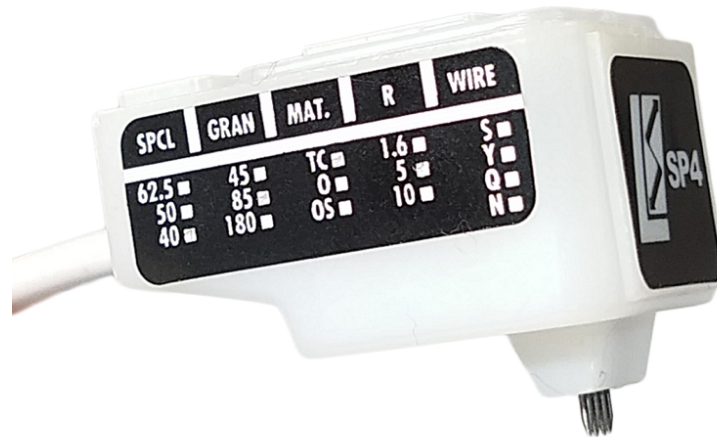


SP4-HT4 FOUR POINT PROBE HEAD

FOUR POINT PROBE MEASUREMENT SYSTEM



HIGHLIGHTS

- ▶ Quick setup
- ▶ High temperature (HT4)
- ▶ High resistivity (HT4)
- ▶ For most samples

SPECIFICATIONS

- ▶ 40, 125, 254 μm radius
- ▶ Up to 650°C
- ▶ Up to 10 G ohm/sq
- ▶ Pressure up to 180g

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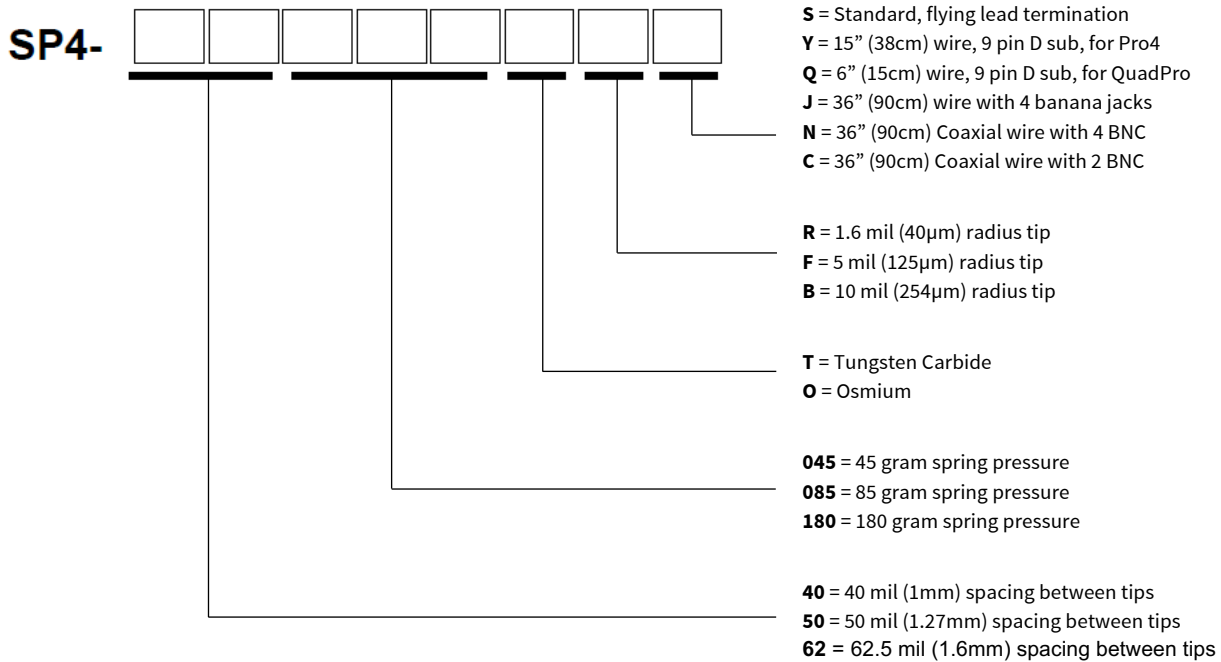
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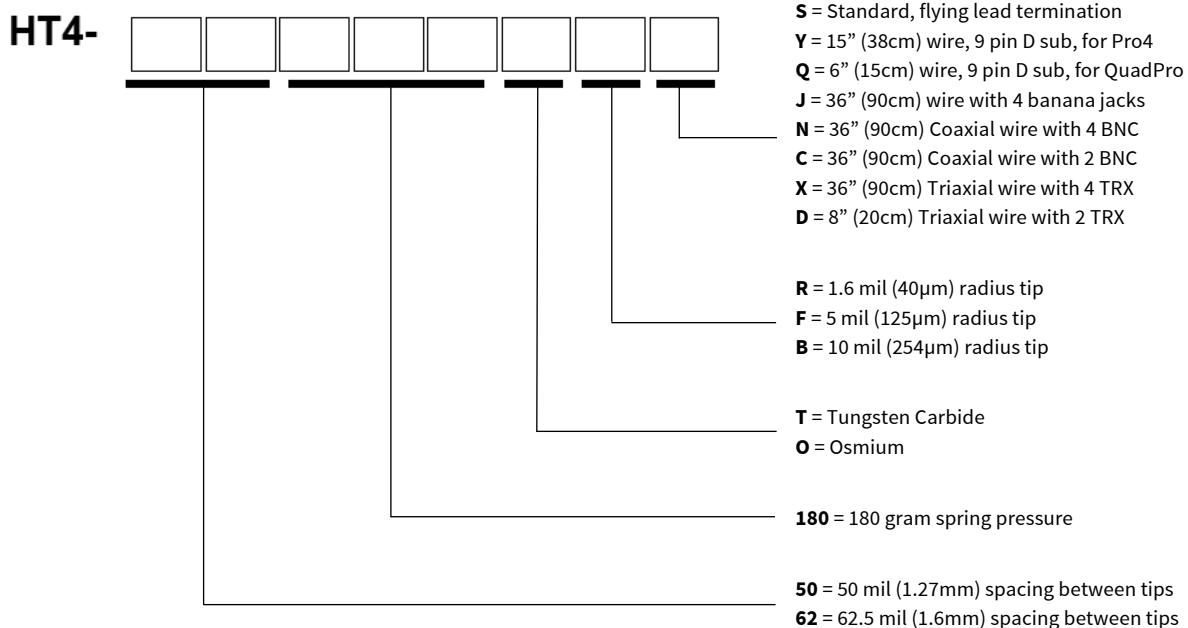


The SP4 probe head is designed for use with resistivity probing systems for the measurement of thin films and materials. The SP4 head has several configurations parameters permitting users to define the probe head best for their application.

Standard head (Delrin)



High temperature and High resistance head (Macor - high property ceramic)



Specifications limits:

<u>Current limits:</u> Max current (SP4) : 1A – 20V (20W) Max current (HT4) : 3A – 20V (60W)	<u>Temperature limits:</u> Max temperature (HT4) : 650°C Max resistivity (HT4) : 10G ohm/sq
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SP4-HT4 probe chose:

1 – Spacing

The spacing will be determined by your sample size and thickness.

To limit the edge effect, the sample size should be more than 10 times tips spacing. So, if your sample is small, we will prefer to use small tips spacing.

To keep the 4.53 factor, the sample thickness should be less than 0.4 times tips spacing. So, if you have thick samples, we will prefer to use high tips spacing.

2 – Pressure

The pressure will be determined by your film layer and substrate.

More you have pressure on your sample more the accuracy will be, but it will make hard scrub.

If your substrate is soft, high pressure will warp the surface and the measurement will be affected.

If your layer is very thin, high pressure will trough the layer and you will measure the substrate.

3 – Material

Most of the customer are using Tungsten probe tips.

We observed that for few materials, Osmium gives more accuracy on measurements.

The best solution is to make repeatability test to determine the best material.

4 – Radius

Radius choice will be linked to the pressure.

Less the contact surface is, more the accuracy will be, but it depends of the current/voltage that will pass through the tips.

If we inject high power, the tip will heat and the local resistance will be affected, so bigger radius can be interesting.

If your sample has oxide layer, you will need sharp tips to trough the layer and measure the semi-conductor layer.

5 – Termination

Termination is the connection at the end of the wires. It should match your device.

Practically, we determined roughly the probe using previous explanation and we will make 5 time repeatability test with closest probe tips. We will compare the standard deviation of each measurements and we will keep the best one.

SP4-HT4 probe cleaning:

For cleaning the tips, you have 3 possibilities:

1 – Cleaning with compressed air blow gun.

→ Blow with the compressed air on the tips to remove the weak residue.

2 – Cleaning with IPA (Isopropyl Alcohol) and Q-tip.

→ Wet a cotton swab with IPA and gently clean the tip.

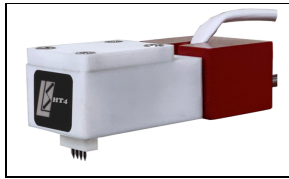
3 – Cleaning with ceramic plate.

→ Place the ceramic plate under your tips and make contact 3 or 5 times to clean it well.

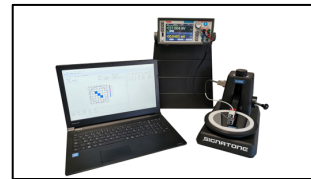
This solution must be used last because it consists of damaging and blunting the tips to regain its original properties. **The cleaning is destructive for the probe head.**



Chuck Controller



HT4 probe head



MW-Pack 4PP