

Probe comparison

From sigrok



Probe collection.

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Logic analyzer probes

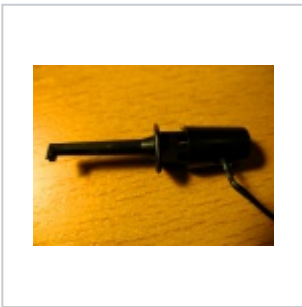
There are many logic analyzer probes of varying quality and price on the market (see photo for a small subset).

Low-end probes

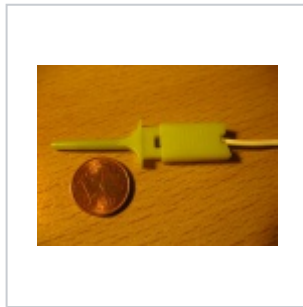
There are various **simple and cheap** logic analyzer probes available from various sources. Some logic analyzers are also shipped with this kind of probes out of the box.

They're generally **not recommended**, if you can avoid them. They're usually of low quality, break/bend/fail relatively quickly, and cannot be easily used to probe finer-pitch devices/pins. Probes 1 and 2 (see photos) also have the additional disadvantage that they're hardwired/soldered directly to a custom logic analyzer cable, which means they cannot be easily replaced, swapped, or removed and used for other purposes (which is possible with the other probes). See below for better alternatives.

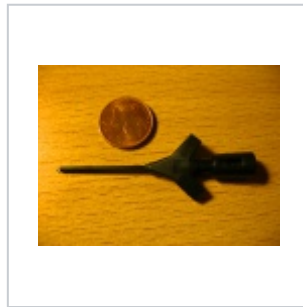
Sometimes you can also replace the probes shipped with your device by a better-quality cable/probe set, e.g. in the case of the RockyLogic Ant8 probe cable (see photos).



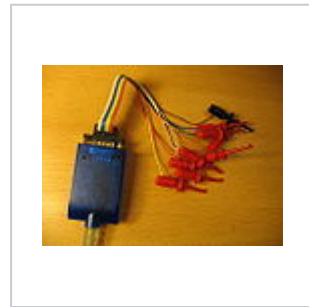
Cheap probe 1.



Cheap probe 2.



Cheap probe 3.



Original Ant8 probe cable.



DIY Ant8 cable w/ EZ-Hooks.

Quality probes

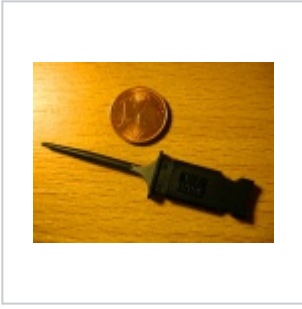
The **better-quality** (and minimum **recommended**, in our opinion) probe type is the **EZ-Hook**. This type of probe is of sufficient quality, doesn't break too easily, and the grabber is small enough to probe most fine-pitch devices one usually encounters in day-to-day probing.

The Agilent probes (shipped with some Agilent oscilloscopes with integrated logic analyzer) seem to be exactly the same as the EZ-Hooks. They're probably merely rebranded for Agilent (just a guess).

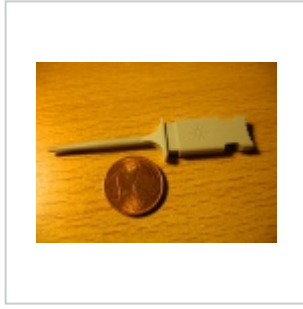
The Tektronix probes are different, but of similarly good quality as the EZ-Hooks.

The ZEROPLUS probes seem to be custom-made by/for ZEROPLUS and are of similarly good quality, too (only one pin where you can attach, though; most other probe types usually have two).

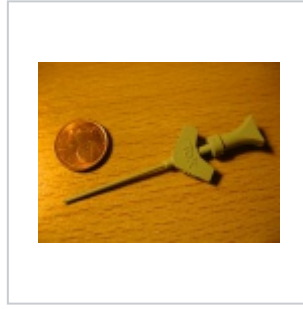
Saleae used to deliver EZ-Hooks with the Saleae Logic; currently at least the Saleae Logic16 comes with a cheaper copy. The Link Instruments MSO-19 comes with the same probes (in different colors).



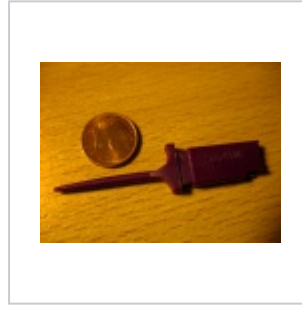
Original EZ-Hook probe.



Agilent probe.



Tektronix probe.



ZEROPLUS probe.



Saleae Logic16 probe.



Link Instruments MSO19 probe.



TPI MC1 probe.



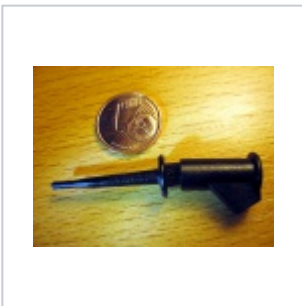
Rigol probe (front)



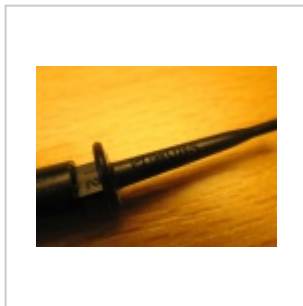
Rigol probe (back)

Pomona Grabber

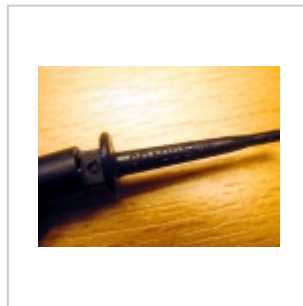
The Pomona Grabber probes seem of similarly good quality (and also have only one pin where you can attach).



Pomona Grabber probe.



Pomona Grabber, side 1



Pomona Grabber, side 2

Universal-Chip Clip TSOP/MSOP/SSOP/TSSOP/SOIC/SOP

These are noname probes with gripper hooks that are available from AliExpress, e.g. here (<https://www.aliexpress.com/item/Universal-chip-clip-TSOP-MSOP-SSOP-TSSOP-SOIC-SOP-Car-Remote-Control-key-IC-Pin-clip/32615203653.html>), here (<https://www.aliexpress.com/item/Universal-small-chip-clip-chip-PIN-clamping-test-clamping-General-IC-Logic-Analyzer-foot-burn-clips/32777804481.html>), or here (<https://www.aliexpress.com/item/Universal-chip-clip-TSOP-MSOP-SSOP-TSSOP-SOIC-SOP-car-remote-control-key-IC-pin-clip/32537624614.html>).

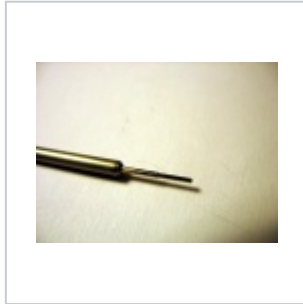
They're slightly better than the ultra-cheap low-end probes and can probe smaller-pitch devices. Opening the hook requires quite a bit of force and gets tedious after a while. They're larger and bulkier than e.g. the EZ-Hook X2015 and cannot probe small-pitch devices as easily as X2015 can (see also photos).



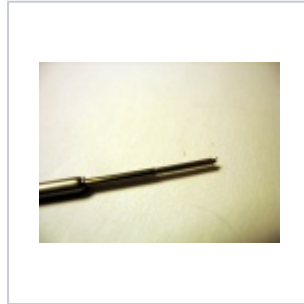
Package, top



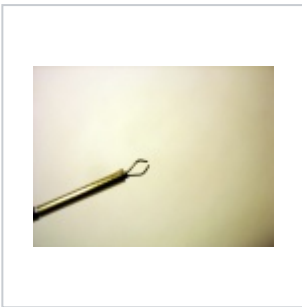
Package, bottom



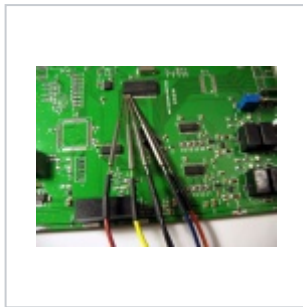
Connector



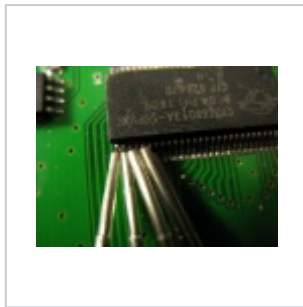
Gripper hook



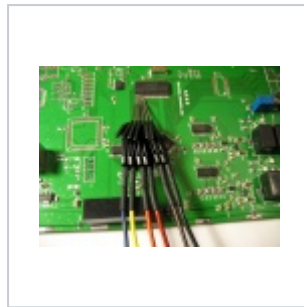
Gripper hook, open



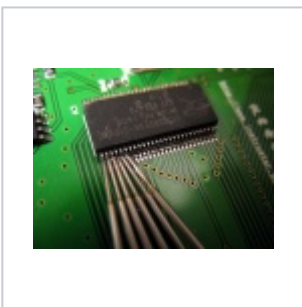
Example



Example, zoomed



Comparison to X2015



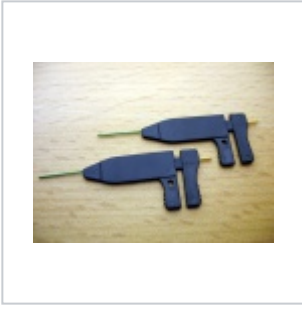
Comparison to X2015,
zoomed

High-end probes

There are of course also various **higher-end**, special-purpose probes which are **much more expensive**. They allow for probing much smaller pitch devices, for example.

TPI NC1 series

The Test Products International (TPI) (<http://testproductsintl.com>) NC1 is a series of micro test clips.



2x NC1B



NC1B, left



NC1B, right

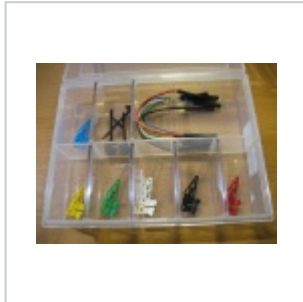
Where to buy:

Vendor	Device	Comments	Price
Digikey	TPI NC1B (http://www.digikey.de/product-detail/de/NC1B/290-1106-ND/299987)	Black	€7.30
Digikey	TPI NC1BLUE (http://www.digikey.de/product-detail/de/NC1BLUE/290-1111-ND/299992)	Blue	€8.59
Digikey	TPI NC1Y (http://www.digikey.de/product-detail/de/NC1Y/290-1109-ND/299990)	Yellow	€8.59
Digikey	TPI NC1GY (http://www.digikey.de/product-detail/de/NC1GY/290-1107-ND/299988)	Gray	€8.59
Digikey	TPI NC1R (http://www.digikey.de/product-detail/de/NC1R/290-1108-ND/299989)	Red	€8.59
Digikey	TPI NC1G (http://www.digikey.de/product-detail/de/NC1G/290-1110-ND/2999919)	Green	€8.59

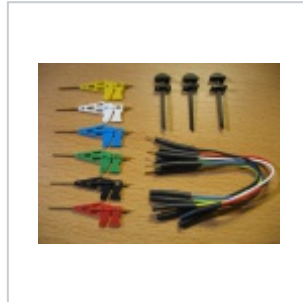
ElectroPJP 6800 / Pomona 72902



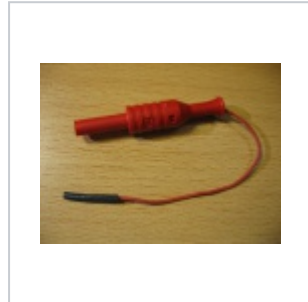
Electro-PJP MS 6800-6, box



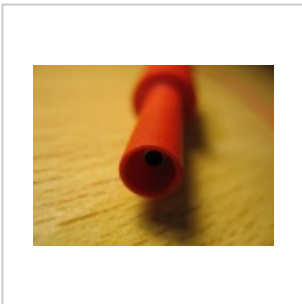
Box, open



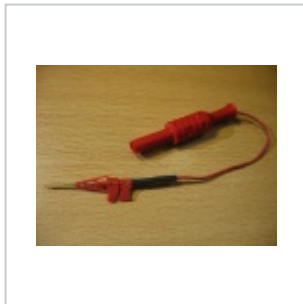
Box, contents



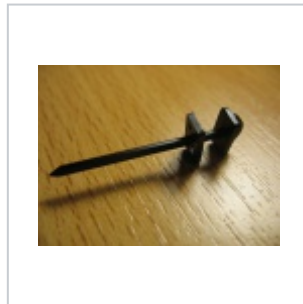
Cable 1



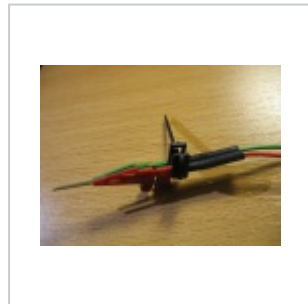
Cable 2



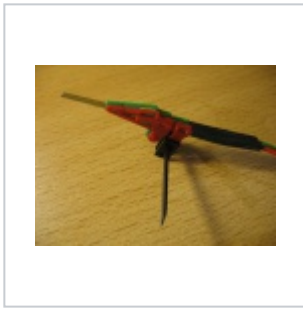
Cable 3



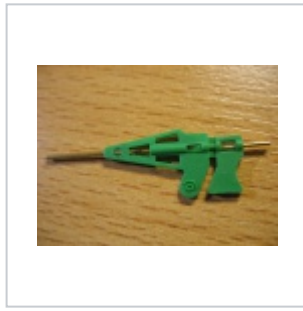
Holding rod 1



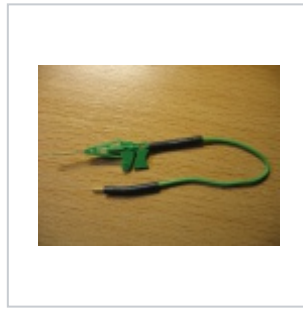
Holding rod 2



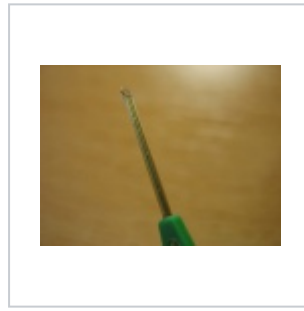
Holding rod 3



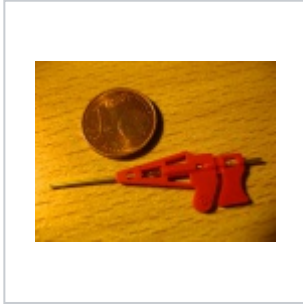
Electro-PJP MS 6800, green



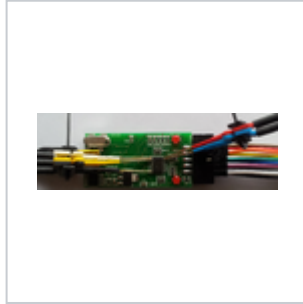
Probe w/ cable



Gripper



Electro-PJP MS 6800, red



25mil / 0.65mm pitch probing

Products:

- Electro-PJP 6800: Micro pincer clip w/ 0.8 mm (0.031") (male) pin (http://www.electro-pjp.com/index.php?id=74&langue=AN&id_produit=250)
- Electro-PJP 6800-6: Kit, 6 clips + 3 holding rods + 6 leads (http://www.electro-pjp.com/index.php?id=74&langue=AN&id_produit=253)
- Pomona 72902 (<http://www.pomonaelectronics.com/index.php?i=prodmain&page=3&getDetails=1&parent=GRABCLIP>) (various products)

Where to buy:

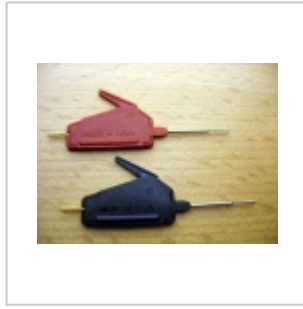
Vendor	Device	Comments	Price
Reichelt	Electro-PJP CLIP 6800 RT "Challenger-clip" (https://secure.reichelt.de/Bananenstecker-Zwergstecker/CLIP-6800-RT/3/index.html?ACTION=3;LA=446;ARTICLE=63455;GROUPID=3244;artnr=CLIP+6800+RT)	One probe, red	€6.55
Reichelt	Electro-PJP MS 6800-6 (https://secure.reichelt.de/Bananenstecker-Zwergstecker/MS-6800-6/3/index.html?ACTION=3;LA=446;ARTICLE=63475;GROUPID=3244;artnr=MS+6800-6)	Set of 6 probes, 3 holding rods, 6 cables	€48.95
Reichelt	Electro-PJP MS 6800-8 (http://www.reichelt.de/Bananenstecker-Zwergstecker/MS-6800-8/3/index.html?ACTION=3;LA=2;ARTICLE=63477;GROUPID=3244;artnr=MS+6800-8)	Set of 8 probes, 4 holding rods, 8 cables	€63.85
Reichelt	Electro-PJP MS 6800-12 (http://www.reichelt.de/Bananenstecker-Zwergstecker/MS-6800-12/3/index.html?ACTION=3;LA=2;ARTICLE=63479;GROUPID=3244;artnr=MS+6800-12)	Set of 12 probes, 6 holding rods, 12 cables	€86.45
Digikey	Pomona 72902-0 (http://www.digikey.de/product-detail/de/72902-0/501-1172-ND/1196307)	One probe, black	€11.69
Digikey	Pomona 72902-2 (http://www.digikey.de/product-detail/de/72902-2/501-1173-ND/1196308)	One probe, red	€11.69
Digikey	Pomona 72902 (http://www.digikey.de/product-detail/de/72902/501-1171-ND/1196378)	Kit	€179.97

E-Z-Hook X2015

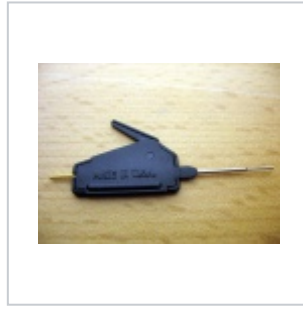
The E-Z-Hook X2015 (<http://catalog.e-z-hook.com/item/test-hooks/e-z-micro-hooks-double-hook-style/x2015?&plpver=10&assetid=a1010>) micro double-hook.



X2015, probes 1



X2015, probes 2



X2015, black 1



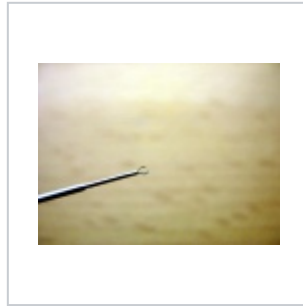
X2015, black 2



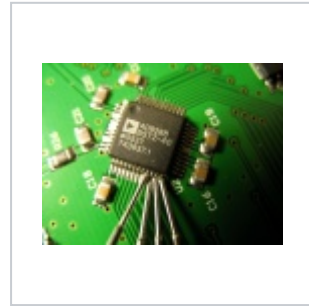
X2015, red 1



X2015, red 2



Gripper



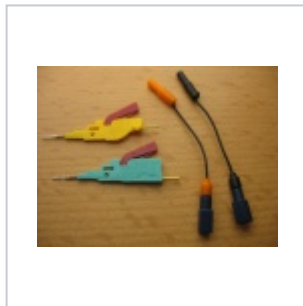
LQFP 0.5mm pitch example

Mechano Japan FP-2S

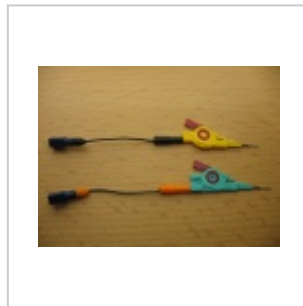
The Mechano Japan FP-2S (<http://www.mechano.co.jp/products-img/pmc-s.html>) micro test clips (microgrippers) are suitable for ICs with a pitch of 0.50mm—0.20mm. They're available from various vendors under different names.



Package



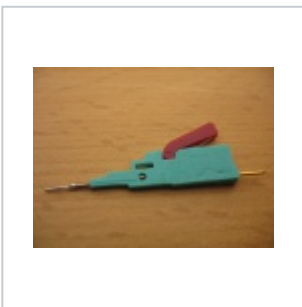
Probes + cables



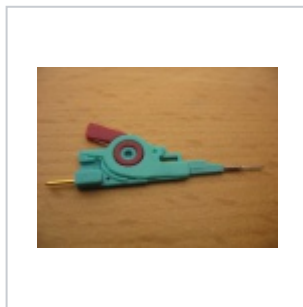
Probes + attached cables



Cable



ChipQuik SMDFP-2S-2



ChipQuik SMDFP-2S-2



ChipQuik SMDFP-2S-2



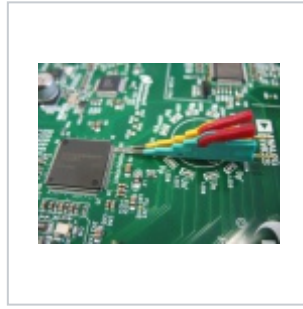
ChipQuik SMDFP-2S-2



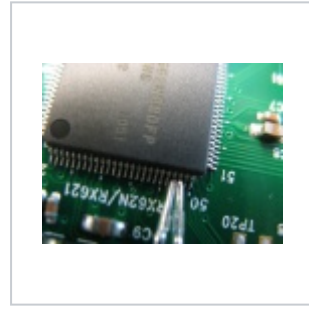
ChipQuik SMDFP-2S-2



ChipQuik SMDFP-2S-2



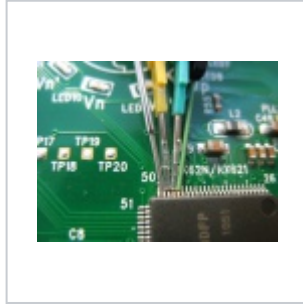
Attached 1



Attached 2



Attached 3



Attached 4

Vendor	Device	Comments	Price
ChipQuik	ChipQuik Microgripper FP-2S-2 (http://www.chipquik.com/store/probes/prod_fp2s2.htm)	2 micro-grippers, 2 wires.	\$79.00
Digikey	ChipQuik SMDFP-2S-2 (http://www.digikey.de/product-detail/de/SMDFP-2S-2/SMDFP-2S-2-N/D/2334394)	2 micro-grippers, 2 wires. Datasheet (http://media.digikey.com/pdf/Data%20Sheets/Chip%20Quik%20PDFs/FP-2S-2%20%20Specs%20.pdf).	€80.56
Distrelec	PMK FP-2S-2 (https://www.distrelec.de/klemmp/r%C3%BCfspitzegr%C3%BCn-gelb-ve-2stk/pm/fp-2s-2/102980)	2 micro-grippers, 2 wires. Datasheet (https://www.distribelec.de/ishop/Datasheets/sqFP-2x_data_de-en.pdf).	€90.28
Emulation Technology	Emulation Technology MicroGripper FP-2S-2 (http://www.emulation.com/cgi-cfm/insert_quantity.cfm?part_number=FP-2S-2)	2 micro-grippers, 2 wires. Datasheet (http://www.emulation.com/cgi-cfm/viewpdf.cfm?dwg=f5732.pdf).	\$74.72
PEWA	PMK FP-2S-2 QFP IC-Clip (http://www.pewa.de/cgi-bin/cosmoshop/lshop.cgi?action=showdetail&artnum=FP-2S-2)	2 micro-grippers, 2 wires. Datasheet (http://www.pewa.de/DATENBLATT/DBL_PMK_FP-S2_FP-2B_FP-2BL_DEUTSCH.PDF).	€73.00
PMK	PMK SMDFP-2S-2 (http://www.pmk-gmbh.com/en/products/Micro_Test_Accessories_0_64_mm_40/FP_2S_2_80.html)	2 micro-grippers, 2 wires	€80.56

Mechano Japan FP-5 (FP-2B)

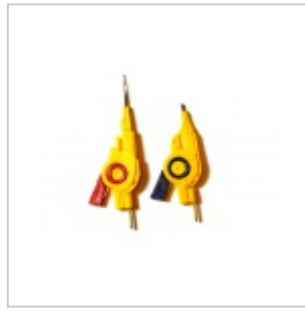
The Mechano Japan FP-5 (<http://www.mechano.co.jp/products-img/pmc-cl.html>) (a.k.a FP-2B) micro test clips (microgrippers) are suitable for ICs with a pitch of 1.00mm—0.30mm. They're available from various vendors under different names.



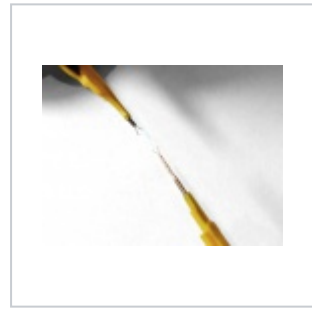
FP-5



FP-2S and FP-5, front



FP-2S and FP-5, back



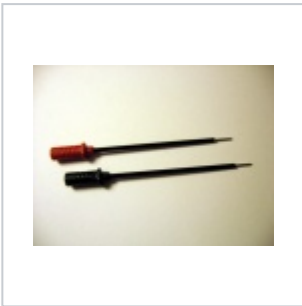
FP-2S and FP-5, grabbers

Needles

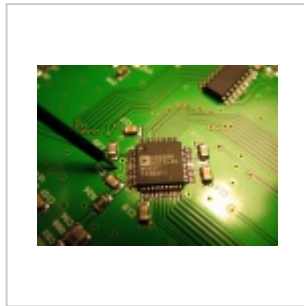
Hirschmann Mikro-Pruef MPS-2

The Hirschmann Mikro-Pruef MPS-2 (<http://www.newark.com/hirschmann-testmeasurement/973995100/probe-test-micro-black-mln/dp/67C8522>) spring-loaded needles can be used to easily probe PCB vias.

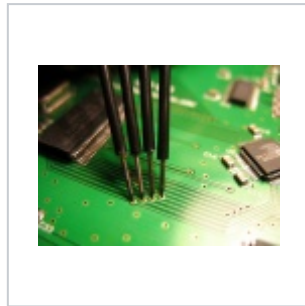
They're useful for usage with logic analyzers as well as multimeters via certain test leads (<http://www.newark.com/hirschmann-testmeasurement/932959001/test-lead-kit/dp/92K8202>).



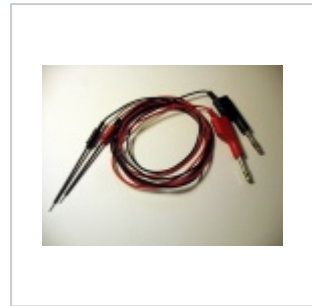
Spring-loaded needles



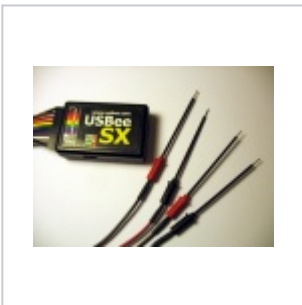
Via



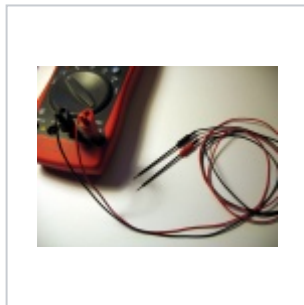
Vias



Test leads



LA + needles

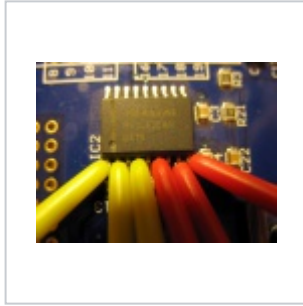


DMM + needles

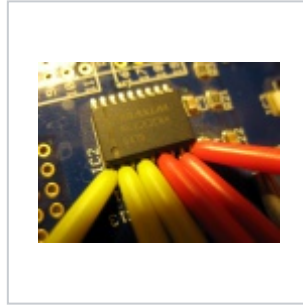
Probe comparison



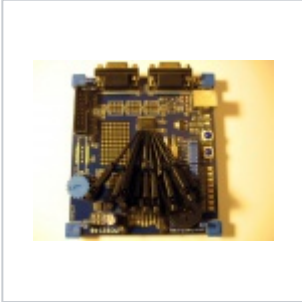
Cheap #2



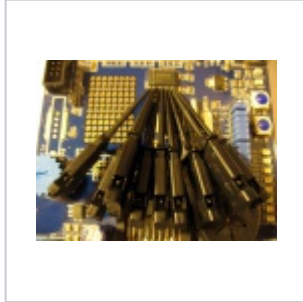
Cheap #2



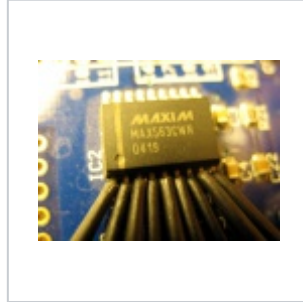
Cheap #2



E-Z-Hook XKM



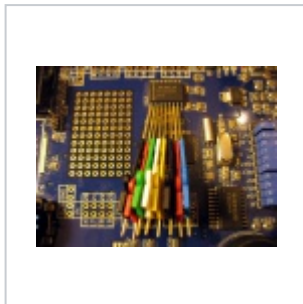
E-Z-Hook XKM



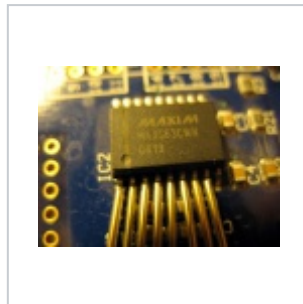
E-Z-Hook XKM



ElectroPJP 6800



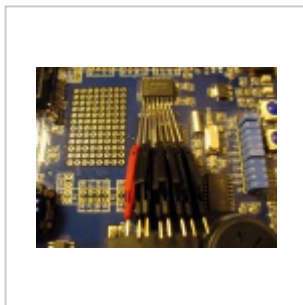
ElectroPJP 6800



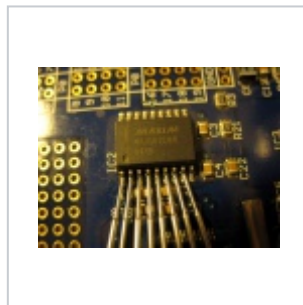
ElectroPJP 6800



E-Z-Hook X2015



E-Z-Hook X2015

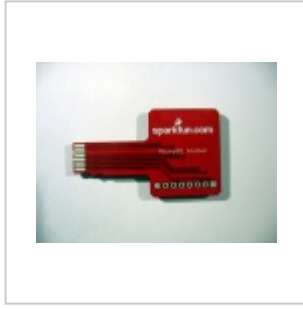


E-Z-Hook X2015

Logic analyzer adapters

Attaching "normal" logic analyzer probes directly to the system you want to analyze is not always the easiest method. For specific use-cases there are also special "sniffer" or "breakout" boards that can be used.

Micro SD sniffer



SD sniffer



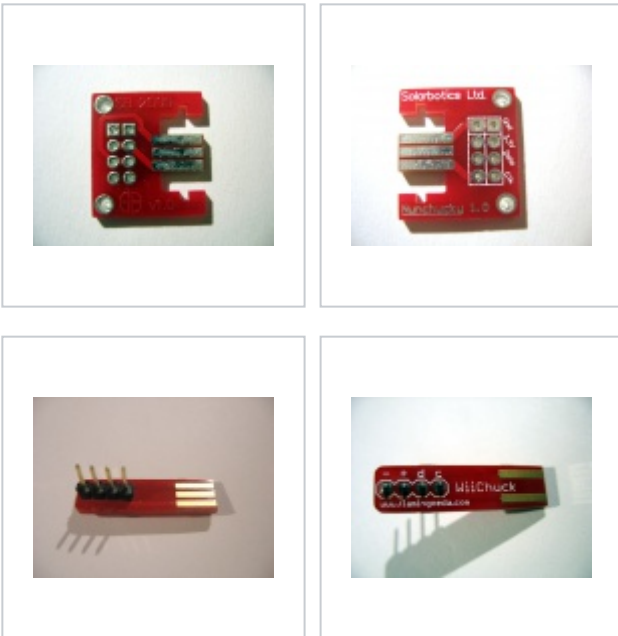
USB sniffer



PCI sniffer



Nintendo Wii Nunchuk sniffer



Oscilloscope probes

Low-end probes

There are various cheap oscilloscope probes which are shipped with many PC/USB oscilloscopes and also some standalone bench scopes.

The two major manufacturers seem to be:

- Globaltone (<http://www.cnglobaltone.com/product.asp?divid=2&classid=136>)
 - Models: P6020, P6040, P6060, P6100, P6200, ...
 - Globaltone AliExpress.com store (<http://www.aliexpress.com/store/301245/210286086/Oscilloscope-Probe.html>)
- Protek (TODO: URL?)
 - Models: PP-60, PP-80, PP-150, PP-200, ...
 - Hints: [1] (<http://salestores.com/protek113.html>), [2] (http://www.testequipmentandmore.com/PROTEK_PP-200.html)

TODO: Photos

DIY probes

The SMD probe for multimeter (<http://essentialscrap.com/probe/>) project at the essentialscrap site discusses the construction of a fine pitch probe for multimeters and logic analyzers, some hand held, others kind of self supporting for longer term use of a few probes at the same time without manual attention. The article also contains the How to Build Your Own Oscilloscope Probes (<http://www.cromwell-intl.com/radio/probes.html>) link.

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