

Probe Station Systems



Probe Station Systems and Accessories Catalog

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InitialPS

A 2" to 6" cost-effective probe station with upgrade capability.



Application

DC, RF Tests;
MEMS, NEMS, Optoelectronics Tests;
,etc.

Features

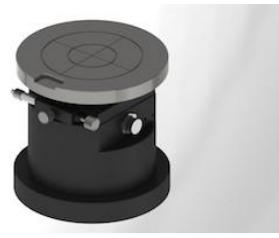
Application oriented – Kitstart test kits for various applications.
Cost-effective – Users can start with a very cost-effective set up.
Modular design – Various modular options allow user to upgrade the system easily.
Unique X-Y– Air bearing stage for fast movement and micrometer heads for accurate X-Y movement.

Description

Probe stations are very expensive and durable lab equipment. Many users only have very limited budgets at the beginning but their test requirements could change over time. This will result in idle equipment and more capital costs. InitialPS allows you to start with a probe station with very competitive price. You can upgrade the system easily as their test requirements change. With the modular design, you simply choose from various chuck options, microscope options and test kits. The ease of upgrade capability protects your current investment for future need.

Two options for InitialPS chuck

SimpleStage – SimpleStage has only X-Y coarse positioning and theta rotation. Its smooth and fast X-Y adjustment is driven manually on a ergonomic air bearing stage. This set up is perfect for users with very limited budget but a stable probe station system is needed. It can be upgraded to AccuStage without modifications to other parts.



SimpleStage

AccuStage – Besides the air bearing stage, AccuStage has fine X-Y-Z and theta adjustment. They are all spring loaded and driven by precise micrometer heads. This set up not only assures positioning accuracy but also reduces system set up time, thus thriving measurement efficiency.



AccuStage

Various optical set ups

Stereoscope – InitialPS' stereoscope is a Motic SMZ171 microscope. It has a magnification of 100X with 110mm working distance. This is ideal for basic I-V/CV probing and RF probing. InitialPS-Stereo can be upgraded to superscope Superscope or SlimScope set up without modifications to any other parts, which means the shortest lead time and the best price to meet higher measurement requirements.



Stereoscope set up

Superscope – Superscope has a turret for 4 M Plan APO lens. The magnification range could be 20X~2000X with 2X~100X objectives. This system is generally set up for probing on tiny geometric structures of wafer level reliability tests, failure analysis, high power tests, etc. InitialPS' intuitive manipulation enables users focus more on their measurements rather than manipulation.



Superscope set up

SlimScope – SlimScope has a 0.58X~7X Zoom lens. When used with 1X microscope, it has 82mm working distance. It is also compatible with M Plan APO objective lens for higher magnification application. Generally InitialPS with a SlimScope is set up for High-performance RF, multi-contact/mixed signal probing, Single-ended broadband/mmWave, THz, source/load pull and RF noise probing.



SlimScope set up

HAPS

A 8" to 12" probe station
with excellent stability and
reliability.



Application

DC, RF Tests;
MEMS, NEMS, Optoelectronics Tests;
,etc.

Features

- Application oriented – Kitstart test kits provide know-how test methods and techniques for various applications.
- Highly stable and accurate – Built on a granite base with <5 micron planarity, which provides the stability and accuracy crucial to highly reliable test results.
- Slimscope and superscope – Slimscope for tests requires space besides the microscope (mmW test, etc.)and Superscope for high magnification requirements .
- Cost-effective – The most cost effective system among the products of the same grade.

Description

In order to acquire accurate and reliable test results in the cutting edge tests, one of the key factors is to use a probe station system with ultra mechanical accuracy and stability.

HAPS is built on a granite base with less than 5 micron planarity. This design not only assures the high planarity in X-Y motion but also provides a rigid and stable platform for high accuracy tests. To achieve positioning accuracy, we use precise micrometer heads to drive spring loaded X-Y axes. With an air bearing X-Y stage, user will be able to move the X-Y in coarse positioning smoothly and quickly, thus greatly reducing set up time and improving test efficiency. One of the most common applications of HAPS is millimeter wave device characterization. The accuracy and stability act as an important role in protection of fragile and expensive mmW probes while producing reliable test results.

Two set ups for HAPS

HAPS with a SlimScope is generally set up for

High-performance RF, multi-contact/mixed signal probing, Single-ended broadband/mmWave, THz, source/load pull, RF noise probing. All these measurements requires the system to be ultra accurate and stable to ensure reliable measurement output. SlimScope and Superscope is interchangeable.



HAPS with a superscope is generally set up for probing on tiny geometric structures of wafer level reliability tests, failure analysis, high power tests, etc. HAPS' intuitive manipulation enables users focus more on their measurements rather than manipulation. SlimScope and Superscope is interchangeable.



CryoPS

Dedicated probe station systems that provide precisely-controlled environments.



Application

DC, RF, mmW Tests;
MEMS, NEMS, Optoelectronics Tests;
Super conductor Tests.
,etc.

Features

Precisely controlled environment – high vacuum chamber with 4.4K-675K stage temperature range.

Upgradable – Upgradable in positioners, temperature range, vacuum range, and optical access.

Affordable – Using liquid cryogen, very competitive price among the products of the same grade.

Compact Footprint – Perfect for academic and laboratory research settings with limited space.

Description

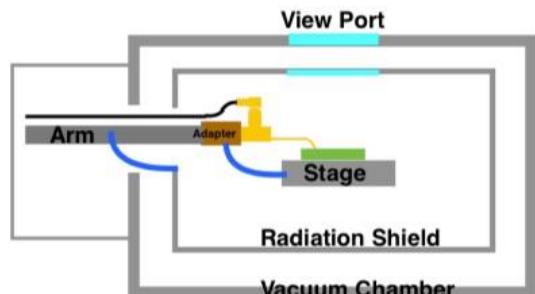
KeyFactor's CryoPS offers a cryogenic environment with 10⁻³ or 6 mbar vacuum level. It meets the requirements for non-destructive measurement of the electrical properties of materials and early-stage electronic devices.

Users can start with a standard system and upgrade to a higher level probe station with higher vacuum level and temperature range. Dedicated design is also available upon request.

Typical applications include sampling IV and CV curves over a wide range of temperatures, measuring microwave and electro-optical responses, characterizing magneto-transport properties in variable magnetic fields, Hall-effect measurements to understand carrier mobility, and a variety of other material studies.

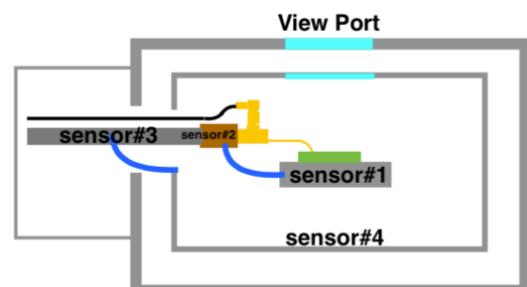
The key factors to your DUT(sample device) temperature.

The temperature of the device under test (DUT) would be affected by heat radiation and transmission from the parts around it. If without comprehensive thermal anchoring to these parts, the real temperature of the DUT would be much higher than you see on the temperature controller. That is because the temperature sensor is always installed on the stage but not the DUT. To avoid erroneous results, we apply the innovative thermal anchoring technique to probes, arms and radiation shields.



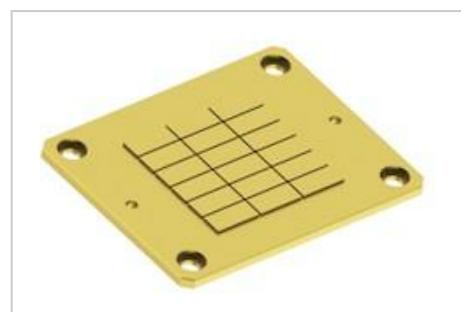
Comprehensive temperature monitoring.

There are four temperature sensors in our system to provide you with a accurate thermal profile of the test environment. One sensor is installed on the sample stage and the others are installed on the radiation shields, probe arms, and probes separately.



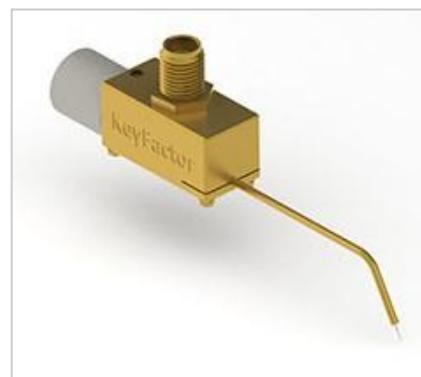
Various sample holders.

The most common sample holder is a OFC holder grounded to the System chasis. It is used when no background signal transmission is needed on the DUT. We also provide coax and triax versions with low noise for high resolution signal measurement. All holders are Type II gold plated.



High performance probes available.

FemtoProbe is compatible with CryoPS. This set up will provide guarded probe tips to triax source and measurement units. It significantly reduces system noise level and will enable you to measure signals down to 1 femtoamp resolution.



Please contact us for detailed information.

Specifications are subject to change without notice.

Positioners

DTP100

Accuracy	5µm
X-Y-Z Travel Range	12.5mm*12.5mm*12.5mm
TPI	100
Mounting	Magnetic (W/O On/Off function)
Footprint	106mm*80mm*70mm (W*D*H)
Application	Basic I-V/C-V probing

*Available in right hand or left hand config.



DCP100

Accuracy	3µm
X-Y-Z Travel Range	12.5mm*12.5mm*12.5mm
TPI	100
Mounting	Magnetic (W/O On/Off function, On/Off version available upon request)
Footprint	124mm*87mm*101mm (W*D*H)
Application	I-V/C-V, RF probing, Failure analysis

*Available in right hand or left hand config.



RFP100

Accuracy	5µm
X-Y-Z Travel Range	25mm*25mm*12.5mm
TPI	50
Mounting	Bolt down
Footprint	165mm*125mm*130mm (W*D*H)
Application	High-performance RF, multi-contact/mixed signal probing High-performance versatile wafer-level reliability probing Single-ended broadband/mmWave, THz, source/load pull, RF noise probing



RFP100-MMW

Accuracy	5µm
X-Y-Z Travel Range	25mm*25mm*12.5mm
TPI	50
Mounting	Bolt down
Footprint	255mm*192mm*155mm (W*D*H)
Application	High-performance RF, multi-contact/mixed signal probing High-performance versatile wafer-level reliability probing Single-ended broadband/mmWave, THz, source/load pull, RF noise probing

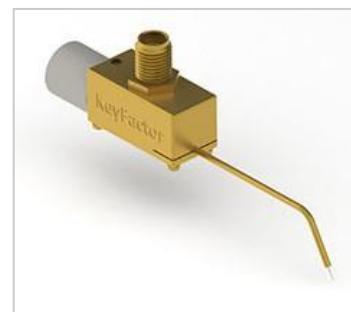


Probes and Adapters

FemtoProbe

Application	Low noise I-V measurement
Current Leakage	<10fA
Cable	N.A.* See page 16 for cable assemblies.
Connector	SMA, female, gold plated
Breakdown voltage	500V
Adapters	N.A. *

* Cable assemblies and adapters purchased separately.



FemtoProbe Replacement Tips

Application	Low noise I-V measurement, FemtoProbe replacement tips.
Tip Diameter	5µm, 10µm, 20µm
Probe bend	45 or 60 degree in one bend

FP-A100

Application	FemtoProbe and CPA-10 probe adapter to positioners.
Positioner compatibility	DTP100, DCP100
Features	Cost-effective rigid stainless structures.



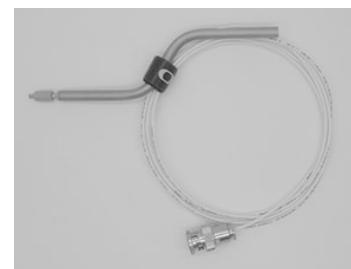
FP-A200

Application	FemtoProbe and CPA-10 probe adapter to positioners.
Positioner compatibility	DTP100, DCP100
Features	Adjustable in X-Y-Z directions, improves set up efficiency.



S10-Coax

Application	Basic I-V measurement
Current Leakage	<10pA
Cable	2m Coax Cable (Available in different lengths)
Connector	BNC, male, silver (contact finish)
Breakdown voltage	500V



S10-Tiax

Application	Basic I-V measurement
Current Leakage	<100fA
Cable	2m Triax Cable (Available in different lengths)
Connector	Tiax, male, gold (contact finish) *Female gender available upon request.
Breakdown voltage	500V



S10-BA

Application	Basic I-V measurement
Current Leakage	<1nA
Cable	2m flexible cable (Available in different lengths)
Connector	Banana, shrouded plug, nikel (contact finish) *Female gender available upon request.
Breakdown voltage	500V



CPA-10

Application	Excellent performance with LCR, Low noise I-V measurement
Current Leakage	<10fA
Cable	N.A. See page 16 for cable assemblies.
Connector	SSMC, female, gold plated
Breakdown voltage	500V
Adapters	N.A. *



* Cable assemblies and adapters purchased separately.

FemtoProbe Replacement Tips

Application	Low noise I-V measurement, FemtoProbe replacement tips.
Tip Diameter	1µm, 3µm, 10µm, 20µm
Probe bend	45 or 60 degree in one bend or dual bends

Disposable probe tips

Application	I-V/C-V measurement, failure analysis
Tip Diameter	5µm, 10µm, 20µm
Length	50mm
Finish	Nikel



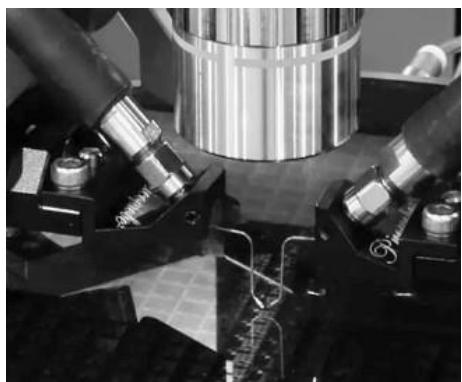
Disposable probe tips - Catwhisker

Application	I-V/C-V measurement, failure analysis, excellent in probing on thin film geometric structures
Tip Diameter	1µm
Length	60mm
Finish	Nikel



RF/mmW Probe Tips

Application	High-performance RF, multi-contact/mixed signal probing, Single-ended broadband/mmWave, THz, source/load pull, RF noise probing
Footprint	GS, SG, GSG, or diferencial
Pitch	Customized when ordered
Calibration Substrate	N.A. *
Adapters	N.A. *



* Calibration Substrate and adapters are purchased separately.

RFH-100

Application	RF probes adapters to positioners
Positioner compatibility	DCP100, RFP100
Features	Rigid structures. 10° horizontal tilting range for probe tip planarity alignment to pads. Available in south, east, north and west version.



High impedance active probe (Model 12C)*

Application	High speed, high input impedance active probe for measuring the internal node voltage of integrated circuits.
Input Capacitance	0.1pf
Input Resistance	1.0 megohm
Rise/Fall Time	0.8ns
Bandwidth	DC ~500MHz
Linearity	0.5%
Voltage Range	-10 to +20V*
Gain Accuracy	±3%
Signal Attenuation	(High Input impedance oscilloscope: 10 to1) (50 ohm input: 20 to 1)



*This is a 12C model from GGB industries, other requirements please contact for detail information.

12C Disposable tips

Application	Used with model 12C
Radius	<0.1µm, <1µm, <2µm, <3µm, <5µm



Cable Assemblies

DC Cable Assemblies

CA-SMA-Triax-MTM-1M /(-2M -3M)

Application	Low noise I-V measurement FemtoProbe cable assembly For connection of FemtoProbe to ultra high resolution semiconductor characterization systems.
Current Leakage	<10fA
Cable	2m triax cable (1m and 3 meter available upon request)
Connector	SMA, male, gold coating side1 Triax, male, gold (contact finish) side2
Breakdown voltage	500V



CA-SSMC-BNC-FTM-1M /(-2M -3M)

Application	Low noise I-V measurement CPA-10 cable assembly For connection of CPA-10 to LCR or any other C-V measurement instrument.
Current Leakage	<10pA
Cable	1, 2 or 3m coax cable available
Connector	SSMC, male, gold coating, side1 BNC, male, gold (contact finish) side2
Breakdown voltage	500V



CA-SSMC-Triax-FTM-1M /(-2M -3M)

Application	Low noise I-V measurement For connection of CPA-10 to ultra high resolution semiconductor characterization systems.
Current Leakage	<10fA
Cable	1, 2 or 3m Triax cable available
Connector	SSMC, male, gold coating, side1 BNC, male, gold (contact finish) side2



CA-BNC-BNC-MTM-1M /(-2M -3M)

Application	Extended connection, in series. Low noise I-V measurement
Current Leakage	<10pA
Cable	1, 2 or 3m coax cable available
Connector	BNC, male, silver (contact finish) side1 BNC, male, silver (contact finish) side2 *Female gender available upon request.
Breakdown voltage	500V

**CA-BNC-Triax-MTM-1M /(-2M -3M)**

Application	Extended connection, between series. Low noise I-V measurement
Current Leakage	<10fA
Cable	1, 2 or 3m triax cable available
Connector	BNC, male, silver (contact finish) side1 Triax, male, gold (contact finish) side2 *Female gender available upon request.
Breakdown voltage	500V

**CA-Triax-Triax-MTM-1M /(-2M -3M)**

Application	Extended connection, in series. Low noise I-V measurement
Current Leakage	<10fA
Cable	1, 2 or 3m triax cable available
Connector	Triax, male, gold (contact finish) side1 Triax, male, gold (contact finish) side2 *Female gender available upon request.
Breakdown voltage	500V

**CA-BNC-AC-MTM-1M /(-2M -3M)**

Application	Adapts coax cable to alligator clip end
Current Leakage	<10nA
Cable	1, 2 or 3m coax cable available
Connector	BNC, male, silver (contact finish) side1 Alligator clip, male, gold (contact finish) side2 *Female gender available upon request.
Breakdown voltage	500V



CA-Triax-AC-MTM-1M /(-2M -3M)

Application	Adapts triax cable to alligator clip end
Current Leakage	<10nA
Cable	1, 2 or 3m triax cable available
Connector	Triax, male, gold (contact finish) side1 Alligator clip, male, gold (contact finish) side2 *Female gender available upon request.
Breakdown voltage	500V

**CA-BNC-BA-MTM-1M /(-2M -3M)**

Application	Adapts coax cable to banana plug end
Current Leakage	<10nA
Cable	1, 2 or 3m coax cable available
Connector	BNC, male, silver (contact finish) side1 Banana, plug, nikel (contact finish) side2 *Female gender available upon request.
Breakdown voltage	500V

**CA-Triax-BA-MTM-1M /(-2M -3M)**

Application	Adapts triax cable to banana plug end
Current Leakage	<10nA
Cable	1, 2 or 3m triax cable available
Connector	Triax, male, gold (contact finish) side1 Banana, plug, nikel (contact finish) side2 *Female gender available upon request.
Breakdown voltage	500V

**RF/mmW cables, waveguides**

Application	High-performance RF, multi-contact/mixed signal measurement, Single-ended broadband/mmWave, THz, source/load pull, RF noise measurement
Cable*	Semi rigid coax cable or waveguides
Connector*	Vary from frequency bands

*Please contact us for detail information of cables and connectors.



Adapters (Connectors)

ADP-BNC-BNC-FTF

Application	In series, extended connections or feedthroughs.
Current Leakage	<10pA
Gender	Female side 1
	Female side 2
Coating	Nikel
Contact Finish	Silver
Mounting	Bulkhead
Breakdown voltage	500V



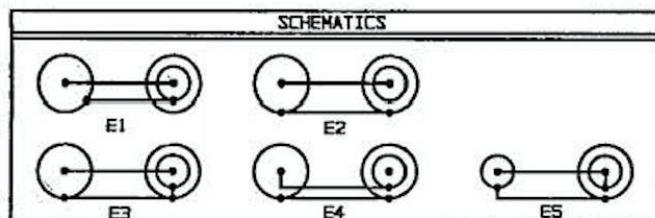
ADP-Triax-Triax-FTF

Application	In series, extended connections or feedthroughs.
Current Leakage	<10fA
Gender	Female side 1
	Female side 2
Coating	Nikel
Contact Finish	Gold
Mounting	Bulkhead
Breakdown voltage	500V



ADP-BNC-Triax-FTF

Application	Between series, BNC to triax.
Current Leakage	<10pA
Gender	Female side 1
	Female side 2
*Male gender available upon request.	
Coating	Nikel
Contact Finish	Gold
Schematics	E1/ E2/ E3/ E4/ E5, see picture below
Mounting	Bulkhead
Breakdown voltage	500V



ADP-SHV-SHV-FTF

Application	In series, extended connections or feedthroughs. High voltage I-V/C-V measurement.
Current Leakage	<10pA
Gender	Female side 1 Female side 2 <small>*Male gender available upon request.</small>
Coating	Nikel
Contact Finish	Gold
Mounting	Bulkhead
Breakdown voltage	>5000V



Coax to waveguide adapters

Application	Between series, connects coax connectors to waveguide connectors. Eg. 1.0mm to WR-12
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*Please contact us for detail information.



Light Tight, EMI Shield Enclosure

EMIShield



Application

Light tight and EMI shielding.

Features

Light tight – Seamless design provides a light environment for measurement.

EMI Shielding – Grounded to instrument chassis to shield systems from EMI interference.

Easy feedthroughs – Two feedthrough panels on each side, very convenient to install bulkhead connectors.

Spring load door stand – Effortless and low vibration level when opening/closing the front door.

Interlock – Interlock version available for high power test.

VIT compatible – Can be integrated to VIT Frames, vibration free to DUT.

Physical Dimensions

Dimensions	1020mm(W)*940mm(D)*930mm(H)
*Handles included	1220mm(W)*940mm(D)*930mm(H)
Weight	90kg
	120kg

* Specifications are subject to change without notice.

Vibration Isolation Frames

Table Top Compact Vibration Isolation Table

Size	24in*24in (W*D)
Natural Frequency	Horizontal 3.6Hz, Vertical 3.2Hz
Damping	Pneumatic
Maximum load	80kg
Compressed air	Yes
Auto leveling	Yes
Hieight	2in
Weight	20kg

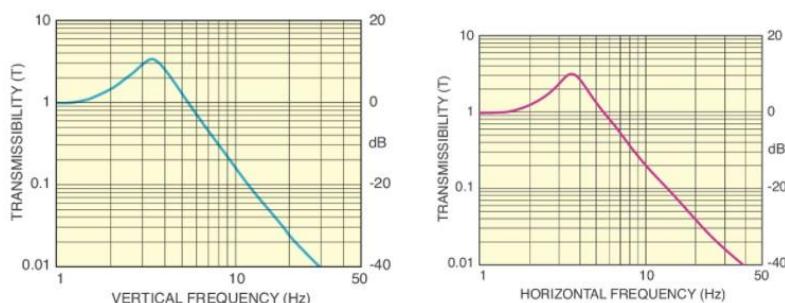


Table Frame Vibration Isolation Table

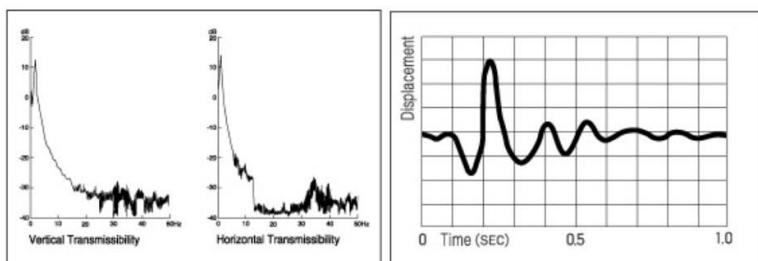
Size	1200*900mm (W*D)
Natural Frequency	Horizontal 1.5~1.7Hz, Vertical 1.2~1.5Hz
Damping	Pneumatic
Maximum load	300kg
Compressed air	Yes
Auto leveling	Yes
Hieight	4in
Weight	20kg



Frequency and transmissibility - Table Top Compact Vibration Isolation Table



Frequency and transmissibility - Table Frame Vibration Isolation Table



Microscopes, Objectives and Cameras

Microscopes

Stereo Microscope

Magnification	15X~100X
Resolution	Horizontal 3.6Hz, Vertical 3.2Hz
Eyepieces	20X
Zoom Range	0.75X~5X
Working Distance	110mm
Focus travel range	50mm
Camera interface	C-Mount



SlimScope

Magnification	Vary from CCD and Monitor sizes
Resolution	N.A.
Eyepieces	N.A.
Zoom Range	0.58X~7X
Objectives	1X, 2X, 5X, 10X, 20X, 50X, 100X (available upon request)
Objectives slot	Twist and change
Working distance	89mm (1X objective)
Focus travel range	50mm/10mm coax focus range
Camera interface	C-Mount



SuperScope

Magnification	20X~2000X
Resolution	N.A.
Eyepieces	10X
Objectives	2X, 5X, 10X, 20X, 50X, 100X (available upon request, turret for maximum 4 pcs of objectives)
Zoom Range	1X~2X
Working Distance	Vary from objectives
Focus travel range	50mm coax focus range (4mm/rev coarse, 0.1mm/rev fine)
Camera interface	C-Mount
Laser interface	Optional



*Objectives are purchased separately.

Objectives



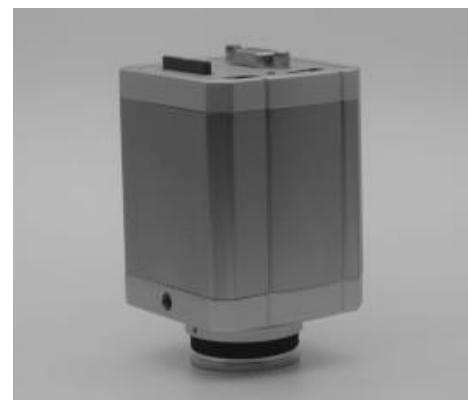
Objective lens, compatible with SlimScope and Superscope.

Model #	Description	Application	Mag.	N.A.	W.D.	Resolution	Focal Depth
OBL-2X	M Plan APO 2X	BF, LWD	2X	0.055	34.6mm	5µm	91µm
OBL-5X	M Plan APO 5X	BF, LWD	5X	0.13	45mm	2µm	14µm
OBL-10X	M Plan APO 10X	BF, LWD	10X	0.28	34mm	1µm	3.5µm
OBL-20X	M Plan APO 20X	BF, LWD	20X	0.42	31mm	1µm	3.3µm
OBL-50X	M Plan APO 50X	BF, LWD	50X	0.42	45mm	0.7µm	1.6µm
OBL-100X	M Plan APO 100X	BF, LWD	100X	0.55	12.5mm	0.5µm	1.0µm
OBL-1X-NIR	M Plan APO NIR 1X	BF, Laser	1X	0.03	12mm	22.4µm	611µm
OBL-2.5X-NIR	M Plan APO NIR 2.5X	BF, Laser	2.5X	0.1	28mm	6.7µm	55µm
OBL-5X-NIR	M Plan APO NIR 5X	BF, Laser	5X	0.13	45mm	2µm	14µm
OBL-10X-NIR	M Plan APO NIR 10X	BF, Laser	10X	0.28	34mm	1µm	3.5µm
OBL-20X-NIR	M Plan APO NIR 20X	BF, Laser	20X	0.5	12mm	0.5µm	2.2µm
OBL-50X-NIR	M Plan APO NIR 50X	BF, Laser	50X	0.6	10mm	0.6µm	1.5µm
OBL-100X-NIR	M Plan APO NIR 100X	BF, Laser	100X	0.75	10mm	0.75µm	0.9µm
OBL-20X-NUV	M Plan APO NUV 20X	BF, Laser, NUV	20X	0.4	17mm	0.69µm	1.72µm
OBL-50X-NUV	M Plan APO NUV 50X	BF, Laser, NUV	50X	0.7	14.8mm	0.64µm	1.49µm

Cameras and Monitors

CAM-200MP-VGA

Sensor	1/2.86 in
Resolution	1928*1080 pixel
Frame rate	30 ftps
Digital Zoom	1X~10X
Storage	SD card
Software	Snapping, recording
Video interface	VAG
Camera interface	C-Mount
Power	DC 12V, 1A



*Monitor is purchased separately.

CAM-200MP-HDMI

Sensor	1/2.86 in
Resolution	1928*1080 pixel
Frame rate	60 fps
Digital Zoom	1X~10X
Storage	SD card
Software	Snapping, recording and measuring *It requires calibration before measurement.
Video interface	HDMI
Camera interface	C-Mount
Power	DC 12V, 1A



*Monitor and calibration kits are purchased separately.

CAM-200MP-BNC

Sensor	1/3 in
Resolution	More than 540 TVL
Video interface	BNC
Camera interface	CS-Mount
Power	DC 12V, 1A



CAM-Monitor

TFT screen	23 in (larger available)
Video interface	VGA/HDMI/BNC
Power	110V/220V ±10%

*For used with all KeyFactor's cameras.



Vacuum Pumps and Air Compressors

Vacuum pumps

VP-125

Application	For vacuum fixation of DUT, chucks, and micropositioners.
Vacuum level	-33kPa(-250mmHg)
Volume	7L/min
Inlet/Outlet	Compatible with 6mm~8mm lines, OD
Power	110V/220V ±10%
Weight	0.7kg
Dimensions	92mm*58mm*90mm(W*D*H)



VP-D16C

Application	Used with CryoPS to pump down to basic vacuum level.
Vacuum level	4*10^-4mbar
Volume	17m^3/h
Vacuum Interface	KF25
Power	110V/220V ±10%
Dimensions	540mm (W)



Air Compressors

AC-45DB

Application	Compressed air source
Volume	80L/min
Pressure (max)	8bar/120psi
Cotainer volume	30L
Vacuum Interface	45dB
Noise	110V/220V ±10%
Weight	50kg
Dimensions	600mm*430mm*650mm(W*D*H)



AC-35DB

Application	Compressed air source
Volume	17L/min
Pressure (max)	8bar/120psi
Cotainer volume	4L
Vacuum Interface	35dB
Noise	110V/220V ±10%
Weight	18kg
Dimensions	382mm*300mm*334mm(W*D*H)



Specifications and designs are subject to change without notice.