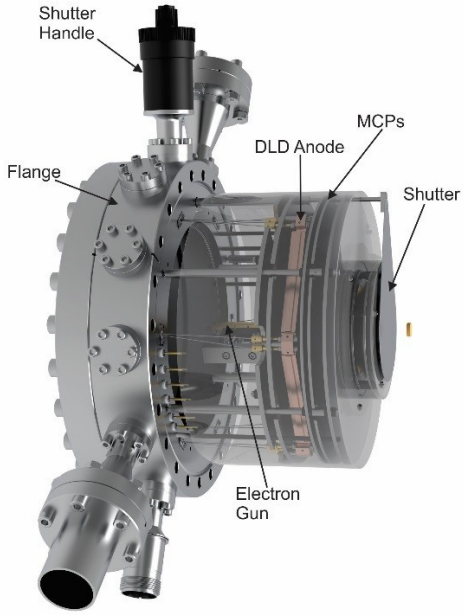
FemtoLEED DLD L1000 Configuration Guide and Specifications



LEED configuration

Base configuration		
Model	Order Code	
DLD L1000		Femto-LEED optics for low energy electron beam application, with 3 grid high resolution retarding field analyzer, integral miniature electron gun, two 80 mm O.D. Long Life (TM) microchannel plates in chevron configuration with Au plating enhanced for pulsed mode, delay-line-hex-anode, Mu-metal shield mounted on the CF10” (DN200CF) O.D. flange.
LMX		Integral linear retraction based on 4 linear ball bearings up to 100 mm
LPS075-D		Digital power supply (0-750 V) with USB interface and PC control software for Windows 10. True primary beam current and total emission measurements. Automatic start-up and shut down, 10 memory settings including standby and outgassing mode with timer, constant beam current mode controlled by filament current or Wehnelt voltage. All cables included.
MCPS2		Electronics for two microchannel plates with digital displays of voltages and MCP load current measurements and protection.
Options		
ISH		Integral shutter
LaB_6		LaB_6 single crystal filament instead of a tungsten wire filament
DLA-TR8		Controller for delay line detector and computer interface PCI card

LEED Software

Software Options		
Model	Order Code	
LIM-DLD		LEED pattern measurements, analysis software & hardware for Windows 10 including: - Automatic LEED pattern acquisition

		- Automatic I-V analysis with spot tracking - Automatic I-T analysis - Automatic spot profile analysis

Detailed Specifications

FemtoLEED DLD L1000 optics	
Detector	Delay Line Detector with dynamic range 32 bit per channel, 75 microns spatial resolution and active area diameter 75mm
Angle of acceptance	77° from sample
Retarding Field Analyzer	Concentric assembly of hemispherical grids
Working distance from sample	15 mm
Grid material	Gold coated tungsten wire mesh (100 mesh, 81% transparency)
Energy resolution	0.2%
Monitoring	10” standard viewport
Linear motion	External nipple with bellow up to 150 mm retraction
Integral shutter	Manual shutter driven by a rotary feedthrough
Magnetic shielding	Mu metal cylinder with front cover for maximum attenuation
Assembly	Extreme high vacuum compatibility with stainless steel, high alumina and Au-plated copper alloy materials
Mounting	CF10”(DN200CF) double sided conflat flange with sample distance 145 mm – 580 mm
Bakeability	Under vacuum, 250°C maximum
Integral miniature electron gun	
Beam energy	LEED: 0-750 eV
Beam current	LEED: 2 μA at 100 eV and 0.5 mm beam size
Beam size	From 1 mm to 250 μm-adjusted by wehnelt potential, limited by exchangeable aperture down to 50 μm
Electron source	Tungsten 2% thoriated filament (standard) or single crystal LaB_6 filament (optional)
Energy spread	0.45 eV (thoriated-tungsten filament)
Overall size	10 mm lens diameter and 80 mm length
Microchannel Plates	
Working area	75 mm
L/D ratio	80:1
Channel diameter	13 microns
Center to center spacing	32 microns
Plate thickness	1.0 mm
Bias angle	20°
Electron gain	10^7, operating in pulsed mode
LPS075-D Electronics	
Beam Voltage	LPS075-D: negative 0-750 V
Filament current	0-3.2 A Tungsten/ 0-2.1 A LaB_6
Wehnelt voltage	0-37 V with respect to the filament
Focus voltage	LEED: positive 70-180% of the beam voltage
Retarding (grid) voltage	Negative 50-110% of the beam voltage
Screen voltage	Positive 0-5000 V
Emission current	1-200 μA
Beam current	0.01-200 μA
Monitoring	All voltages and currents
Display	Vacuum fluorescent, displaying all voltages, currents and program functions
On-board automation	5 pre-programmed and fully programmable operating programs for outgassing, stand-by, filament forming, beam voltage scanning, constant beam current and diagnostics
Manual control	Of all voltages via rotary dials and selection switches
PC control	PC software for full control of all functions via USB
Protection	Over-voltage, over-current, and short circuit
Dimensions	3U 19” rack mount (5.25”/133 mm), depth of 17.5” (440 mm), weight 12 kg

MCPS2 Electronics	
MCP Voltage	1 kV max per microchannel plate
Display	Vacuum florescent display
Manual Control	Of all voltages via rotary dials and selection switches
Protection	Over-voltage, over-current and short circuit protection
Mechanical	19” rack mount box with 2U (3.5”, 90 mm) in height and 13.5” (350 mm) in depth. Weight: 6 kg