

# PCB impedance test probes



Handheld probes for on board or coupon-based controlled impedance test

*IPS – Short trace*

*IPE – Economic*

*Groundless differential*

*Precision variable pitch*



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## Impedance test probes

A comprehensive range of handheld impedance test probes designed for production use in the PCB fabrication environment. Ranging from the economical IPE series through the short trace IPS series, along with Polar's unique groundless differential probes for difficult-to-access on board traces. A broad range of fixed and precision variable pitch probes are available for both legacy and the most recent CITS impedance test systems.



### Robust and ESD safe

IPE and IPS probes not only provide a robust and easy-to-use method for connecting to impedance controlled PCBs and test coupons, they are also manufactured with ESD safe materials to minimise risk of electrostatic harm to your CITS. Combining the use of ESD grounded work surfaces in combination with wrist straps and Polar IPE and IPS probes ensures that ESD exposure is minimised, which will extend the life of your TDR and also ensure that the calibration is preserved for its full annual cycle.

### Wide variety of footprints

IPE and IPS probes are available in a large variety of standard footprints; however, Polar recommends that wherever possible you use one of the preferred footprints as these are more cost effective and are available on shorter lead times. If designing your own test coupons Polar CGen impedance coupon generation software makes it easy for you to design using a preferred footprint. However, when you need to probe on the PCB itself you may encounter a variety of footprints; Polar precision variable pitch probes are designed to make quality measurements whilst being continuously adjustable over a wide range of common footprints.



## IP probe ranges

Choose between IPE probes for economy, IPS probes for shorter traces (on CITS880s) and a range of fixed and variable pitch probes for both coupon and on board testing.



### S-Series IPS probes

S-Series IPS probes are premium impedance probes with coaxial internal structure for best signal integrity. They are designed to complement the CITS880s and enable accurate testing on both coupons and shorter on board traces.



### E-Series IPE probes

IPE probes are the workhorse of the CITS probe range. Field proven, they are ergonomic, attractively priced and suit both the CITS880s and all generations of legacy CITS. Like all present generation Polar IP probes the IPE probes have an ESD safe construction.



### G-Series groundless differential probes

Groundless differential probes are especially designed for on board test of differential traces where direct access to the ground plane is difficult or impossible. Polar proprietary probe technology enables groundless differential probes to be connected with a single coaxial cable, reducing operator fatigue and cost of ownership.



### V-Series precision variable pitch probes

Precision variable pitch probes are available both as groundless differential, and single ended alternatives. Precision adjustment is ideal for situations where the boards you test are in low volumes and have a high variety of footprints.



### Single ended or Differential

Both IPS and IPE probes are available in a range of single ended or differential styles. Choosing one of the preferred styles (see Application Note AP146) will minimise your running costs and ensure short lead times when ordering replacements.



### Custom footprints

Should your specific application not be covered by any of the above Polar is pleased to quote for custom footprints. However, please note that when designing custom footprint probes, signal integrity needs to be considered and whilst our engineers will provide the best connection possible, they are unable to rewrite the laws of physics.



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**E-Series IPE probes:**  
Economical ESD safe general purpose impedance probe for all CITS models. Available in single ended and differential versions.



**G-Series groundless differential probes:**  
Polar proprietary groundless differential probes for on board testing where access to ground is limited or not possible. Single cable connection.



**S-Series IPS probes:**  
Premium probes for shorter traces and on board testing – designed especially for the CITS880s.



**V-Series:**  
Precision variable pitch probes available as single ended or groundless differential – ideal for low volume test where you need to probe a wide variety of footprints.

**Probe Footprint and Pitch**

**Preferred pitch probes:** Application Note AP146 lists the preferred footprints for Polar fixed probes; these are our most popular probes and are available for rapid delivery regardless of series. Polar recommends that if you have control over coupon design you use a preferred pitch probe to minimise consumables cost.

**Non preferred pitch probes:** An extensive range of probe pitches is available – please refer to AP146 for detailed information. Non preferred pitches and footprints may be subject to longer lead times than the preferred pitch part numbers.

**Custom footprints:** In the unlikely event a preferred or non preferred footprint does not cover your specific requirements Polar is pleased to quote for custom probes – subject to your required footprint meeting adequate signal integrity.

**Ordering Information**

Detailed part numbering and footprint information is too extensive to list in this brochure and a comprehensive list of footprints and probe types is covered in AP146 – or alternatively contact your local Polar office for guidance.

**About Polar Instruments**

*Polar Instruments is a market leader in designing and manufacturing tools to simplify and enhance the design, fabrication and testing of printed circuit boards (PCBs). Their innovative tools include the industry-standard Controlled Impedance Test System (CITS) which provides the global PCB industry with an easy-to-use test system for high-speed digital and RF boards, as well as class-leading tools for fast and accurate design and testing of controlled impedance in PCBs. Polar also leads the industry in tools for automated PCB layer stackup design and documentation. Polar Instruments was established in 1976 and now has operations and channel partners in the US, UK, Europe and Asia Pacific.*