

High Performance Microwave Probes for RF probing

❖ Model 110H

- Durable RF probe
- DC to 110 GHz
- Insertion loss 1.5 dB max
- Return loss 15 dB max
- Measurement repeatability better than -80db
- Individually spring-loaded contacts
- BeCu, tips
- Any pitch from 50 to 1250 micron
- Available with a 1.0 mm female connector
- Patented coaxial design
- Available in thirteen different adapter styles



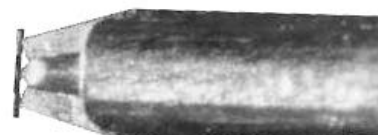
The MODEL 110H is a high performance microwave probe which incorporates our patented coaxial design techniques and has inherent low loss and low dispersion characteristics.

Like all of our Picoprobe microwave probes, the Model 110H has customer-preferred features such as: individually spring loaded Beryllium-Copper tips which provide reliable contacts even when probing non-planar structures; direct viewing of probe tips for accurate positioning; and can be designed to almost any pitch and footprint.

Smaller pitches and Ground-Signal-Ground footprints are recommended for optimum performance. Connection to the Model 110H is via a female 1.0 mm connector. Please contact our office for additional information regarding the performance specifications of the Model 110H Picoprobe.

❖ Flexible Tips for Flexible Probing

The Model 110H has patented, independently spring loaded tips which ensure a reliable contact to the probing surface. Because the tips are flexible they minimize circuit damage, increase probe life, and most importantly, provide a reliable individually spring loaded contact for each point. With a small amount of overdrive, the point scrubs the surface to make a reliable contact free of dust, dirt, and oxide contamination. A well-appreciated feature of the Model 110H is the ability to view the exact contact area which eases probe placement and allows for the precise positioning necessary for good LRM calibrations. The flexible tips even allow probing of non-planar surfaces such as ceramic substrates and laser diode structures.



Close up of Model 67A Tips with 150 Micron Pitch almost touching a 50 ohm calibration load.

❖ Coaxial Transmission Improves Performance

The Model 110H uses a precision miniature coaxial cable from the probe tips to the connector interface. The coaxial design provides lower loss and less radiation than coplanar designs. The miniature coaxial cable is fabricated from flexible Beryllium-Copper which greatly improves the probe's durability.



Typical Probe Card with Model 40 Probes.

❖ Probe Cards

The Model 110H as well as all of our RF probes can be mounted on standard 4.5 inch probe cards and/or custom-sized cards to provide a convenient method for testing wafers at high frequencies using standard automatic or manual probe stations. Picoprobe Probe Cards can incorporate our Model 50A probes for RF connections with DC needles for power and low frequency signals



Examples of the Multi-Contact Wedge which combines Multiple RF and DC Contacts.

❖ Multi-Contact Wedges

Our unique Multi-Contact Wedge designs accommodate multiple RF and DC contacts on a single, compact adapter. This compact design provides the user with a convenient method for testing wafers at high frequencies using standard automatic or manual probe stations. The user can choose from a variety of wiring options for the DC or power needles and select any combination of 40, 50, 67, and/or 110 GHz RF probes.

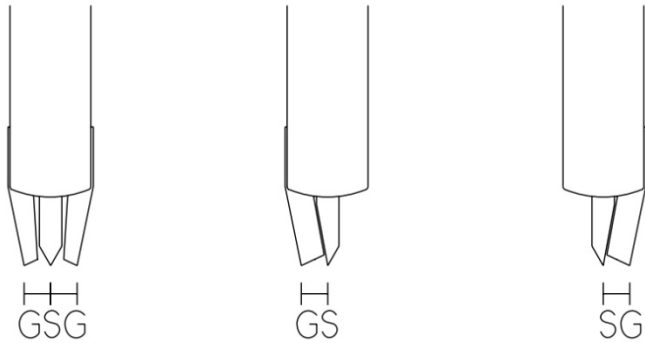
❖ **ORDERING INFORMATION**

When ordering Model 110H probes, use the following part numbering convention:

Model SP-110 _____ -- _____ -- _____
configuration -- pitch -- mounting style

Configuration: Specify GSG, GS, or SG for tip placement where S is the signal tip and G is a ground tip. Use the following diagram to determine the appropriate configuration.

TOP VIEW



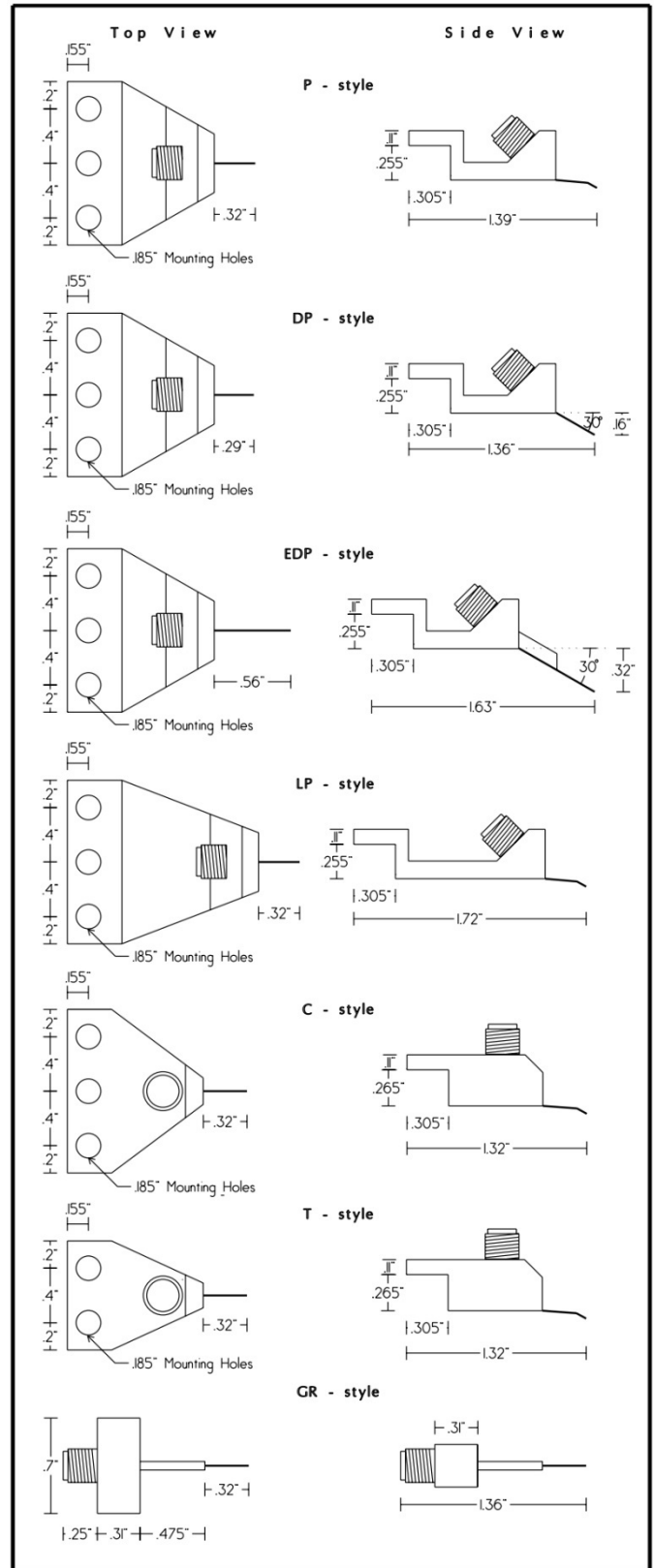
Pitch: Specify ground (G) to signal (S) tip spacing in Microns from 50 to 1250 microns. For standard GSG probes, the two spacings are equal. Contact the factory for spacings larger than 1250 microns or unusual tip placement and spacings.

Mounting Style: Choose from thirteen adapter styles. Seven of the most common adapter styles are pictured on the right. Specify T, C, GR, P, DP, EDP, LP, Q, F, S, DS, VP, or RVP. Choose the appropriate mounting type for your application. The P, DP, EDP, LP, Q, S, DS, VP, and RVP styles have the connector pointing back at a 45 degree angle to give more working area above the probe. The DP, EDP, DS, VP, and RVP styles are used where extra clearance beneath the probe is needed. When using DP, EDP, and DS style probes, probe positioning is more difficult due to the increased probing angle since the probe points slide further forward for a given change in the Z axis than our other style probes. Custom mounting styles are available.

Example: SP-110-GSG-150-P is a Model 110H with Ground, Signal, Ground configuration with 150 microns between each contact mounted in a P style adaptor.

Right: Specifications for seven of our most common adapter styles. Please contact our office or visit our web site at: www.signatone.com for information on other adapter styles.

❖ **Mounting Styles and Dimensions**



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	2.5mm	1.8mm	1.0mm	0.8mm
Tip Configuration	GS/SG/GSG	GS/SG/GSG	GS/SG/GSG	GS/SG/GSG	GSG
Pitch Range	25μ - 2540μ	25μ - 1250μ	25μ - 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	100μ X 100μ	150μ X 150μ	300μ X 300μ
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	100μ X 100μ	150μ X 150μ	300μ X 300μ
Pitch Range	50μ - 200μ	200μ - 600μ	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	1.8 M - 1.8 F	1.0 M - 1.0 F

* Contact Factory

S-M40 Series RF Positioner

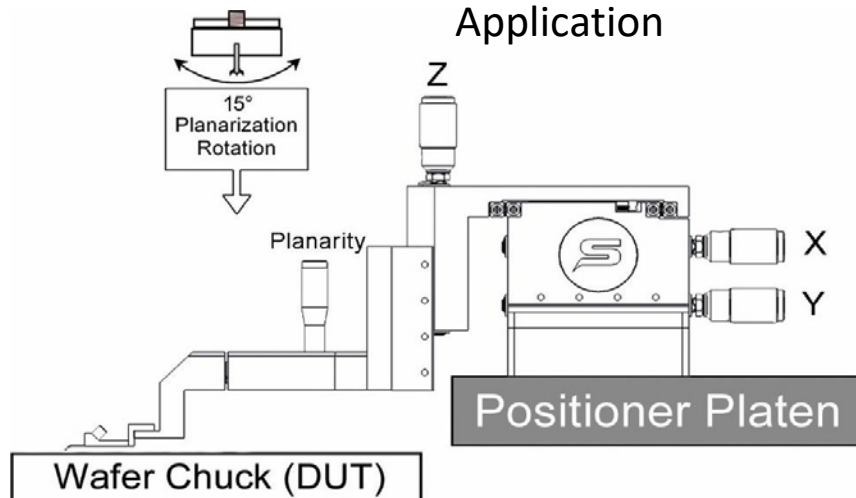
S-M40 Series RF Positioner with 50 TPI linear X-Y-Z motion with in-line precision knobs for quick and accurate positioning of RF probes – great for use with RF and Wedge probe applications DC-110GHz.

An optional "switchable" magnetic base utilizes a neodymium rare-earth magnet. This allows for easy coarse placement of the positioner, which is then locked into place with the simple flip of a lever. Unlike typical magnetic designs, there is no loss of high-frequency performance, due to the strength of the magnetic bond. This extends non-resonant performance to beyond 110 GHz



Travel Range, X, Y, Z	1" (25mm). 40 Turns/inch
Planarization Range: X, Y, Z Resolution:	± 7.50 (.10 Resolution)
Orientation.	E/W (0°) & N/S (90°)
Standard Base: HM	Bolt-Down
Optional Bases: MM	Magnetic (Lever-actuated rare-earth magnet)
OM	Optical table bolt-down base

Typical Application



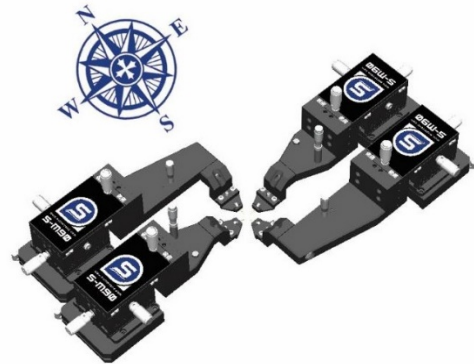
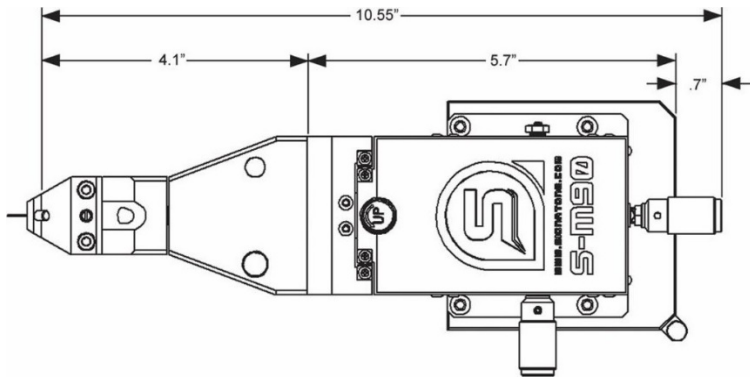
S-M90 Series RF Positioner

Based on SIGNATONE's highly successful S-M40 design, the Model

S-M90 is intended for users that have requested orthogonal XM control. The use of over-sized cross-roller bearings insures the ultimate in precision and control of probe positioning, while the direct-drive leadscrew design virtually eliminates backlash and hysteresis.



Travel Range, X, Y, Z	1" (25mm). 40 Turns/inch
Planarization Range: X,Y,Z Resolution:	± 7.50 (.10 Resolution)
Orientation.	E/W (0°) & N/S (90°)
Standard Base: HM	Bolt-Down
Optional Bases: MM	Magnetic (Lever-actuated rare-earth magnet)
OM	Optical table bolt-down base



❖ 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
- **Tel:** 1-408-848-2851

