

**varioptic liquid lens**

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www.varioptic.com - April 2004

# Arctic 320 Series Liquid Lens

## Evaluation Kit & Technology Assessment Programs

## Introduction

Varioptic's liquid lens technology is a breakthrough in the possibilities for designing small aperture lens systems.

Varioptic recognized the wide interest in gaining insight to such a breakthrough technology and has put in place a program to facilitate this. Interest ranges from university research teams, to organizations looking to use the technology commercially.

To accommodate the needs of the different interest groups, the Technology Assessment Program (TAP) is structured to provide two levels of access to the technology and interaction with Varioptic:

- Lens Evaluation Kit - this includes 5 lenses, the equipment necessary to operate the lenses, drawings and user's guides, so you can evaluate the liquid lens performance.
- Technology Assessment Program - includes 5 lenses, the equipment necessary to operate the lenses, drawings and user's guides. We also provide documentation and technical support for optical and reliability testing, together with sample data. Technical support is available by email or phone, or by visiting our offices for a period of three months.

A non-disclosure agreement will be required before commencing mentioned program.

It must be stressed that TAP gives no rights to use the technology for any purpose other than evaluating the lens technology (so development of products based on the lenses or information provided is excluded). For organizations that would like to develop products incorporating liquid lenses, we have a flexible business model offering a number of product design or technology licensing options. Obviously we would be happy to discuss these with you.



## Lens Evaluation Kit

There are 3 basic components:

- lens
- power supply (lens driver system)
- lens holder

A short description of each of these is given in the following sections.

### Varioptic Liquid Lens



#### Arctic 320 lo specifications:

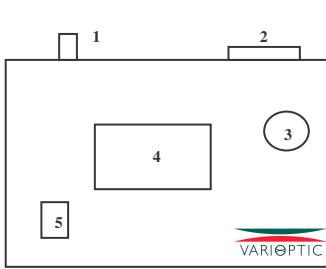
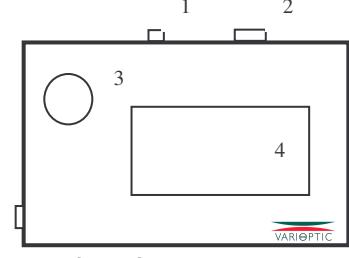
	Item	Unit	25 °C +/- 5 °C	-10 °C to +40 °C
<b>Mechanical</b>	Pupil diameter	mm		3
	Dimensions	mm	Φ10.5 x 2.46	
<b>Optical</b>	Focal range	diopter	> 20	> 18
	Offset dioptic power	diopter	-5 ±2	-5 ±3
	Wave front error (RMS)	µm	<0.7	<0.8
	Minimum transmittance	%	>82	>80
	Hysteresis	diopter	<3	<3.3
<b>Electrical</b>	Driving voltage range (at 1kHz)	Vrms	0 - 60	0 - 60
	Power	mW		< 1



## Lens Driver Power Supply Unit

Two driver/power supply options are available and which you choose depends on how you propose to test the lenses. The main considerations are:

- portability – the VPS048 is much smaller and has a rechargeable battery, compared with the VPS060 which is mains powered only
- programmability – the VPS060 is LabView compatible, whereas the VPS048 accepts any PC-based programming via a USB interface

VPS-060	VPS-048
<ul style="list-style-type: none"> <li>• Typically, the VPS-60 is used in the stand-alone mode.</li> <li>• A potentiometer allows voltage to be varied between 0-60Vrms. The display allows voltage monitoring.</li> <li>• Push button disables/enables the output to apply step changes in voltage</li> <li>• Remote-control is possible via a 0-5v BNC connector.</li> </ul> <p>Size: 162x192x70 Weight: 1.4Kg Power supply: 110/220Vac mains Output: sinusoidal</p>	<ul style="list-style-type: none"> <li>• Typically, VPS-048 is used in a remote-controlled mode (but can be used in stand-alone mode if the USB cable is not connected).</li> <li>• Close to real time architecture and can be controlled via the USB port.</li> </ul> <p>Size: 68x115x25 Weight: 164g Power supply:Li-Ion embedded battery Output: pseudo square wave</p>
	
 <p>1-BNC connector: 0-5v input remote controlled. 2-110/220VAC input 3-potentiometer 4-Voltage display 5- enable/disable output</p>	 <p>1-2 wires lens connector 2-Mini-Usb connector (PC controlled) 3-ON/OFF potentiometer (stand alone mode) 4-LCD status display 5-Connector to charge the embedded battery</p>

## Lens Holder

A voltage needs to be applied to operate the lens, so the lens holder is provided as the means of doing this for evaluation purposes.



## TAP Documentation

- Power supply (VPS060 or VPS048) user's guide
- Varioptic Liquid lens mechanical drawing
- Lens holder drawing
- Lens test results - the diopter vs voltage characteristics of each of the lenses we send to you
- Data for optical simulation: pdf format and Zemax library file
- Lens Optical & Electrical Test Methodologies – a comprehensive explanation of the testing methodologies we use, including transmittance, cosmetic and electrical testing. This document also includes Sample Data Set.
- Glossary for Liquid Lens

## TAP Contents & Price

	Lenses	Lens Holder	Power supply	Documentation and Support	Price
Lens Evaluation kit	5	1	VPS-048 or VPS-060	<ul style="list-style-type: none"> <li>▪ User's guides</li> <li>▪ Lens and holder drawings</li> <li>▪ Lens test results</li> <li>▪ Glossary for liquid lens</li> </ul>	€ 15,000
Technology Assessment Program	5	5	VPS-048 or VPS-060	<ul style="list-style-type: none"> <li>▪ User's guides</li> <li>▪ Lens and holder drawings</li> <li>▪ Lens test results</li> <li>▪ Data for optical simulation</li> <li>▪ Lens Optical &amp; Electrical Test Methodologies</li> <li>▪ Glossary for liquid lens</li> <li>▪ <b>Technical support (3 months)</b></li> </ul>	€ 40,000

## Next Steps

If you wish to take part in the Academic Evaluation Kit, we will ask you to agree our NDA (confidentiality agreement).

Please contact Varioptic on +33 (0)4 37 65 35 31