Signatone S - 1160 | 150mm - 200mm Manual Probe System designed for reliable and accurate analytical testing of DC, CV-IV, and High-Power applications.

❖ FEATURES / BENEFITS

Multi – Use

- Designed for a wide variety of DC/HP test.
- Robust design and multiple setup and configuration options allow for a maximum of measurement dynamics

Ergonomics and Optional Configurations

- Ease of use , single-handed X-Y Stage knobs for quick movement plus fine knob control
- Quick platen lift with adjustable platen separation
- Chuck fine rotation and lock
- Steel platen accepts DC/HP/CAP Positioners (magnetic or vacuum mount)
- Available in multiple configurations including a variety of chuck options, DC/RF/1 to10KV, Micro positioners, microscopes, camera's, PCB holders, and more.
- Optional Instrumentation racks, Vibration Isolation tables, Thermal chucks dark-box, …

❖ SPECIFICATIONS

Chuck XY Stage (Standard)	
Travel range	203mm X 203mm (8 x 8 in)
Fine-travel range	12mm x 12mm (0.5" x 0.5") (optional)*
Fine-travel resolution	<1µm (0.001mm) @ 250µm/rev
Planarity	< 10 µm
Theta travel (Standard)	360°
Theta travel (Fine)	± 6.0° (optional)*
Theta resolution	1.5×10^{-5} gradient
Motion Control	Coaxial Knob Gear Drive Stage
Chuck to Platen	
Chuck to Platen Separation (Quick Lift)	9.375mm (3/8")
Chuck to Platen Separation (Fine Adjust)	38.1mm (1.5")

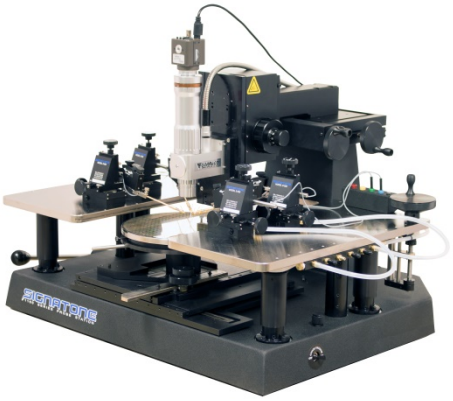
*All data are relevant with optional configuration

Manual Microscope Stage (Linear)	
Movement range	50 X 50mm (2" x 2")
Resolution	1° = 2.54µ (0.0001")
Scope "Z" range	25mm-100mm * (dependent on microscope selection)
Motion Control	Independently controlled X and Y knobs

*All data relevant with optional configuration

S-1160A###

- "A" option: *50mm X-Y Microscope mount* (for use with high-powered optics)



S-1160B###

- "B" option: *50mm X-Y Microscope mount* (for use with low-powered optics)

S-1160S###

- "S" option: *"boom" style Microscope mount* (for use with low-powered optics)

❖ Sample Microscope –SELECTION GUIDE

Motic
PSM-1000

- **High Powered Microscope**
  (allows up to 2000x magnification)
  1-4 Objectives - rotatable turret – 1X-2X zoom
  50mm manual "Z" focus adjust- Camera Port

Seiwa
S-12Z

- **Mono-Zoom Video Scope**
  (100X-600X magnification- Offered by Seiwa)
  Single Objective - Camera Port (no eye pieces)
  Fiber-optic illumination -25mm "Z" focus adjust

Motic
SMZ-171

- **Stereo -Zoom Low Power Microscope**
  (7.5X -50X magnification – Offered by Motic)
  Long working distance (113mm) - Camera Port
  Fiber-optic or LED illumination
  50mm "Z" focus adjust

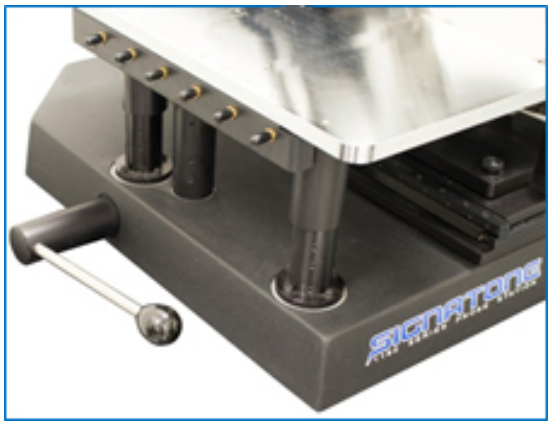
❖ PROBE PLATEN

Specifications

Design	Four Post Support
Dimension	L = 406.5mm x W = 610mm x H = 12.7mm 16" x 24" x 0.5"
Chuck to Platen Top	Min. 14.7mm (Variable Separation with Fine Platen Adjust)
Max. No of Micro Positioners	10 x DC/HP/RF (Multiple Probe / Test Configurations)
Quick Platen Lift Control (CVL)	Continuous Variable Lift (0 to 9.375mm)
Contact Repeatability	< 1 µm (0.04 mils) by Manual Control
DC/High Power Micro Positioner Mounting	Magnetic or Vacuum
CAP946 Micro Positioner Mounting	Magnetic or Bolt Down

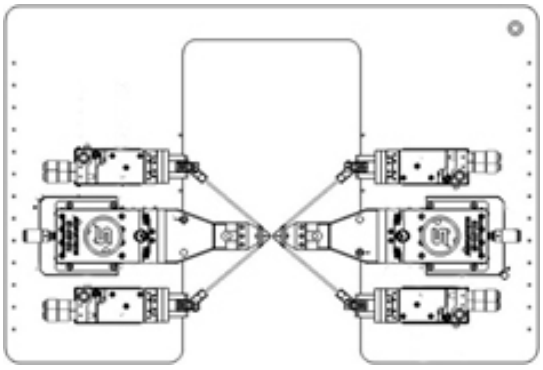
Signatone Multi Benefit Ergonomically Correct Platen Adjust and Features:

- "Quick Lift" with Continuous Variable Lift (CVL) for easy probe to pad separation and alignment
- "Fine Adjust" for Probe card and variable Chucks and DUT thickness setup

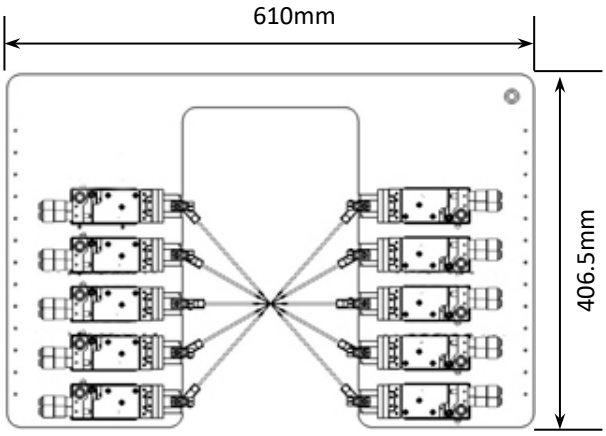


Platen "Quick Lift"

Platen "Fine Adjust"



Sample Configured with 2 RF + 4 DC Probes



Sample Configured with 10 DC Probes

❖ MICRO POSITIONER

Choose the Micro Positioner that's best for your application (more positioner styles available)

The S-1160 Series probe stations include a Steel Platen for use with Vacuum or Magnetic based micro Positioners (Bolt-down optional)

- The **SP-100** Series with 100 TPI linear X-Y-Z motion with in-line micrometer knobs for high precision probing sub-micron features at high magnification – great for use with multi probe applications
- The **S-926** Series with 100 TPI rectilinear X-Y-Z motion, good for probing down to 1 micron, at a very competitive price
- The **S-725** Series with 80 TPI is economically priced, Low profile, great for pad / large contact probing

SP-100PV

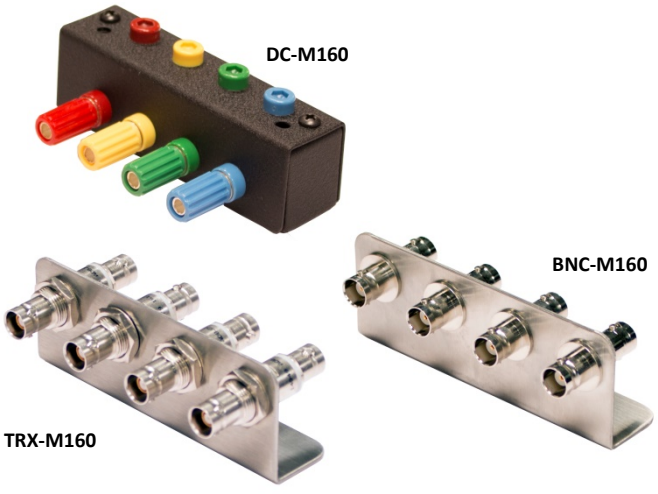
S-926-PLV

S-725-PLM

Probe Connector Panels:

The S-1160 Series probe stations include mounting for various probe connector panels. Probes (Micro-positioner Probe holder) supply one of the following 3 basic connections styles

- Single line wire with Mini-phone tip
- Micro-coax wire with Coaxial – BNC
- Triaxial wire with Triax Connector



DC-M160

BNC-M160

TRX-M160

❖ DC PROBE –SELECTION GUIDE

	Coax Probe (C)	Triax Probe (T)	Kelvin Probe (K)
Max voltage	500 V	500 V	500 V
Temperature range	-60 °C to 300 °C	-60 °C to 300 °C	-60 °C to 300 °C
Leakage current	< 50fA	< 20fA	< 20fA
Connectivity	BNC	Standard Triax	SSMC
Connectivity type	Single Coaxial	Single low noise Triaxial	Force/Sense Coax
Characteristics impedance	50 Ohms	50 Ohms	50 Ohms
Residual capacitance	< 80fF	< 80fF	< 80fF
Probe holder material	Brass	Brass	Brass
Probe tips material	Tungsten	Tungsten	Tungsten
Probe tips sizes	0.5 µm – 25 µm	0.5 µm – 25 µm	0.5 µm – 25 µm
Minimum pad size	25 µm x 25 µm	25 µm x 25 µm	25 µm x 25 µm

Coax Probe

Triax Probe

Coax Kelvin Probe

❖ High Voltage/High Current PROBE –SELECTION

	High Voltage Probes			High Current Probe
Model	HVP-CX-3	HVP-TX-3	HVP-CX-10	HCP 100
Max Voltage	3 kV	3 kV	10 kV	500 V
Max Current	1 A DC/30 A Pulsed	120 mA DC	20 mA DC	10 A DC/100 A Pulsed
Temperature Range	-60˚C to 300˚C	-60˚C to 300˚C	-60˚C to 300˚C	-60˚C to 300˚C
Leakage Current	< 200 pA @ 3 kV, < 5 pA @ 10 V	< 1 pA @ 3 kV, < 100 fA @ 10 V	< 100 pA @ 10 kV	N/A
Connector Type	SHV	HV Triax	UHV Coax	HV Banana
Replaceable Tip	Yes	Yes	Yes	Yes
Probe Material	W	W	W	BeCu or W

HVP-CX-3

HVP-TX-3

HVP-CX-10

HCP-100

❖ RF PROBE –SELECTION GUIDE

Cable Interface

	SP-40A	SP-50A	SP-67A	SP-110H	SP-145
Frequency	DC-40GHz	DC-50GHz	DC-67GHz	DC-110GHz	DC-145GHz
Connector	2.92mm	2.4mm	1.85mm	1.0mm	0.8mm
Tip Configuration	GS/SG/GSG	GS/SG/GSG	GS/SG/GSG	GS/SG/GSG	GSG
Pitch Range	50µ - 2540µ	50µ - 1250µ	50µ - 1250µ	50µ - 1250µ	50µ - 200µ
Insertion Loss	<.8db	<1.0db	<1.1db	<1.5db	<1.75db
Return Loss	> 18db	>18db	>14db	>15db	>15db

Calibration Substrates

GSG	SP-CS-5	SP-CS-9	SP-CS-10	SP-CS-18
Pad Size	50µ X 50µ	100µ X 100µ	150µ X 150µ	300µ X 300µ
	100µ X 100µ			
	150µ X 150µ			
Pitch Range	75µ - 250µ	250µ - 600µ	600µ - 1250µ	1250µ - 2540µ

GS/SG	SP-CS-8	SP-CS-14	SP-CS-11	SP-CS-17
Pad Size	50µ X 50µ	100µ X 100µ	150µ X 150µ	300µ X 300µ
	100µ X 100µ			
	150µ X 150µ			
Pitch Range	50µ - 200µ	200µ - 400µ	400µ - 1250µ	750µ - 2540µ

GSG > 110GHz	SP-CS-15
Pad Size	25µ X 25µ
Pitch Range	40µ - 150µ (SOLT)
	30µ - 150µ (LRM)

RF Cables

	RFC-40	RFC-50	RFC-67	RFC-110
Frequency Range	DC - 40GHz	DC - 50GHz	DC - 67GHz	DC - 110GHz
Length	4 Ft.	4 Ft.	3 Ft.	*
Connectors	2.92 M – 2.92 F	2.4 M – 2.4 F	1.85 M - 1.85 F	1.0 M - 1.0 F

* Contact Factory

❖ NON-THERMAL CHUCKS

Standard Wafer Chuck	
Connectivity	Coax BNC (m)
Diameter	203mm
Material	Nickel Plated Brass (gold optional)
Chuck surface	Zone selector knob with Pin Hole vacuum patterns
Vacuum hole pattern sections(diameter)	5mm, 22mm, 50mm, 91mm, 135mm, 168mm
Vacuum actuation	Selector Knob allows individual activation of vacuum zones
Supported DUT sizes	10mm, 25mm, 75mm, 100mm, 150mm, 200mm
Surface planarity	±6.5µ
Rigidity	<3µ / 10N at edge of the chuck

Electrical Specification (Coax)	
Operation voltage	Designed for operation at -200V to + 200VDC
Maximum voltage between chuck top and GND	500 V DC
Isolation	> 150 GΩ

Wafer Chuck (Triaxial)	
Connectivity	Triax (m)
Diameter	203mm
Material	Gold Plated Brass
Chuck surface	Independent Vacuum zones with Pin Hole vacuum patterns
Vacuum hole pattern sections(diameter)	0mm, 65mm, 112mm, 162mm
Vacuum actuation	Multi-Zone Adjustable Control
Supported DUT sizes	3mm, 75mm, 125mm, 200mm
Surface planarity	± 5µm
Rigidity	<3µm / 10N near at edge of the chuck

Electrical Specification (Triax)	
Chuck isolation	Measured @ 10V DC
Force to guard	> 2 TΩ
Guard to shield	> 7 TΩ
Force to shield	> 15 TΩ

❖ SIGNATONE THERMAL CHUCKS

Typical Specifications of *Signatone* Thermal Technology

	200mm Standard Hot	200mm Hot/ Triax	200mm Hot/ 3kV Triax
Temperature Range	+25°C to +300°C	+25°C to +200°C	+25°C to +200°C
Connectivity	Coax (m)	Triax (m)	SHV Triax (m)
Temperature control method	Liquid Cooled / Resistance heater	Liquid Cooled / Resistance heater	Liquid Cooled / Resistance heater
Coolant	Water	Water	Water
Smallest temperature selection step	0.1°C	0.1°C	0.1°C
Chuck temperature display resolution	0.01°C	0.01°C	0.01°C
External touchscreen display operation	Yes	Yes	Yes
Temperature stability	±0.1°C	±0.1°C	±0.1°C
Temperature accuracy	±0.5°C	±0.5°C	±0.5°C
Control method	Low noise DC/PID	Low noise DC/PID	Low noise DC/PID
Interfaces	RS232C	RS232C	RS232C
Optional Interfaces	GP-IB	GP-IB	GP-IB
Chuck surface plating	Nickel	Gold	Gold
Temperature sensor	RTD	RTD	RTD
Temperature uniformity	±0.5°C at ≤ 200°C ±1. °C at > 200°C	±0.5°C at ≤ 100°C ±2.5°C at 200°C	±0.5°C at ≤ 100°C ±3.5°C at 200°C
Surface flatness	< ±1 µm	< ±8µm	< ±15µm
Electrical isolation - Coax BNC (m) / SHV Triax	150nA	> 5TΩ	> 5TΩ
Heating Rates	25°C to 300°C < 12 min	25°C to 200°C < 9 min	25°C to 200°C < 28 min
Cooling Rates	300°C to 25°C < 9 min	200°C to 25°C < 8 min	200°C to 25°C < 8 min
Leakage @ 10 V Kelvin Triax	N/A	<25fA	<400fA
Residual Capacitance		<200fF	<1pF
Maximum voltage between chuck top and GND	500V	500V	3kV
3 Safety Circuits	Yes	Yes	Yes
Vacuum Pattern	Rings	Pin hole	Pin hole
Vacuum Zone (DUT Size)	50, 100, 150, 200mm	2, 50, 100, 150, 200mm	2, 50, 100, 150, 200mm

System Controller / Dimensions /Weight / Power Consumption

System Model	W x D x H (mm)	Weight (kg)	Weight (Lbs.)	Power cons. (VA)
S-1080	432 x 483 x 267	20.4	45	2000
TC-II	355 x 711 x 610	50.8	112	1500

❖ ERS HIGH POWER THERMAL CHUCKS

Specifications of ERS/ SIGNATONE Technology HV 200mm Chucks

Temperature Range	25°C to 200°C	25°C to 300°C
Connectivity	Kelvin Triax (M),3kV or 10 kV Coaxial	Kelvin Triax (M),3kV or 10 kV Coaxial
Temperature control method	Cooling air / Resistance heater	Cooling air / Resistance heater
Coolant	Air (user supplied)	Air (user supplied)
Smallest temperature selection step	0.1°C	0.1°C
Chuck temperature display resolution	0.01°C	0.01°C
External touchscreen display (optional)	Yes	Yes
Temperature stability	±0.08°C	±0.08°C
Temperature accuracy	±0.1°C	±0.1°C
Control method	Low noise DC/PID	Low noise DC/PID
Interfaces	RS232C	RS232C
Chuck surface plating	Gold plated with pinhole surface	Gold plated with pinhole surface
Temperature sensor	Pt100 1/3DIN 4-line wired	Pt100 1/3DIN 4-line wired
Temperature uniformity	< ±0.5°C at ≤ 200°C	< ±0.5°C at ≤ 300°C
Surface flatness and base parallelism	< ±10 µm	< ±10 µm
Heating and Cooling Rates*	25°C to 200°C <30min 200°C to 25°C <30min	25°C to 300°C <35min 300°C to 25°C <35min
Leakage @ 3000V Kelvin Triax (M)		
25°C	5pA	5pA
200 °C	10pA	10pA
300°C	--	15pA
Leakage @ 10kV Coax UHV/SHV (M)		
25°C	6nA	6nA
200 °C	6nA	6nA
300°C	--	6nA
Maximum voltage between chuck top and GND	10 kV DC	10 kV DC

*All data are relevant for chucks in ECO mode

System Controller / Chiller Dimensions and Power / Air Consumption

System type	W x D x H (mm)	Weight (kg)	Power cons. (VA)	max. Air flow (l/min)
25 to 200 °C	300 x 360 x 135	12	1300	220
25 to 300 °C	300 x 360 x 135	12	1300	220

❖ SYSTEM OPTIONS – ACCESSORIES

Probe Station Dark Box (PSDB-1160)
Probe Station light tight, electrically shielded enclosure
Excellent for use in conjunction with the following:

- Low-Leakage measurements
- High-Power measurements
- Thermal measurements
- Light-Sensitive measurements

Door and Panel interlock options are typically used for High Voltage and High Temperature safety

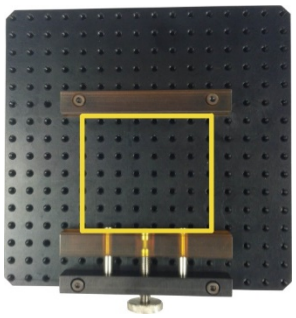
PSDB-1160

Probe Card Adapter (S-4710)
For use with 4.5" wide probe cards

4710

CM-BMVC
Board Mount Vice Chuck
The S-1160 Series probe stations supports the 200mm x 200mm adjustable Vice chuck

- For clamping various size and shaped devices, packaged parts, PCB's, single chips, MEMS, BioMEMS or virtually anything you want to hold view and probe
  (VICE Clamps are non-conductive/ ULTEM)

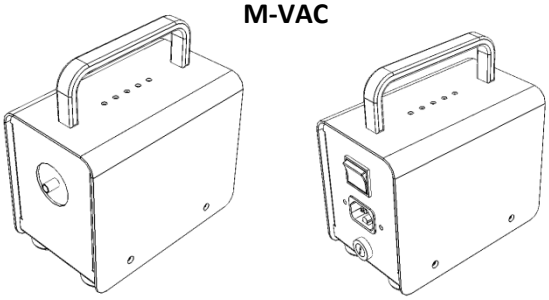


CM-BMVC

M-VAC
AC Linear Piston – (Small) Quiet Vacuum Pump
Supports vacuum hold-down of DUT and mounting of 1-10 Micro-positioners
(11 in. Hg @ 115VAC /428 mbar @ 230V AC)

- Includes Power Cord, On/Off Switch, 10' flexible vacuum tubing, 5Amp Fuse, Vibration dampening feet, Easy grip handle

M-VAC



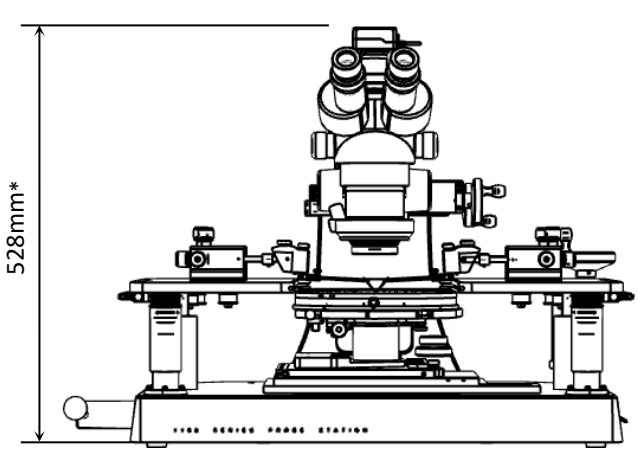
Front Back

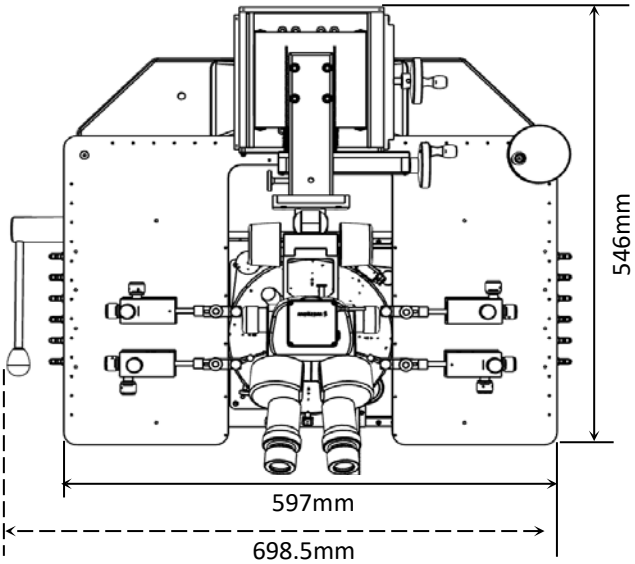
❖ SYSTEM DIMENSIONS – TABLE OPTIONAL

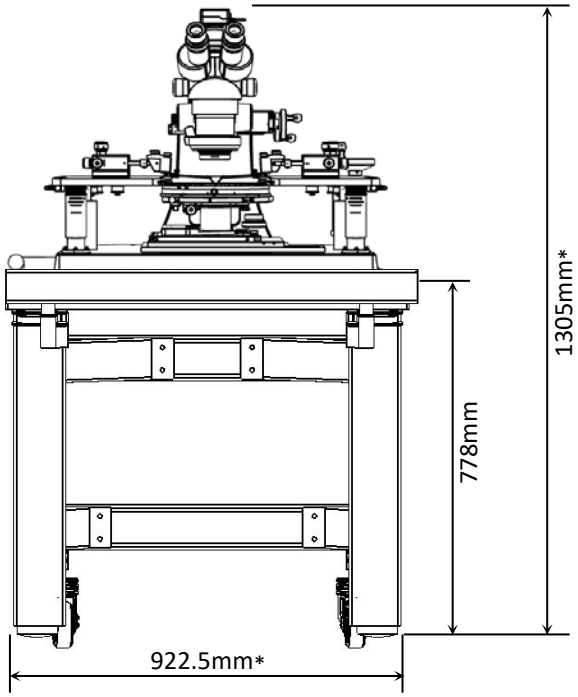
WL-1160 / including microscope*

Dimensions (L x D x H)	546 x 597 x 528mm	(21.5" x 23.5" x 20.78")
Weight	56.7kg	(125 lbs.)

** Can very dependent on monitor, probes, shelf, and microscope selection*







❖ WARRANTY

- Standard Warranty 12 months *
- For Extended Warranty and Service Contracts : Contact Signatone Corp. for more information

**** See Signatone Corporate Terms and Conditions of Sale for further details.***

- **North America:** Sales.NA@signatone.com
- **Europe:** Sales.Europe@signatone.com
- **Asia:** Sales.Asia@signatone.com