



# LISTA DE EQUIPOS

## LABORATORIO DE ÓPTICA CUÁNTICA

(Q-402, Q-506)

### Fuentes láser

1. Láser continuo 405nm de 40mW, con fuente ajustable en potencia (Cantidad: 1)

<b>Marca:</b>	Crystalaser
<b>Modelo:</b>	DL405-050
<b>Año de compra:</b>	2009
<b>Descripción:</b>	405 (+/-5)nm, 40mW, Low Noise TEM <sub>00</sub> . Noise <0.5% (rms. 10Hz-20MHz). Output stability 1% Compact Solid. State laser with CL2005 power supply.



2. Láser continuo 405nm de 200mW, con fuente ajustable en potencia CrystaLaser (Cantidad:1)

<b>Marca:</b>	Crystalaser
<b>Modelo:</b>	DL405-200-O
<b>Año de compra:</b>	2014
<b>Descripción:</b>	405 (+/-5)nm, 200mW, Circular, M2 <1.3. Noise <0.5% (rms. 10Hz-20MHz). Output stability 1% Compact Solid. State laser with CL2005 power supply.



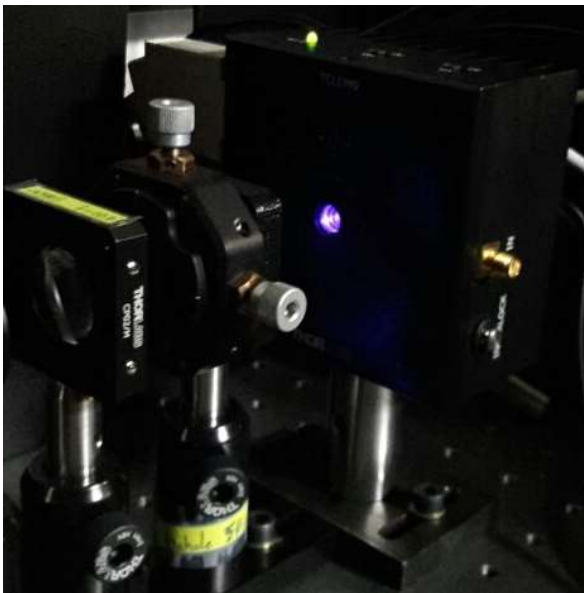
3. Láser HeNe 633nm de 0.5mW (Cantidad: 1)

<b>Marca:</b>	Thorlabs
<b>Modelo:</b>	HRP005S
<b>Año de compra:</b>	2009
<b>Descripción:</b>	Self-contained helium-neon laser system. Wavelength 633nm. Minimum Output Power 0.5mW. Power 3 Seconds After Turn-On > 75%. Polarization Linear > 500:1. Mode Structure TEM00 > 99%. 1/e2 Beam Diameter 0.57mm. Beam Divergence 1.41mrad.



4. Complete Laser Diode / Temperature Controller Set incl. Mount, Optic, & Accessories for 350-700nm (Cantidad: 1)

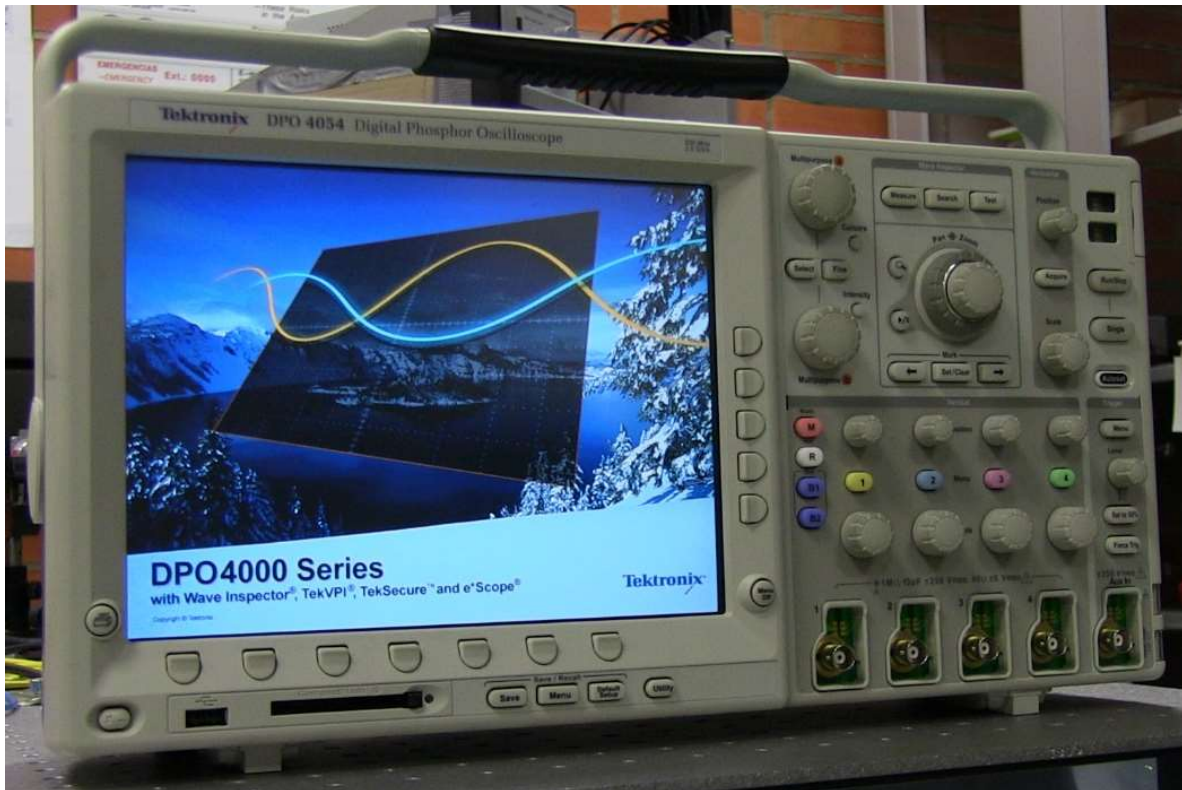
<b>Marca:</b>	Thorlabs
<b>Modelo:</b>	LTC100-A
<b>Año de compra:</b>	2016
<b>Descripción:</b>	<p>The LTC100 Series is a complete laser diode and temperature controller set including mount, optic and accessories. It combines the benchtop LD Current Controller LDC205C and the benchtop Temperature Controller TED200C and other required items for a stable and safe operation of standard laser diodes.</p> <p>Included Items:</p> <ul style="list-style-type: none"> <li>• Benchtop LD Current Controller <math>\pm 500</math> mA HV: LDC205C</li> <li>• Benchtop Temperature Controller, <math>\pm 2</math> A / 12 W: TED200C</li> <li>• TEC LD Mount: TCLDM9</li> <li>• All Connection Cables</li> <li>• Spanner Wrench for M9 x 0.5 Housing: SPW301</li> <li>• Spanner Wrench for SM1 Adapters: SPW909</li> <li>• TR Series Post: TR3</li> <li>• Post Holder for TR Series Post: PH3</li> <li>• Mounting Base: BA2</li> <li>• Optic Adapter: S1TM09</li> <li>• Locking Nut: SM1NT</li> <li>• Grounding Wrist Strap: WS02</li> <li>• AR-Coated Collimation Optic: For 350 - 700 nm: C230TMD-A</li> </ul>



## Instrumentos de medición

5. Osciloscopio digital de 4 canales, 500MHz (Cantidad: 1)

<b>Marca:</b>	Tektronix
<b>Modelo:</b>	DPO4054
<b>Año de compra:</b>	2009
<b>Descripción:</b>	Oscilloscope; digital phosphor, 500 MHz, 2.5 GS/s, 10M record length, 4-ch, color display.



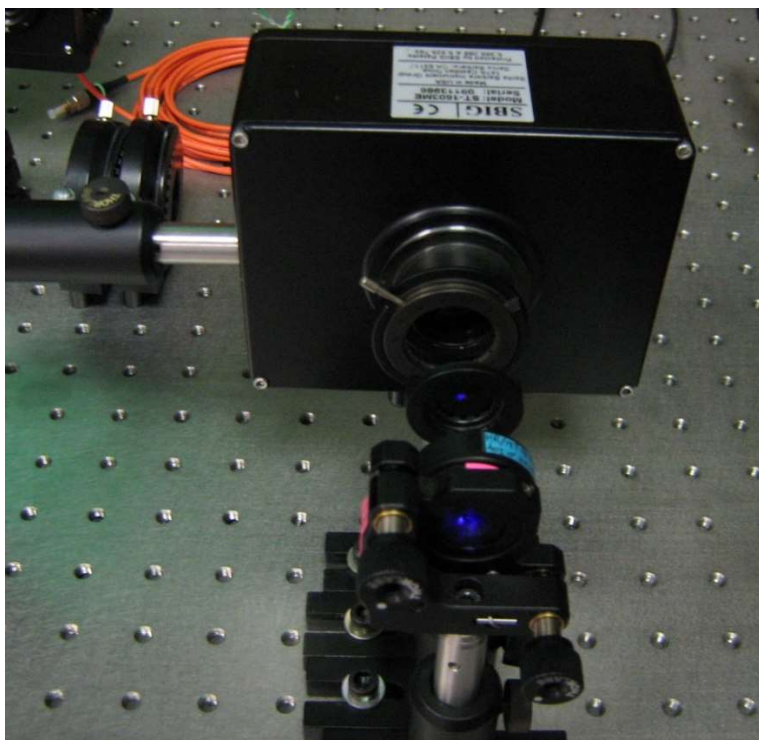
6. Detector de fotones individuales, cuentas oscuras menores a 250cps, con conector de fibra FC/PC. (Cantidad: 5)

<b>Marca:</b>	Perkin Elmer
<b>Modelo:</b>	SPCM-AQRH-13-FC
<b>Año de compra:</b>	2009, 2011 y 2014
<b>Descripción:</b>	Single photon counting module Avalanche photodiode. Peak photon detection efficiency at 650 nm: 65% typical. Active area: 180 $\mu\text{m}$ . Gated output. Single +5 V supply. Maximum dark count rate: 250 counts per second. FC fiber connector attached.



7. Cámara CCD, 1530x1020pixeles, resolución de 9x9um. (Cantidad: 1)

<b>Marca:</b>	Santa Barbara Instruments Group (SBIG)
<b>Modelo:</b>	ST-1603ME
<b>Año de compra:</b>	2010
<b>Descripción:</b>	High quantum efficiency CCD imaging camera. Imaging CCD Kodak KAF-1603ME. Imaging/Pixel Array 1530 x 1020 pixels. CCD Size 13.8 x 9.2 mm. Total Pixels 1.56 million. Pixel Size 9 x 9 microns. Peak QE >80%. Shutter Electromechanical. Exposure 0.09 to 3600 seconds, 10ms resolution. Full Frame Download ~2.1 seconds with USB 2.0. Temperature Regulation +/- 0.1 deg. C. Power 12VDC, Power Supply Included. Dimensions 5 x 4 x 2.5 inches (including fan). Mounting T-Thread.



8. Medidor de potencia óptica, con cabeza lectora (Cantidad: 1)

<b>Marca:</b>	Ophir Spiricon
<b>Modelo:</b>	cabeza: PD300, pantalla: Orion-PD
<b>Año de compra:</b>	2009
<b>Descripción:</b>	<p><b>Cabeza:</b> Aperture 10x10mm. Spectral Range 350-1100nm. Power Range 500pW-300mW. Dimensions 120 L x 13 W x 21 D (mm).</p> <p><b>Pantalla:</b> Orion power meter for photodiode sensors. Supports all Ophir photodiode sensors 200-1800 nm. Wavelength corrected at 1nm increments with user selected favorite wavelength for ease of use. Display Watts or dBm. Auto or manual range. Laser tuning screen to maximize laser power.</p>



9. Medidor de potencia óptica y energía (Cantidad: 1)

<b>Marca:</b>	Thorlabs												
<b>Modelo:</b>	cabeza: S130C, pantalla: PM100D												
<b>Año de compra:</b>	2023												
<b>Descripción:</b>	<p><b>Cabeza:</b></p> <table border="1"> <tr> <td>Aperture Size</td> <td>Ø9.5 mm</td> </tr> <tr> <td>Wavelength Range</td> <td>400 - 1100 nm</td> </tr> <tr> <td>Power Range (with Filter)</td> <td>500 pW - 5 mW (Up to 500 mW)</td> </tr> <tr> <td>Detector Type</td> <td>Si Photodiode</td> </tr> <tr> <td>Linearity</td> <td>±0.5%</td> </tr> <tr> <td>Resolution</td> <td>100 pW<sup>d</sup></td> </tr> </table>	Aperture Size	Ø9.5 mm	Wavelength Range	400 - 1100 nm	Power Range (with Filter)	500 pW - 5 mW (Up to 500 mW)	Detector Type	Si Photodiode	Linearity	±0.5%	Resolution	100 pW <sup>d</sup>
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	<p><b>Pantalla:</b> Compact, Handheld, Power and Energy Meter Console, Large 4" LCD Screen , Long-Life Internal Li-Polymer Battery, Pre-Installed 8 GB SD Memory Card for Data Storage, Console is Calibrated and Includes Certificate of Calibration.</p>
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PM100D



10. Perfilador de haces 7 cuchillas, detector de silicio (Cantidad: 1)

<b>Marca:</b>	Coherent
<b>Modelo:</b>	BeamMaster USB BM-7 Si-enhanced
<b>Año de compra:</b>	2014
<b>Descripción:</b>	Knife-edge profiler; 9mm square with 7 knife edges; Enhanced silicon detector. CW laser beam shape, power and position measurements. Beam sizes from 3 $\mu\text{m}$ to 9 mm with 0.1 $\mu\text{m}$ resolution and high dynamic range. Real-time Windows display, analysis and data-logging system. Wavelengths from 190 nm to 1800 nm. USB interface available.



11. Cortador óptico

<b>Marca:</b>	Thorlabs																
<b>Modelo:</b>	Controlador: MC200B y MC1F10HP																
<b>Año de compra:</b>	2023																
<b>Descripción:</b>	<p>The MC2000B Optical Chopper is a precision instrument that utilizes advanced features to modulate light from a continuous beam. The controller uses a phase-locked loop (PLL) motor speed control design to precisely maintain the chopping speed and phase relative to a reference signal. An internal, crystal-stabilized, frequency synthesizer provides an accurate and stable reference frequency for stable long-term performance. The MC2000B Chopper offers faster locking times, interface improvements, and a larger selection of blades than our previous-generation MC2000 Optical Chopper.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Key Specifications<sup>a</sup></th> </tr> </thead> <tbody> <tr> <td>Chopping Frequency, with Various Blades</td> <td>4 Hz – 10 kHz</td> </tr> <tr> <td>Frequency Drift</td> <td>&lt;20 ppm/°C</td> </tr> <tr> <td>Ext. Reference Compatibility</td> <td>TTL/CMOS</td> </tr> <tr> <td>Frequency Resolution</td> <td>0.01 Hz (2 Slot Blades) 0.1 Hz (MC1F10HP, Default Blade) 1 Hz (All Other Blades)</td> </tr> <tr> <th colspan="2">External Reference Signal Synchronization</th> </tr> <tr> <td>Harmonic</td> <td>2 to 15X</td> </tr> <tr> <td>Subharmonic</td> <td>1/2 to 1/15X</td> </tr> </tbody> </table>	Key Specifications <sup>a</sup>		Chopping Frequency, with Various Blades	4 Hz – 10 kHz	Frequency Drift	<20 ppm/°C	Ext. Reference Compatibility	TTL/CMOS	Frequency Resolution	0.01 Hz (2 Slot Blades) 0.1 Hz (MC1F10HP, Default Blade) 1 Hz (All Other Blades)	External Reference Signal Synchronization		Harmonic	2 to 15X	Subharmonic	1/2 to 1/15X
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## Actuadores

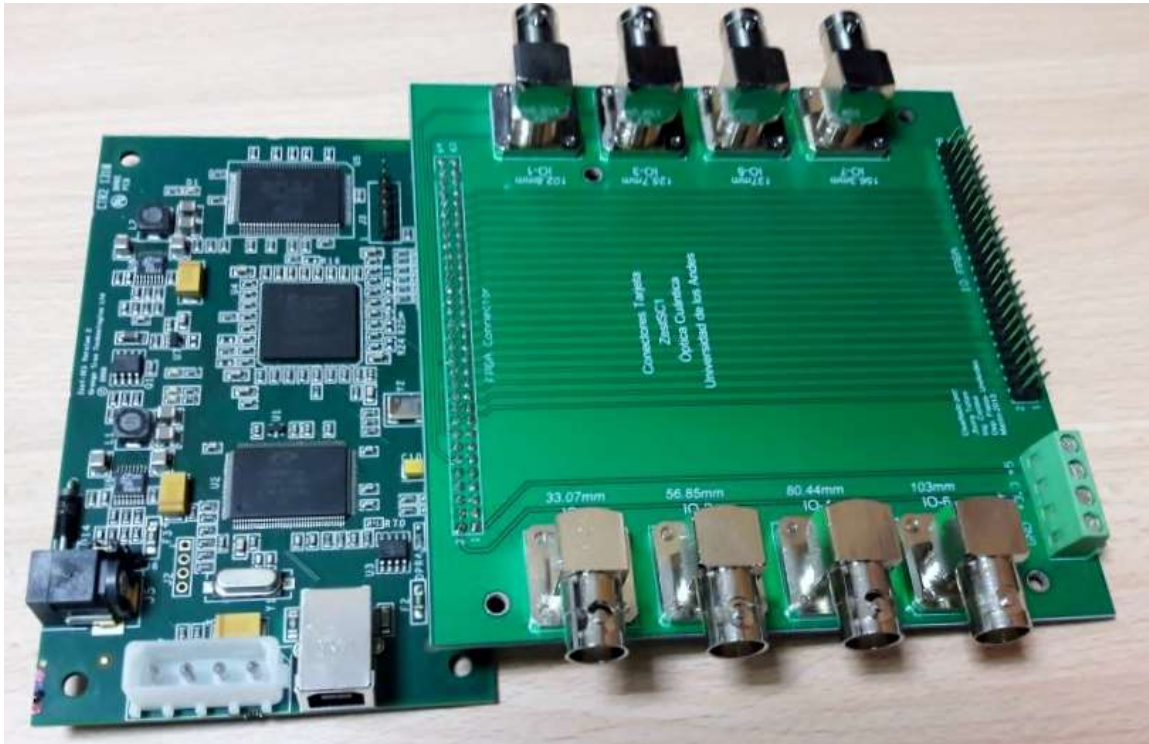
12. Plataforma traslacional 5mm con piezoeléctrico y controlador USB (cantidad: 2)

<b>Marca:</b>	Thorlabs
<b>Modelo:</b>	Plataforma: NFL5DP20S/M, controlador: BPC301
<b>Año de compra:</b>	2014
<b>Descripción:</b>	<p><b>Plataforma:</b> NanoFlex™ single-axis compound flexure stage. Travel of 5mm of coarse manual adjustment with a resolution of 1µm. The differential adjusters also offer 300µm of fine adjustment at a resolution of 50nm. Piezo actuated version, 20µm piezo travel with a 20nm resolution when driven by one of the Thorlabs 0 to 75V piezo controllers. Load capacity is 1Kg (2.2lbs).</p> <p><b>Controlador:</b> 1-Channel 150 V Benchtop Piezo Controller with USB. Variable output selection: 75 V, 100 V, or 150 V. Closed-loop PID with advanced control algorithm. Strain gauge or capacitive sensor feedback options. High-resolution position control for very fine positioning applications. Voltage ramp/waveform generation capability for scanning applications. High bandwidth (10 kHz) piezo positioning. Auto-configure function for thorlabs ident-equipped piezo actuators. User-controlled digital I/O port. USB plug-and-play – multiaxis expansion. Motor control I/O port (jogging, interlocks). Full software control suite supplied. Intuitive software graphical control panels. Extensive ActiveX® programming interfaces. Fully software integrated with other APT™ family controllers (integrated systems development).</p>



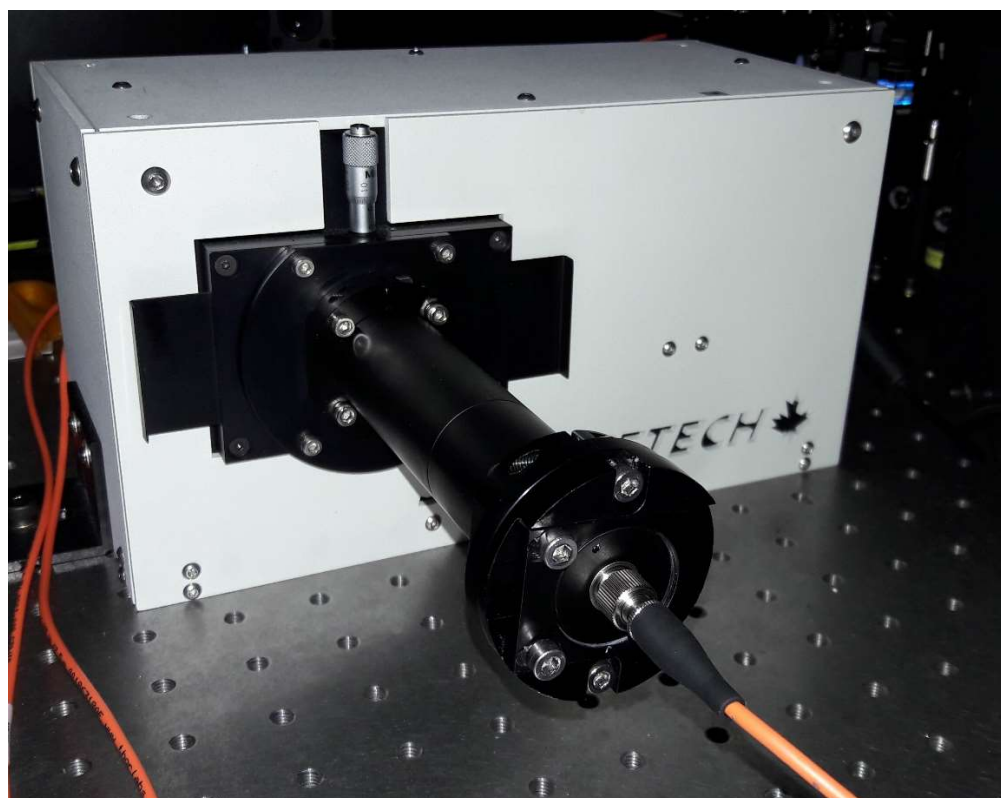
13. FPGA (Cantidad: 3)

<b>Marca:</b>	Orange Tree Technologies Ltd.
<b>Modelo:</b>	Zest-SC1 y Zest-SC2
<b>Año de compra:</b>	2009,2013,2016
<b>Descripción:</b>	<p><b>ZestSC1:</b> FPGA USB board is a low-cost, high performance FPGA board suitable for prototyping and production through to OEM volumes. 1 million gate Xilinx Spartan FPGA, 8MBytes SRAM, 49 user IO pins. (Cantidad:2)</p> <p><b>ZestSC2:</b> FPGA USB board has all the benefits of the ZestSC1 as a high performance FPGA board suitable for prototyping and production through to OEM volumes. 4 million gate Xilinx Spartan FPGA, 64MB SDRAM, 8MB SRAM, Flash, massive 200 user IO pins. (Cantidad:1)</p>



14. Monocromador / espectrógrafo con USB, Controlado por computador (Cantidad: 2)

<b>Marca:</b>	Siencetech
<b>Modelo:</b>	9072
<b>Año de compra:</b>	2016
<b>Descripción:</b>	9072S is a small 1/8m scanning monochromator. The 9072S uses plane gratings 30mm x 30mm in size and utilizes a Czerny Turner optical configuration. The 9072S is designed to be used with single channel detectors or connected to another 9072S to form a double additive or subtractive system. The base 9072S system has a triple grating turret which is computer controlled.



15. Impresora 3D (Cantidad: 1)

<b>Marca:</b>	3D Make-R
<b>Modelo:</b>	Impresora 3D Prusa Tairona multimaterial
<b>Año de compra:</b>	2015
<b>Descripción:</b>	<b>Tecnología:</b> modelado por fusión/adición (FDM/FFF) <b>Volumen De Impresión:</b> 200 mm largo x 195 mm ancho x 210mm alto <b>Resolución De Capa Máxima:</b> 0.05 mm <b>Diámetro Nozzle:</b> 0.4 mm <b>Diámetro De Filamento:</b> 3 mm <b>Hotend:</b> All Metal Catnozzle versión 2.3 <b>Tipos De Archivo:</b> .obj .stl .dea .amf <b>Sistemas Operativos:</b> Windows / OSx / Linux <b>Chasis:</b> Prusa Tairona en Acero inoxidable de 3mm <b>Superficie De Impresión:</b> PCB MK2b (dual 12/24V) <b>Motores:</b> Nema 17 paso a paso 4.0 kg/cm de torque, 1.8 grados por paso <b>Dimensiones:</b> 45cms ancho x 43cms de largo x 40 cms alto <b>Peso:</b> 9 kg <b>Temperatura De Operación:</b> 10° a 32° <b>Entrada Ac:</b> 100-240 VAC 50-60 Hz <b>Requerimientos De Potencia:</b> 12 VDC @ 16 Amperios.

