

GGB Model 10 Force Sensor Probearm Kit PHD-3001A-FS

Advanced TLP/HMM/HBM Solutions



Figure 1: GGB Picoprobe Model 10 pulse force and pulse sense probe including touch down force sensors and rotary stages for probe tip alignment. Application example: probing a 300 mm wafer on a ATS-8300G automated test system.

1 Features

- Pulse force and pulse sense fixed pitch probing solution for TLP/VF-TLP/HMM on-wafer and packagelevel measurements using GGB's Picoprobe[™] Model 10 probe tips
- Electrically isolated from probe station system ground
- Probe tip touch down force sensors at [mN] resolution
- Precision backlash-free 80:1 manual rotary stage for probe tip alignment

2 Specifications

Nominal impedance	50	Ω
Measurement bandwidth ¹⁾	DC - 3.5	GHz
Fixed pitch range ¹⁾	50 - 3000	μm
Rotary stage turn ratio	80:1	
Minimum force readout ²⁾	-617	mΝ
Maximum force readout ³⁾	+394	mΝ
Touch down force resolution	0.3	mΝ
Relative force measurement accuracy ⁴⁾	1	mΝ
Maximum force sampling frequency ⁵⁾	1	kHz
Maximum overload force	5	Ν
Recommended probing touch down force	50	mΝ
 ¹⁾ depending on GGB probe tip, please refer to GGB Model 10 probe tip datasheet: https://ggb.com/wp-content/uploads/2017/06/mod1 ²⁾ negative value is equivalent to probe arm weight ³⁾ positive value is equivalent to probe tip touch down f ⁴⁾ after reference setting (zeroing) 	0.pdf orce	

⁵⁾ depending on software readout speed





Figure 2: Typical probe tip configuration

Fig. 2 shows a typical probe tip configuration of a 50 Ω pulse force probe (right side) and a 5 k Ω pulse sense probe (left side). The so called "5 k Ω pulse sense probe" has a built-in 4950 Ω resistor in the probe tip frontend. When operated into a 50 Ω load resistance, the voltage scale factor results to

$$k = \frac{V_{\rm IN}}{V_{\rm OUT}} = \frac{4950\,\Omega + 50\,\Omega}{50\,\Omega} = 100\tag{1}$$

where $V_{\rm IN}$ is the input voltage at the probe tip and $V_{\rm OUT}$ is the output voltage of the pulse sense probe tip, connected to a 50 Ω load, such as the oscilloscope input. Probe tips with other scale factors and built-in resistors can be ordered directly from GGB (e.g. 1.5 k Ω or 1 k Ω).

The PHD-3001A-FS probearm kit is optimized to be used on the ATS-8300G automated test system. The strain gauge amplifiers for the force sensors are already part of the ATS-8300G probe station. To operate the probe arm including force sensors stand-alone, the strain gauge amplifiers are available optional. In such case the force can be readout by a USB interface of the strain gauge amplifiers.



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3 Physical Dimensions



Figure 3: Physical dimensions (left sided probearm) in [mm]

4 Ordering Information

Pos.	Description	Part No.
01	GGB Model 10 Force Sensor Probearm Kit	PHD-3001A-FS

List of Parts

The GGB Model 10 Force Sensor Probearm Kit PHD-3001A-FS consists typically of the following parts:

Qty.	Description	Part No.
1	PHD-3001A-FS probe arm (right sided)	PHD-3001A-FS-R
1	PHD-3001A-FS probe arm (left sided)	PHD-3001A-FS-L
2	Force sensors	FS-06A
2	GGB Picoprobe [™] Model 10 including SMA 50 Ω cables (1 m and 0.3 m length)	PHD-3001A-PM10
2	Fixed pitch replacement probe tip 50 Ω , right, 100 μ m pad pitch	10-50/30-125-W-2-R-100
2	Fixed pitch replacement probe tip 5 k Ω , left, 100 μ m pad pitch	10-5k(0502)-125-W-2-L-100
4	Bracket screws including washer	UNC #4-40 x 5/16"
4	Bracket screws including washer	M3 x 8 mm
1	Allen key	1.5 mm
1	Allen key	2.5 mm
1	Allen key	3/32 "

General

The product data contained in this data-sheet is exclusively intended for technically trained staff. You and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application. Our products are solely intended to be commercially used internally and should not be sold to consumers. This data-sheet is describing the specifications of our products for which a warranty is being granted by HPPI GmbH. Any such warranty is granted exclusively pursuant the terms and conditions of the respective supply agreement. There will be no guarantee of any kind for the product and its specifications. For further information on technology, specific applications of our product, delivery terms, conditions and prices please contact HPPI:

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