



Corning® Varioptic® C-S-25H0-026 Auto Focus Lens Module

Overview

The Corning® Varioptic® C-S-25H0-026 auto focus lens module integrates a fixed lens module with a Corning® Varioptic® A-25H0 variable focus lens in an M12x0.5 receptacle (S-mount). The C-S-module has an FPC cable and can be connected to a standard 1 mm pitch FPC connector. It can be easily integrated with a standard M12 sensor board. The C-S-module is compatible with imaging sensor formats up to 1/2.5". The C-S-module can be controlled by the same drivers as the A-25H0. For more information on this module, please refer to the C-S-25H0-026 Technical Datasheet (TEDS).

Ordering Information

- **Corning® Varioptic® C-S-25H0-026-06 auto focus lens module:** 4-pin, 1 mm pitch, bent flex cable (FPC-A-6) without IR-cut filter.
- **Corning® Varioptic® C-S-25H0-026-06I auto focus lens module:** 4-pin, 1 mm pitch, bent flex cable (FPC-A-6) with IR-cut filter.

Performance Summary

- Effective focal length 2.6 mm
- F number 2.5
- Image circle diameter 7.2 mm
- Focus range 4 mm to infinity

Example of Applications

- Close-up focus applications
- Surveillance
- Industrial endoscopes



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Opto-Electrical Performance

Performances described below are for 25°C and for the lens setting described in the 'Module Setting Recommendations' section of this document.

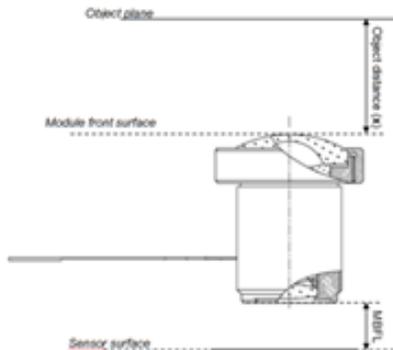
<i>Optical Performances at V_∞</i>	<i>Symbol</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>	<i>Notes</i>
Voltage for infinite focus	V _∞		39.5		V	(1)
Focal length at V _∞	EFL		2.6		mm	
Image circle diameter			7.2		mm	
Corner Chief Ray Angle	CRA			17	°	
Mechanical back focal length at V _∞ , without IR-cut filter			5.26		mm	(4)
Mechanical back focal length at V _∞ , with IR-cut filter			5.36		mm	(4)
F- number	F#		2.5		-	
Relative Illumination	RI	69			%	
Diagonal Field of view	DFOV			160	°	(2)
IR filter cut-off wavelength	λ _c		650		nm	
<i>Focus control performances</i>						
Focus distance	x	0.4		∞	cm	(1)
Voltage for x= 4 mm	V _{4mm}		54		V	(4);

Notes:

- (1) For more information on the behavior of the A-25H0 lens with voltage, please refer to the A-25H TEDS.
- (2) For a sensor size of 7.2 mm diagonal (1/2.5").
- (3) For other sensor sizes, the Field of View (FOV) and distortion is:

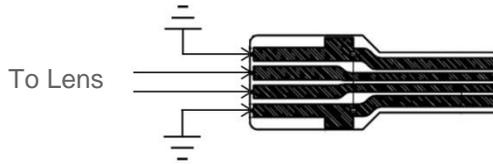
Sensor diagonal	Sensor format	Diagonal FOV	Horizontal FOV	Vertical FOV	Radial distortion (%)
4 mm	1/4"	86°	68°	52°	-21%
5.7 mm	1/3.2"	126°	100°	74°	-47%
6 mm	1/3"	134°	116°	76°	-53%
6.7 mm	1/2.7"	152°	120°	88°	-67%
7.2 mm	1/2.5"	160°	128°	94°	-77%

- (4) Definition of x and MBFL:



Electrical Specifications

Electrical Connection



The following FPC connectors are compatible with the FPC tip:

- SFW4S-2STE9LF from Amphenol FCI
- 04FMN-BTK-A (LF)(SN) from JST

Driver

Several drivers have been qualified for use with Corning Varioptic variable focus lenses (See A-25H Data Sheet). The customer should choose the driver depending on its application. It is important to check the resolution of the driver compared to the depth of field of the system. See driver datasheets for more details.

Absolute Maximum Ratings

<i>Parameter</i>	<i>Symbol</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>	<i>Notes</i>
Operating Temperature	T	-30	..	85	°C	
Storage Temperature	T _{stg}	-40	..	85	°C	
AC Input RMS Voltage	V _{max}			60	V	(1)
Input Voltage Frequency	f		5		kHz	(1)

Notes:

- (1) For more information on the A-25H0 electrical driving, please refer to the A-25H0 TEDS.

Mechanical Dimensions



Module Setting Recommendations

Use caution when configuring the initial lens module settings. Although the user has complete control over module configuration settings, only a limited number of configurations will provide optimum image quality.

Setting Procedure without Voltage:

1. Set a scene which is at a distance of at least 5 m from the camera.
2. Insert and slightly screw the C-S-module on the M12 camera lens holder (C-S-module unpowered).
3. The image should be out of focus.
4. Screw the C-S-module clockwise until the center of the image becomes sharp.
5. From this position, screw the C-S-module clockwise by an additional 1 and 1/4 turns with accuracy of $\pm 1/4$ turn: the image becomes out of focus again.
6. Fix the C-S-module in this position.
7. Power the C-S-module: the infinite focus will be obtained for V_{∞} and the focus at a closer position will be obtained by applying a higher voltage, up to V_{\max} .

Setting Procedure with Voltage:

1. Connect the C-S-module to the driver and adjust the voltage control to $39.5 V_{\text{rms}}$
2. Turn on the camera, and point the camera in the direction of a scene that is at least 5 m from the module, or at a distance of x_0 if using at the maximum focus distance x_0 .
3. Screw the C-S-module clockwise until the image becomes sharp.
4. Optional: Block the C-S-module in that position.

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