "Boost"	10 mA
Max current in radiography	35 mA @ 230V, 18mA @ 115V
Max mAs in radiology	125 mAs @ 230V, 90mAs @ 115V
Exposure Time in radiography	0.03 ÷ 5 sec

### Monobloc

Anode	Stationary
Anode inclination	12°
Focal Spot size according to IEC 336	0.6 mm small focus 1.5 mm large focus
Nominal anodic power	800 W small focus 4000 W large focus
Anode Heat storage capacity	40 kJ (54 kHU)
Max anode cooling speed	400W, 19kJ/min, 536HU/sec, 25.4 kHU/min
Monobloc thermal capacity	500 kJ (670 kHU)
Max continuous thermal dissipation of the monobloc	75W, 102HU/sec, 6120HU/min
Max. Fluoroscopy time	HU safety after 21' of fluoroscopy @ 110kV, 5mA (550W).
Max fluoroscopy time @75W	75kV - 1mA - Continuous fluoro (no limits)
Max fluoroscopy time @280W	80kV - 3,5 mA - 44 Minutes
Max fluoroscopy time @525W	70kV - 7,5 mA - 24 Minutes
Max fluoroscopy time @400W	100kV - 4 mA - 29 Minutes
Max fluoroscopy time @550W	110kV - 5 mA - 21 Minutes
Total filtration	> 2.8 mm Al



### Collimator

Type	Standard: Iris Optional: Iris + parallel shutters
Iris	Control by console with adjustable continuous opening until the max. allowed in function of the I.I. field selected. Iris automatic limitation on the I.I. field selected
Orientable shutters	Control by console for the opening/closing and clockwise/anti-clockwise rotation

### Image Intensifier Tube –9/6/4"

Field Number	3
Input nominal diameter	230mm
Resolution (central)	48/56/64 lp/cm
Conversion factor	240 (cd·m <sup>-2</sup> /mR·s <sup>-1</sup> )
Contrast Ratio	23:1 / 25:1 / 30:1
DQE @ 59.5 kV	65%
MTF	60%/65%/70% @ 10lp/cm 25%/30%/40% @ 20lp/cm
Integral Distortion	4%/2%/1%
"All metal" Technology	Yes
Input screen "Hi-Res"	Yes
Antiscatter fixed grid	Ratio 8:1, 36 shutters/cm, focus 80 cm

### CCD Camera 0,5K x 0,5K

Matrix	752x582 pixels
Technology	CCD sensor (470.000 pixels)
Video Standard	CCIR 625/50Hz interlaced with 752x582 pixels
Video Bandwidth	20 MHz ±3dB
Aspect ratio	4:3 Interlaced scanning
Signal – Noise Ratio	65 dB
Automatic video level compensation	YES
Dynamic contrast shading	YES

### CCD Camera 1K x 1K

Technology	CCD interline progressive scanning
Active pixels	1024 x 1024
Acquisition	Matrix 1024x1024, 10 bits
Contrast resolution	1024 grey levels
Sensitivity	0,2 lux (PB20 light)
Signal – Noise Ratio	60 dB



### Digital Image System with 0.5Kx0.5K CCD Camera

	<b>LIH</b>	<b>1+330</b>	<b>1+2700</b>	<b>DIP 3000A</b>
Image format	768x576x12bits 50Hz 256 grey level	768x576x12bits 50Hz 256 grey level	768x576x12bits 50Hz 256 grey level	576x576x8 bits
Image format working memory	N.A.	N.A.	N.A.	576x576x12 bits
Number of images	1 RAM	1+330 Non volatile	1+2700 Non volatile	1+192 buffer RAM
Number of images on Hard Disk	No	No	No	About 40.000
Programmable frame rate acquisition	NO	NO	NO	YES 1,3,6 fps
Number of monitors	1 (17")	2 (19")	2 (19")	2 (19")
Flicker Free	YES	YES	YES	YES
A/D Converter	8 bits	10 bits	10 bits	10 bits
D/A Converter	8 bits	8 bits	8 bits	8 bits
Recursive filter , Noise Reduction, OFF, 2,4,8,16	YES 0,2,4,8,16	YES 0,2,4,8,16	YES 0,2,4,8,16	YES 2,4,8,16
Smart filter, motion detector	No	No	No	YES (algorithms)
Editing data patient	No	YES	YES	YES
Digital Rotation of the image without X-ray emission	YES	YES	YES	YES
Vertical / Horizontal Image inversion	YES in combination with rotation	YES in combination with rotation	YES in combination with rotation	YES
Left/Right image inversion	NO	NO	NO	YES
Edge enhancement	YES Smooth, Normal Sharp	YES Smooth, Normal Sharp	YES Smooth, Normal Sharp	YES Smooth, Normal Sharp in real time
Grey scale inversion (negative/positive)	No	YES	YES	YES
Cine loop review	NO	NO	NO	YES
Real Time Subtraction (DSA)	NO	NO	NO	YES
Max opac.	NO	NO	NO	YES
Road-mapping, capability for catheter Placement	NO	NO	NO	YES
Shifting Pixel	NO	NO	NO	YES
Land marking	NO	NO	NO	YES
Overview	NO	NO	NO	YES, 4/16 images
Zoom	NO	NO	NO	YES by 2
Virtual Shutter	NO	NO	NO	YES
Contrast Enhancement	NO	NO	NO	YES with Logarithmic Exponential curve
Digital adjustment for contrast/brightness	NO	NO	NO	YES
Text editing	NO	NO	NO	YES
Overlay Note	NO	NO	NO	YES
Patients Directory	NO	NO	NO	YES
Infrared Remote Control	NO	NO	NO	Optional
Start-Stop DVD Recorder synchronization	NO	NO	NO	YES



### Digital Image System with 1Kx1K CCD Camera

<b>Characteristics</b>	<b>HRC 1000 type with standard DICOM ESIDIC 3</b>
Image acquisition	1024 x 1024 with frame integrations up to 16 bit
Image storage	1024 x 1024 x 10 bit up to 256 frames.
D/A Converter	8 bits
Video Input	Digital, LVDS type 10 bits
Video output	D/A converter 10 bit, BNC, 1249 50 Hz lines Interlaced, 625 lines 50 Hz only for printer
<b>Real time processing</b>	
Number of images	L.I.H Last Image Hold + 256 image, output for 2 monitors
Frame acquisition rate (fps)	Single store image, until to 256 ram image in ram or 50.000 frame on DICOM hard disk
Gamma correction	Yes, digital
Recursive filter / Smart filter	Yes, 0, 2, 4, 8, with smart filter, motion detector
Real time image rotation RDR/S	Yes
Digital rotation LIH	Yes
Edge enhancement	Yes, Sharp matrix 3 x 3
Dynamic range	1:2 1:3 1:4 1:5
<b>Post Processing</b>	
Grey scale inversion	Yes
Contrast and brightness	Yes
Overview, Windowing	Yes, 4,9,16 frame , 1+5 frame or 1+7 frame
Image Rotation steps	Yes, 90° - 180° - 270° - 360°
Horizontal, Vertical image inversion	Yes
Electronic zoom	Yes, from 1,2 to 3 factor
Angles measure	Yes
Length measure	Yes
Length calibration on reference object	Yes
Text overwriting	Yes, on image
Electronic Shutter for best quality image on printer	Yes
Print in BMAP format	Yes, on windows printers
<b>Archives and data patients</b>	
Image storage	50.000 on DICOM hard disk
Data patient	Yes
<b>SCU</b> , Service Class <b>Verify</b> Connection Dicom toward server or printer connection	Standard supported by ESIDIC 3
<b>SCU</b> , Service Class <b>Storage</b> toward Dicom server	Standard supported by ESIDIC 3
<b>SCU</b> , Service Class <b>Print</b> with film com- poser toward Dicom printer	Standard supported by ESIDIC 3
<b>SCU</b> , Service Class <b>Work List</b> from Dicom server for downloading patient list	Standard supported by ESIDIC 3
Media Interchange <b>CD Rom</b>	Standard supported by ESIDIC 3



### Monitors Monochrome LCD Display

Version	18"	19"
Panel size / type	18.1" TFT active matrix LCD, anti-glare and hard coated, medical.	19" TFT B/N LCD anti-glare, medical
<b>Hardware requirements</b>		
Brightness and contrast controls	OSD menu	Front pushbuttons
<b>Electrical characteristics</b>		
Standard power supply	100 to 240Vac 60/50Hz	110 to 240 Vac 60/50Hz
Current absorbed	1,4A	---
Power absorbed	60W	60W
<b>Display characteristics</b>		
Visibility angle	170°	170°
Contrast	400:1	700:1
Resolution	1280 x 1024	1280 x 1024
Active Display area	359 mm (H) x 287 mm (V)	376 mm (H) x 301 mm (V)
Pixel pitch	0,2805 x 0,2805 mm	0,294 x 0,294 mm
Gray scale	256 x 3 =768 levels	256 x 3 =768 levels
Max luminance	750 Cd/m <sup>2</sup>	800 Cd/m <sup>2</sup>
Aspect ratio	4:3	4:3
Response time	40 ms	18ms
Video input	2 x BNC / 1 x 15-D sub,	2 x BNC / 1 x D-Sub (VGA) / 1 x D-Sub (DVI-D)
Standard video	625 lines / 100Hz 4:3 interlaced 1249 lines / 50Hz 4:3 interlaced 1249 lines/60Hz 1:1 interlaced	VGA / DVI
<b>Environment and Reliability</b>		
Operative	Temperature: from 5° to +35°C Humidity: 20% to 80% (non condensing) Altitude: until 10.000 ft (3.000 mt)	Temperature: from 0° to +40°C Humidity: 20% to 80% (non condensing)
Temperature and storage	Temperature: from -20° to +5°C Humidity: 10% to 90% (non condensing) Altitude: until 30.000 ft (9.000 mt)	Temperature: from -30° to +70°C Humidity: 10% to 80% (non condensing)
<b>Standards</b>		
	UL60601-1, CSA C22.2 N60111, FCC Part 15 Class B, DOC-B, MDD/CE (EN60601-1, EN55011, EN60601-1-2)	CEI60601-1, CEI60601-1-1, CEI 60601-1-2



### Monitors Color LCD Display

Version	17"	19"	19"
Panel size / type	17" TFT active matrix LCD, anti veiling glare, medical.	19" TFT active matrix LCD, anti-glare and hard coated	19" TFT LCD anti-glare, medical
<b>Hardware requirements</b>			
Brightness and contrast controls	Dedicated knobs	OSD menu	Front pushbuttons
<b>Electrical characteristics</b>			
Standard power supply	18Vdc ±10%	100 to 240Vac 60/50Hz	110 to 240Vac 60/50Hz
Current absorbed	3 A	1,2A	---
Power absorbed	55 W	60W	42W
Display characterics			
Visibility angle	180°	178°	178°
Contrast	1000:1	500:1	800:1
Resolution	1280 x 1024	1280 x 1024	1280 x 1024
Pixel pitch	0,264 x 0,264 mm	0,284 x 0,294 mm	0,294 x 0,294 mm
Active Display area	---	376 mm (H) x 301 mm (V)	376 mm (H) x 301 mm (V)
Gray scale	768 levels	16,7M (8 bit)	256 x 3 = 768 livelli / 16,7Mil colori
Max luminance	350 Cd/m <sup>2</sup>	250 Cd/m <sup>2</sup>	250 Cd/m <sup>2</sup>
Aspect ratio	4:3	4:3	4:3
Response time	25ms	25 ms	15 ms
Video input	2 BNC connectors 75 Ohm	15-D sub, BNC connectors	2 x BNC / 1 x D-Sub (VGA) / 1 x D-Sub (DVI-D)
Standard video	CCIR 625/50Hz EIA 525/60 1049/60 625/100Hz 1023/60 525/120	625 lines / 100Hz 4:3 interlaced 1249 lines / 50Hz 4:3 interlaced 1249 lines/50Hz 1:1 interlaced	VGA / DVI
<b>Enviroment and Reliability</b>			
Operative	Temperature: from 0° to +40°C Humidity: 10% to 80% (non condensing) Altitude: until 10.000 ft (3.000 mt)	Temperature: from 5° to +35°C Humidity: 20% to 80% (non condensing) Altitude: until 10.000 ft (3.000 mt)	Temperature: from 0° to +40°C Humidity: 20% to 80% (non condensing)
Temperature and storage	Temperature: from -20° to +60°C Humidity: 5% to 85% (non condensing) Altitude: until 15.000 ft (4.500 mt)	Temperature: from -20° to +60°C Humidity: 10% to 90% (non condensing) Altitude: until 22.000 ft (7.000 mt)	Temperature: from -30° to +70°C Humidity: 10% to 80% (non condensing)
<b>Standards</b>			
	EN60601-1, EN60601-1-2, FCC Part 15 rules, EN 60950	UL60601-1, CSA C22.2 N60111, FCC Part 15 Class B, DOC-B, MDD/CE (EN60601-1, EN55011, EN60601-1-2)	CEI60601-1 12/98, CEI60601-1 04/98, CEI 60601 02/98



### Functionality

Description	Data	
User's interface	Membrane keyboard with alphanumeric touch-screen 5.7" LCD display for all the operative parameters and messages of eventual faulty conditions. Microprocessor management. User interface control could be rotate of 60°	
Selectable languages	Italian, English, French. German, Spanish (selection by set-up)	
I.I. field selection	Electronic zoom selection according to the number of I.I. fields with automatic limitation of the radiated field by the iris collimator.	
Thermal units	Check and visualization in real time of thermal units on the display according to the applied load. From 100% to 5% XR enabled. When there are 5 minutes of fluoroscopy (for the kV and mA values in use in that moment) to reach the 5% of the HUT, a particular audio-visible signal is activated. If more than 5 minutes are necessary to finish the exam, the fluoroscopy data have to be lowered. After reaching the 5% of the available HUT, the x-ray emission is stopped (*). In order to go on with the fluoroscopy, it is necessary to wait that the HUT have reached at least the 10%. (* In particular conditions it is possible to exclude this block and go on with the exam, under the direct responsibility of the qualified personnel or the doctor that uses the unit. In radiography it is not possible to control the x-ray emission any more when the 5% of the available HUT is reached.	
Fluoroscopy control	Multi-functioning foot switch: <ul style="list-style-type: none"> <li>➤ Pedal for continuous, pulsed and single shot (boost) fluoroscopy (functions selection by 3 different foot switches).</li> <li>➤ Storage image on memory by foot switch without interrupting fluoroscopy</li> </ul>	
On Stand	General magneto-thermic switch Key safety switch Emergency pushbutton Printer for Dose Area meter (optional)	
Monitor position	Directly on the stand with 1 monitor LCD orientable 17" NL series or: Monitor trolley with five wheels, two of them with stationary brake Lamp for x-ray emission warning Cable winding support	
	<b>Digital system with CCD 0.5Kx0,5 K</b>	<b>Digital system with CCD 1K x 1K</b>
	Two monitors LCD 19" Alphanumeric keyboard Thermal Printer Sony or equivalent Medical Image Capture Device: MediCap USB150	Two monitors LCD 18" Alphanumeric keyboard Memory HRC1000 Dicom Trasmission Unit ESIDIC3
Cables connection between monitor trolley and stand	Easy cleaning of cable interface	
Safeties	Filament current Monobloc temperature Overload kV min/max. or fault H.V. Stored data check	



### Operational Modes

Mode	Characteristic	Performances			
Continuous fluoroscopy	Dose control (kV - mA)	Automatic or manual			
	Focus	0.6 mm (CEI Tube)			
	kV variation range	40 - 110 kV			
	mA fluoro variation range	0.5 - 8 mA			
	kV - mA correlation	Standard: 40kV/0.5mA, 80kV/7.6mA, 110kV/8mA			
	Safety timer	Audible alarm resettable after 5' X-Ray X-Ray stop after 10' of continuous radiations according to IEC 60601-2-7 §29.1.104			
	Last image hold (LIH)				
Pulsed fluoroscopy	Range of exposure rate variation (Selectable by console)	From 2 image/sec to 1 image every 5 sec (2image/1s; 1image/1s; 1image/2s; 1image/3s; 1image/5s)			
	XR flash time	Minimum time for better image			
	Other characteristics as per the continuous fluoroscopy				
One-shot Digital Radiography	mA variation range	1 - 10 mA			
	XR flash time	< 1 sec			
	Acquisition obtained by integrating 16 following readings				
	Automatic storage of the image on RAM or "nonvolatile memory", according to the memory type				
Other characteristics as for the continuous fluoroscopy					
mA 1/2 fluoroscopy	mA variation range	0.25 - 4 mA			
	kV - mA Correlation	40kV/0.25mA, 80kV/3.8 mA, 110kV/4mA			
	Other characteristics as per the continuous fluoroscopy				
Anatomic APR selection, in fluoroscopy	APR 1 mA Low	Anatomic fine parts or paediatric use from 0,7 mA to 6.6 mA 40kV / 0.7mA, 80kV / 6.4 mA, 110kV / 6.6mA			
	APR 2 mA lung	Lungs from 0,5 mA to 7 mA 40kV / 0.5mA, 80kV / 7mA, 110kV / 6mA			
	The curves cannot be modified by the operator				
Radiography	Working technique	2 points with kV and mAs setting			
	Focus	1.5 mm (TOSHIBA and CEI Tube)			
	kV variation range	40 - 110 kV			
	mA variation range	@ 230Vac	25 mA fixed from 40kV to 100kV; 22 mA at 110kV	@ 115Vac	18 mA fixed from 40kV to 100kV; 16 mA at 110kV
		mAs variation range	@ 230Vac 1 - 125 mAs from 40 to 100kV 1 - 100 mAs from 101 to 110kV in 42 steps, R'20 curve	@ 115Vac 1 - 90 mAs from 40 to 100kV 1 - 80 mAs from 101 to 110kV	
	Times range	0.04 - 5 sec max			
	Use coefficient (duty cycle)	Calculated as per the anode dissipation			
APR anatomic selection in radiography	Description	Norm	Paediatric	Adult	
	APR 1 Head	77kV 56mAs	74kV 45mAs	80kV 71mAs	
	APR 2 Lungs	110kV 11mAs	107kV 9mAs	110kV 14mAs	
	APR 3 Pelvis	85kV 22mAs	82kV 28mAs	88kV 18mAs	
	Possibility to change and store with every APR: kV and mAs				





### Environmental conditions

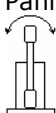
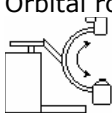
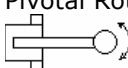
Environmental condition in Normal Use	Temperature: from +10° to +40° Celsius Humidity: from 30% to 75% non condensing Pressure: from 700 to 1060 hPa
Environmental condition in Transport and Warehouse	Temperature from -25° to +70° Celsius Humidity: from 10% to 90% not condensing Pressure: from 500 to 1060 hPa

### Weight and Dimension

Description	Stand	Base Trolley, Low configuration	Base trolley, High configuration	High configuration Trolley
Weight	About 340 kg	About 67 kg	About 97 kg	About 150kg
(1) Width	859 mm	830 mm	870 mm	872 mm
(2) Depth in transport position	2000 mm	855 mm	855 mm	577 mm
(3) Height in transport position	1800 mm with 1k x 1k CCD 1780 mm with 0,5 x 0,5K CCD	1605 mm	1605 mm	1603 mm

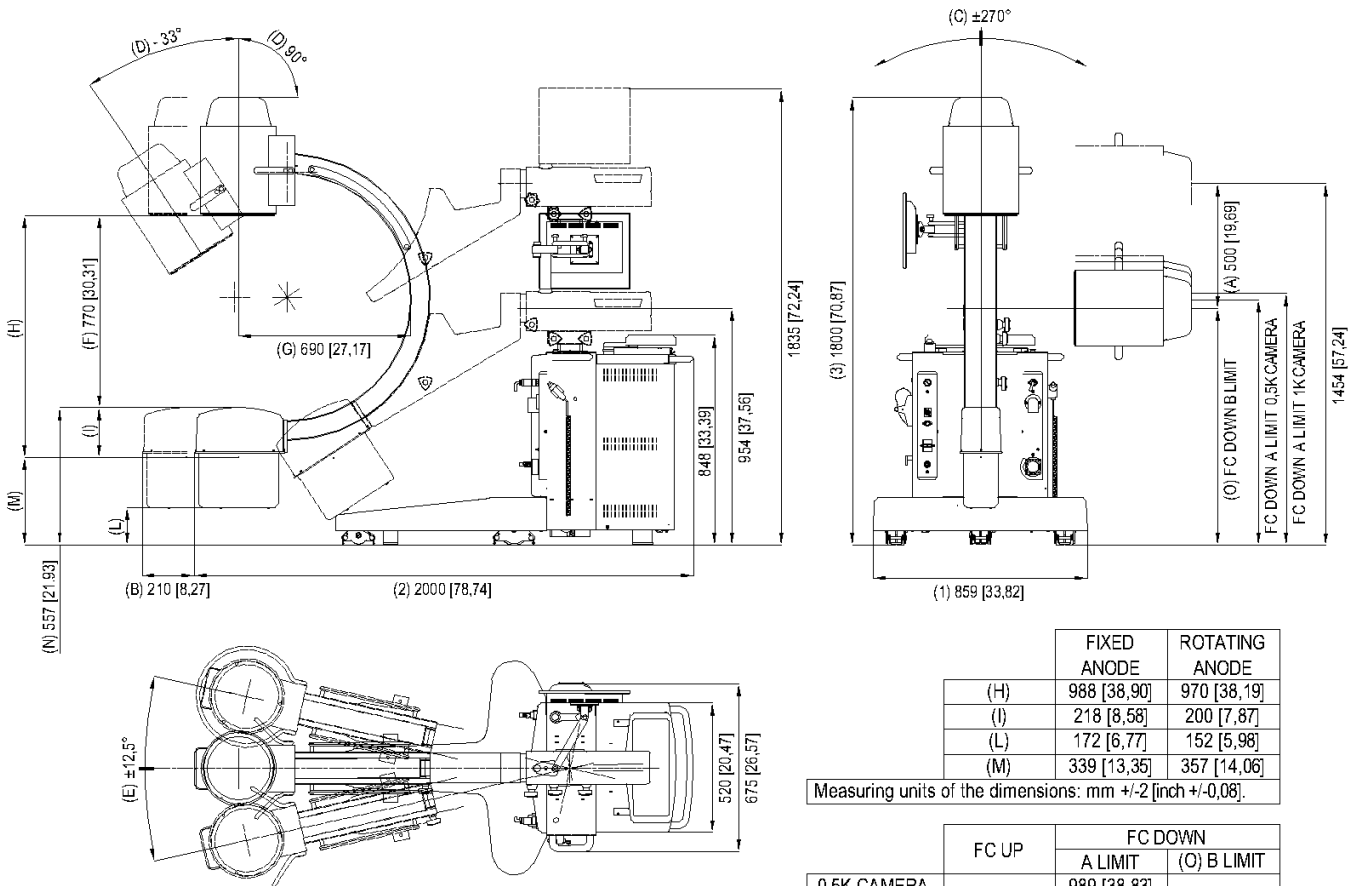
Weights and dimensions can vary with different accessories

### Mechanical characteristics

Vertical motion	500 mm motorized in 60 sec
Horizontal motion	210 mm
Panning motion 	± 270°
Orbital rotation 	123° (+90° ÷ -33°)
Pivotal Rotation 	± 12.5°
Free Space	770 mm
Depth	690 mm
S.I.D.	988 mm
Focus Skin distance	218 mm
Distance between ground and lower Monobloc	172 mm
Distance between ground and X-ray focus	339mm
Distance between ground and focus skin distance	557mm
Movement	Manual. Steering rear wheels with manual control by the operator, swiveling front wheel. Stationary brake by hand
Stand Wheels diameter	Rear: Double wheels 125 x 40 mm Front: Double wheels 80 x 30 mm
Trolley Wheels diameter	Base Trolley 5 x 80 x 35 mm with brake High configuration Trolley 4 x 125 x 30 mm with brake
Protection against cables squashing	Semi-rigid rubber core-hitch on all the wheels of the stand.



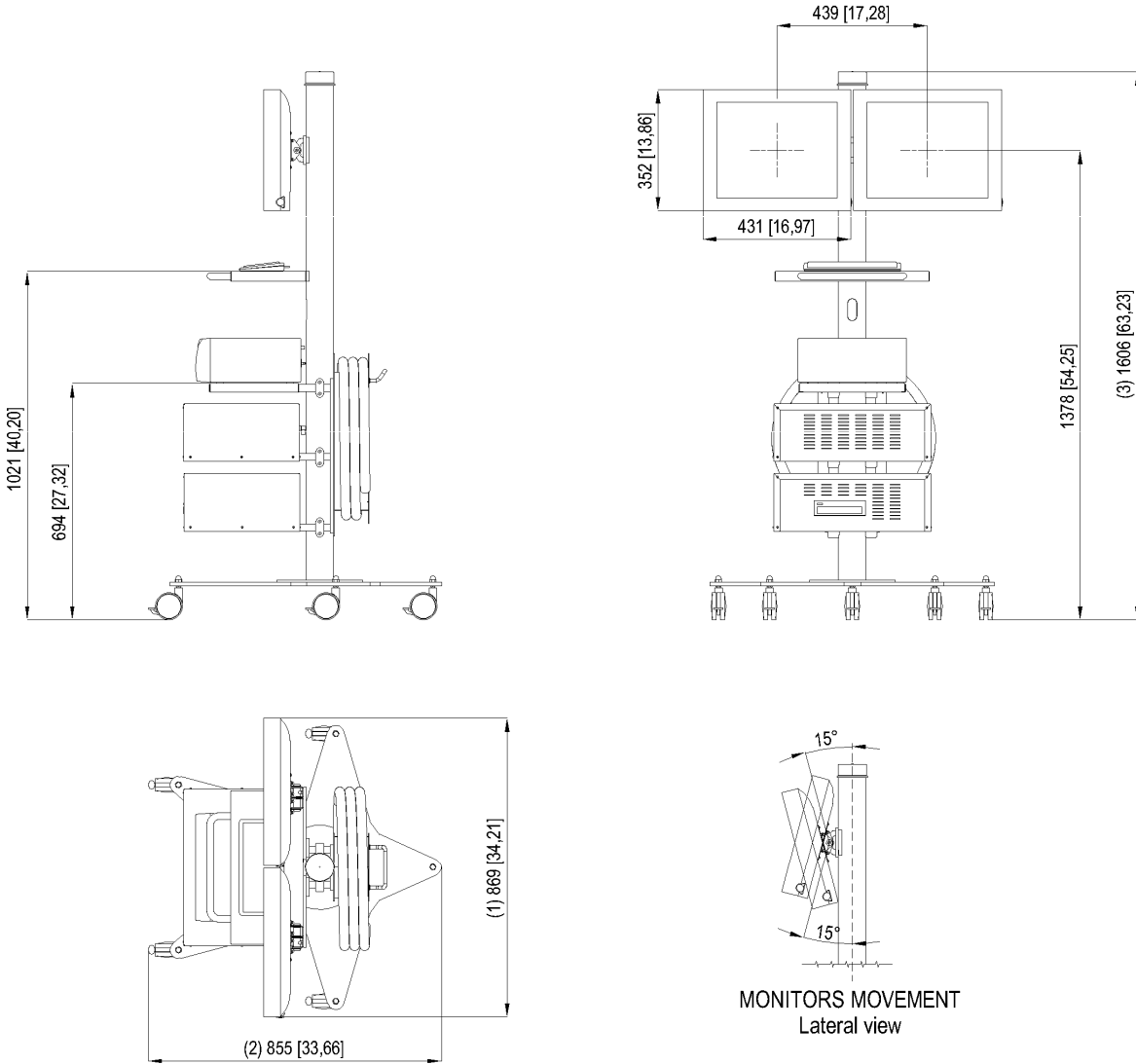
### Stand



Dimension in mm



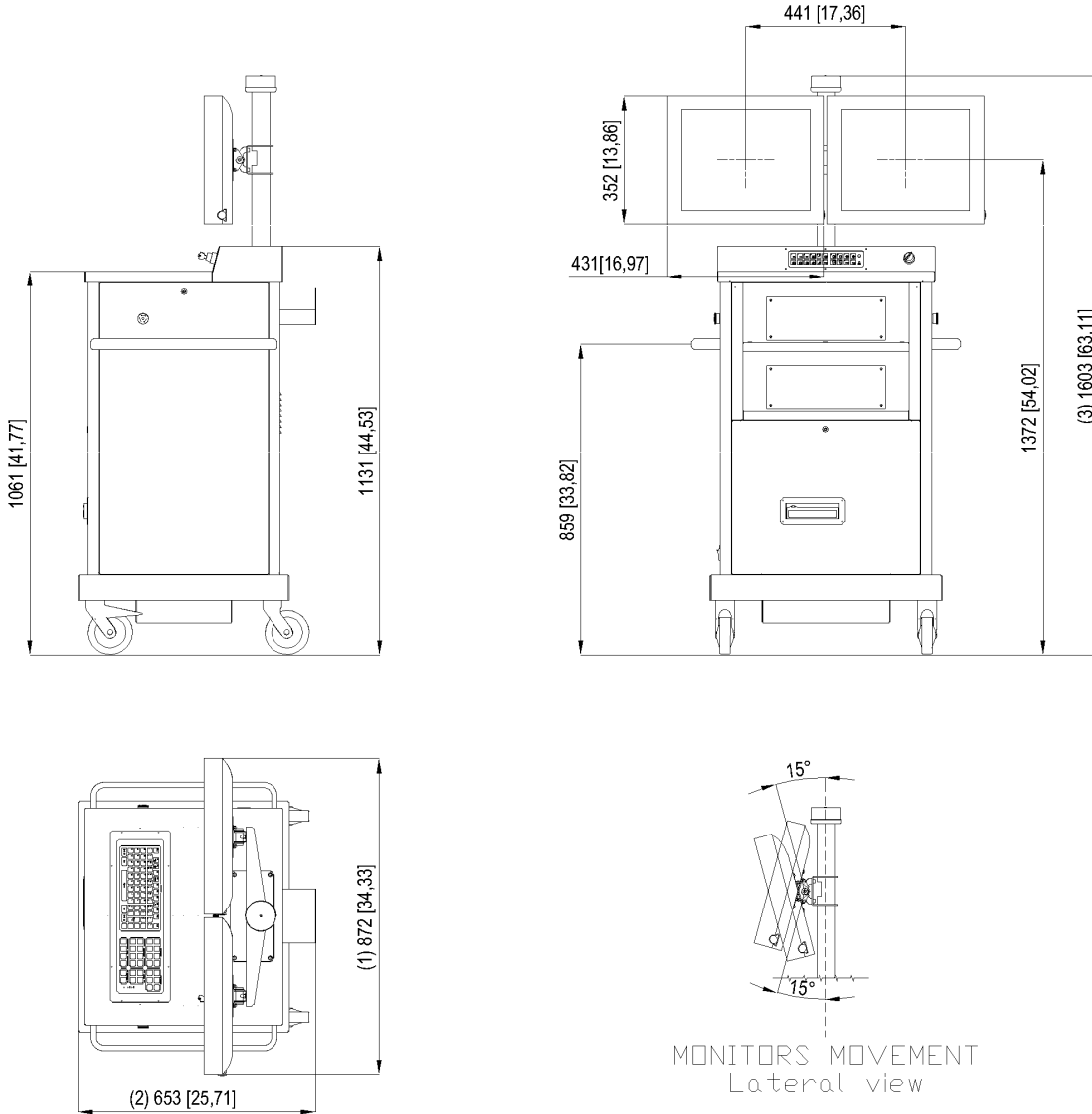
### Base Trolley



Dimension in mm



### High Configuration Trolley



**Note :** Technical Specs can be subject to changes, in order to grant the highest quality levels, and so they can vary without notice obligation



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