CORNING

Varioptic® Lenses

Marketing Datasheet

Corning® Varioptic® A-PE-58N Series Variable Focus Lens

Overview

A-PE-58N Series is based on Corning® Varioptic® A-58N liquid lens providing a fast and robust variable focus, it is designed to compensate for temperature related variation using V-temp® feature and relieve customer from calibration work. In addition, it embeds V-speed® response time optimization algorithm further accelerating the liquid lens change from one optical power to another. Pre-implemented V-sweep® algorithm allows customer to make linear change of the optical power of the variable focus lens with time.

Ordering Information

- **Corning® Varioptic® A-PE-58NX-37 variable focus lens:** Packaged A-58NX (X=0,1) with electronic board and 6-pins, 0.5 mm pitch straight flex cable with on-flex thermistor.
    - Coating options:
        - X = 0: has anti-reflective (AR) coatings optimized in the visible range
        - X = 1: has AR coatings optimized in near infrared range

Performance Summary

- 15 diopters dynamic range
- Low wave front error
- Embeds liquid lens driver, temperature sensor and microcontroller
- Integrate individual lens thermal calibration parameters
- Embeds response time optimization algorithm
- I²C / RS 232 interface

Applications

Corning Varioptic A-PE-58N liquid lenses have been used in:

- Scientific and optical instrumentation
- Microscopy

Contents

ESD

Opto-Electrical Performance

@25°C, @635 nm unless otherwise stated

Parameter	*Unit*	*Symbol*	*Typ*	*Notes*
Aperture size	mm	$Ø_e$	5.5	(1)
Low optical power	m^{-1}	P_L	-5	
High optical power	m^{-1}	P_H	+10	
Optical power @ 0V	m^{-1}	P_o	-13.5	
Wave Front Error, rms	nm	WFE_{rms}	80	(2); (3); (4)
Transmission @ 587 nm	%	T_{587}	97	

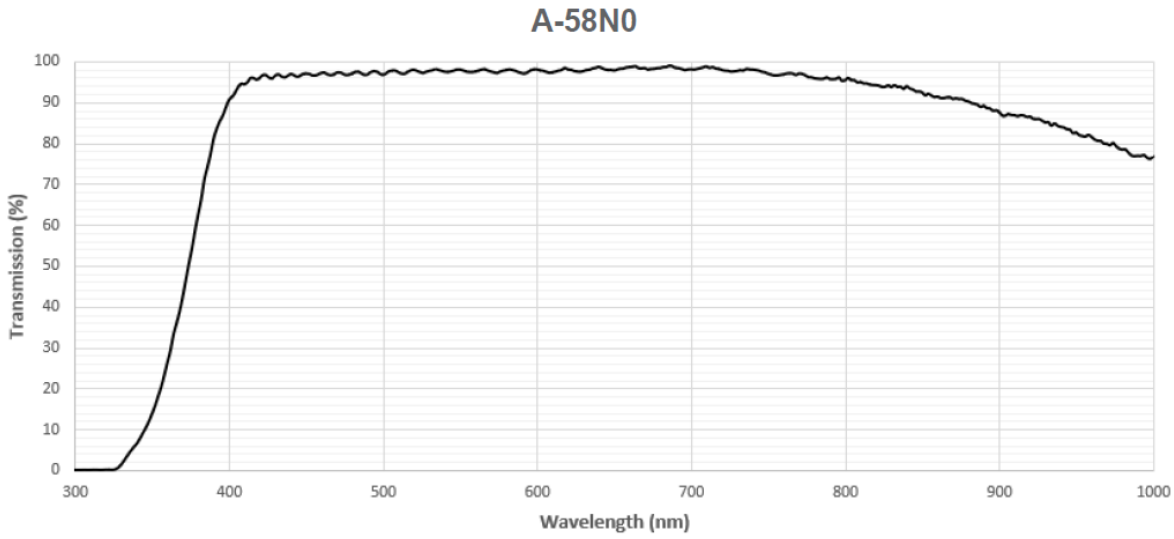
Notes:

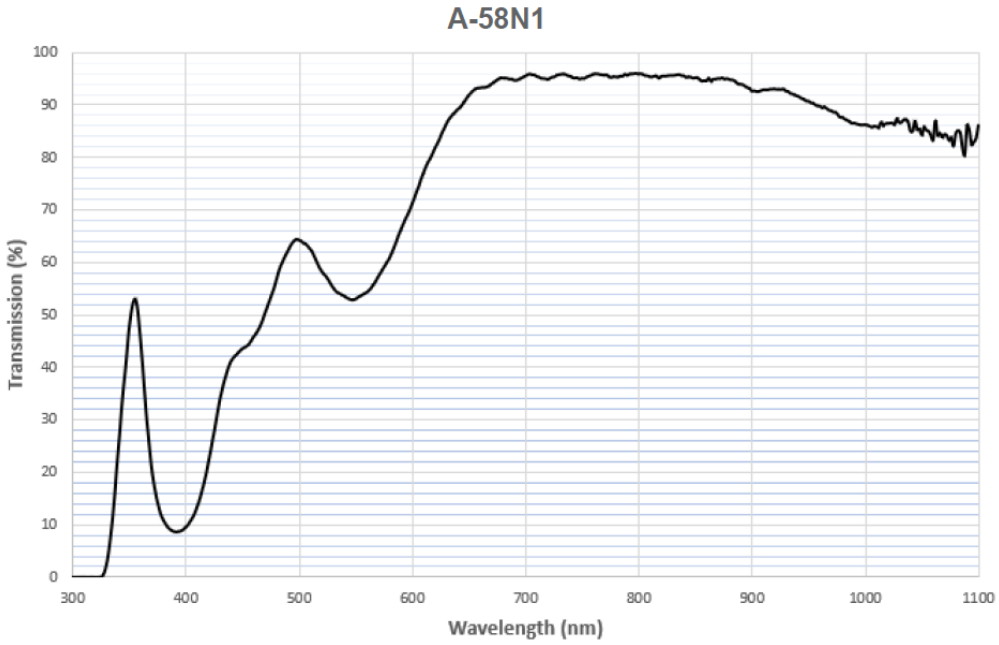
(1) Pupil size on the bottom part of the adjustable lens.
(2) Measured on pupil size and on [P_L;P_H] – WFE is mainly astigmatism.
(3) Parameter is compiled on [P_L;P_H].
(4) Parameters measured through 42 acquisition points within the optical range.

Transmission Performance

The two outer surfaces of the glass windows of the adjustable lenses have AR coatings. These AR coatings have been optimized for different wavelengths.

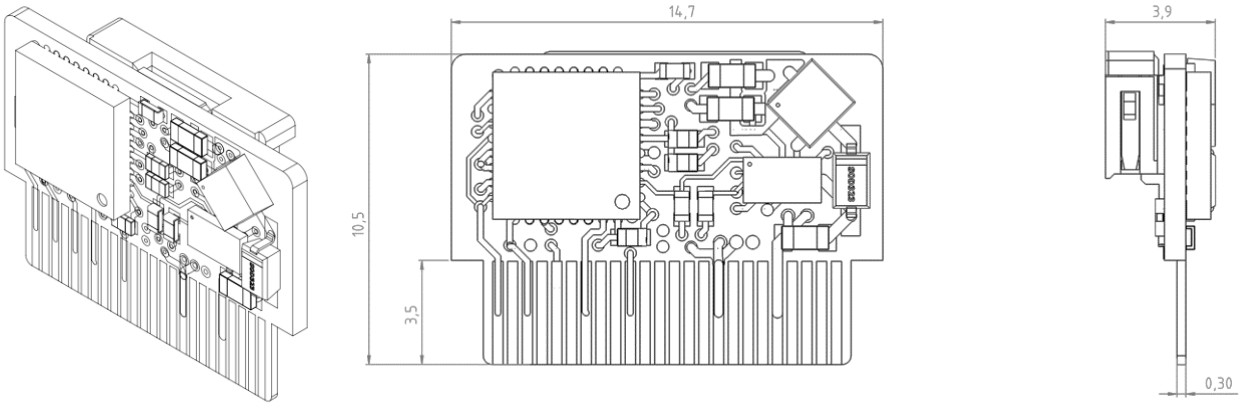
Transmission curves of the complete adjustable lens including AR coatings:





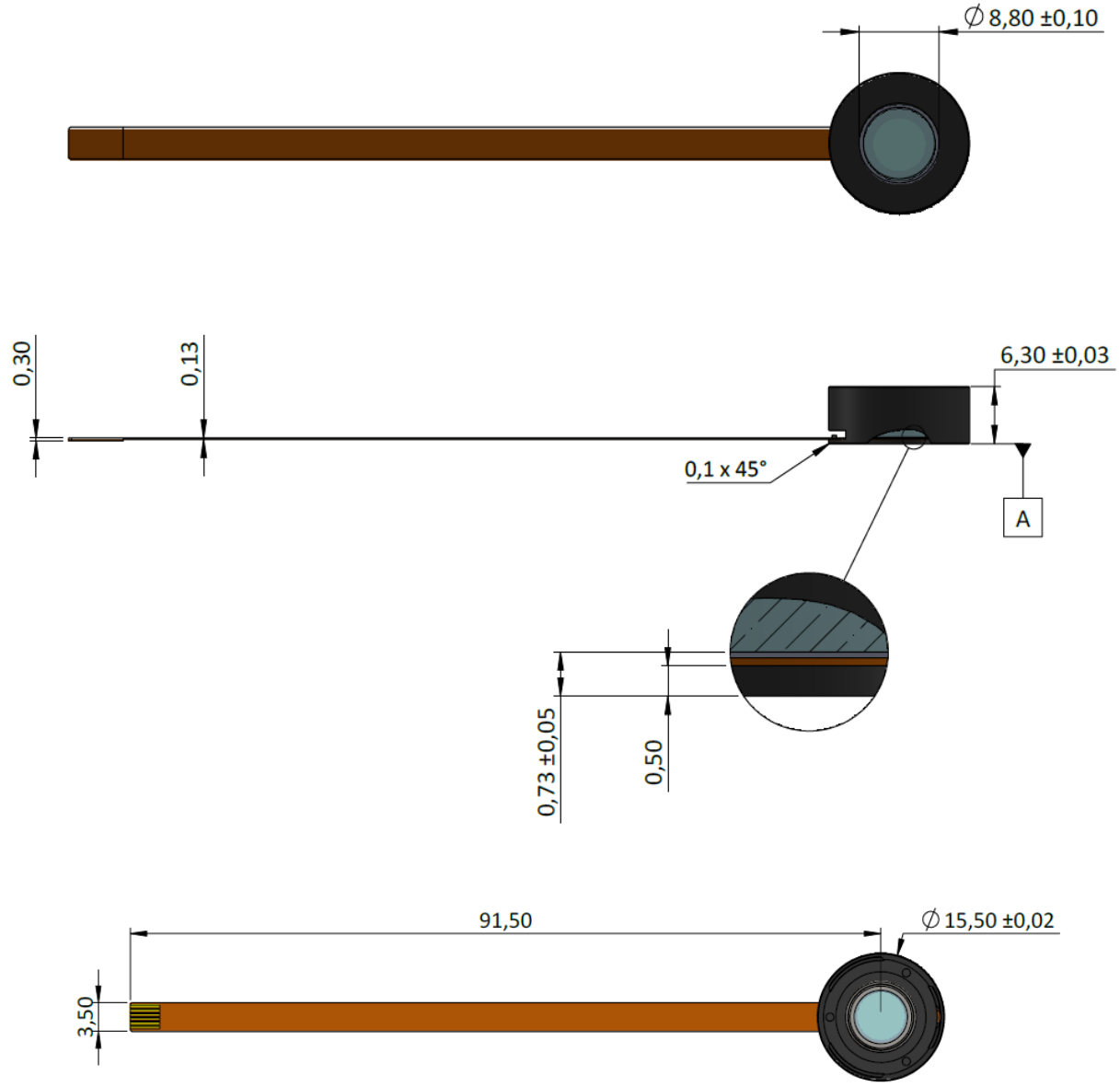
A-PE electronic board

For additional information on the A-PE board, please refer to MAAN - 251003 - A-PE series hardware



Mechanical Dimensions

Packaged Lens



Absolute Maximum Ratings

Parameter	*Symbol*	*Min*	*Typ*	*Max*	*Unit*	*Notes*
Operating Temperature	T	-20	..	50	°C	
Storage Temperature	T_{stg}	-40	..	85	°C	
Input Voltage	Vin	2.8	3.3	3.6	V	

Important note:

Corning Varioptic Lenses and electronic boards are sensitive to electrostatic discharge (ESD). Use caution when handling.

Embedded Features

- **V-Speed**: Up to x5 faster compared to standard response time
- **V-Temp**: Up to x5 improvement on thermal stability
- **V-Sweep**: Driving profile of the liquid lens with linear change of the optical power of the lens with time, allowing the user to take pictures while the lens is still moving with virtually no settling time. For more information on this feature, please refer to the A-PE-58N Technical Data Sheet (TEDS).

For additional information on the register map, please refer to MAAN - 251003 - Serial Communication Protocols.