CORNING

Varioptic® Lenses

Marketing Datasheet

Corning® Varioptic® C-C-39N0-250 Auto Focus Lens Module

Overview

The Corning® Varioptic® C-C-39N0-250 auto focus lens module is an electronically controllable focus C-Mount lens, based on the Corning Varioptic A-39N0 variable focus lens. It incorporates the necessary electronic components to drive the lens and just needs a DC power supply. Focus can be controlled through either an RS232, I2C, Analog or SPI input. With a 25 mm effective focal length and 2/3" sensor compatibility, it is specifically designed for machine vision applications. For more information on this module, please refer to the C-C-39N0-250 Technical Datasheet (TEDS).

Ordering Information

Corning® Varioptic® C-C-39N0-250-XX auto focus lens module where **XX** determines objective lens configuration:

- **Corning® Varioptic® C-C-39N0-250-I2C auto focus lens module**: I2C or analog operation.
- **Corning® Varioptic® C-C-39N0-250-R33 auto focus lens module**: RS232 with 3.3 V signal or analog operation.
- **Corning® Varioptic® C-C-39N0-250-SPI auto focus lens module**: SPI operation only.
- **Corning® Varioptic® C-C-39N0-250-R12 auto focus lens module**: RS232 with 12 V signal or analog operation.

Key Features

- Variable focus from 12 cm to infinity
- Functions quietly
- Supports I2C - Analog - RS232 - SPI interfaces
- Supports closed loop operation

Contents

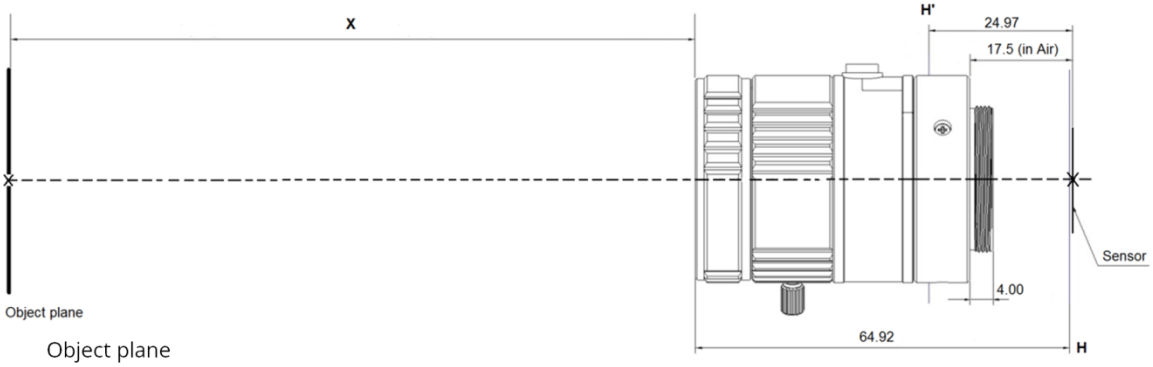
Opto-Electrical Performance

Performances described below are for 25°C

Optical Performances at V∞	*Symbol*	*Min*	*Typ*	*Max*	*Unit*	*Notes*
Voltage for infinite focus	V_∞		46		V	(2)
Focal length at V_∞	EFL		25		mm	
Image circle diameter			11		mm	
Corner Chief Ray Angle	CRA		0		°	
Flange distance			17.5		mm	(3)
F- number	F#	4		22	-	
Diagonal Field of view	DFOV		24.8		°	(4)
Focus control performances						
Focus distance	x	12		∞	cm	(2)
Voltage for x= 11 cm	V_{12cm}		62		V	(2)

Notes:

(1) For more information on the behavior of the C-C-39N0-250 or A-39N0, please refer to the lens and module full datasheet.
(2) Distance to object refers to the principal plane of the objective lens as shown below:



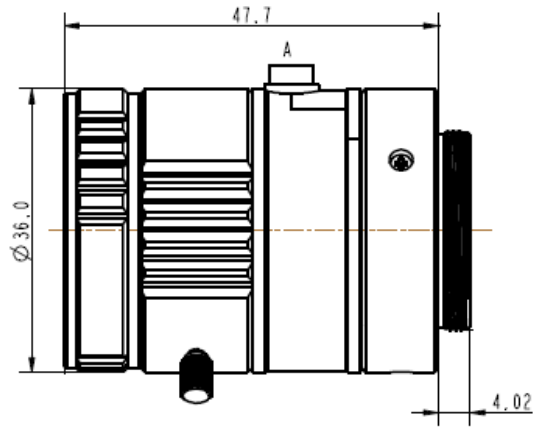
Object plane

(3) Refer to ISO 10935.
(4) For a sensor size of 2/3".

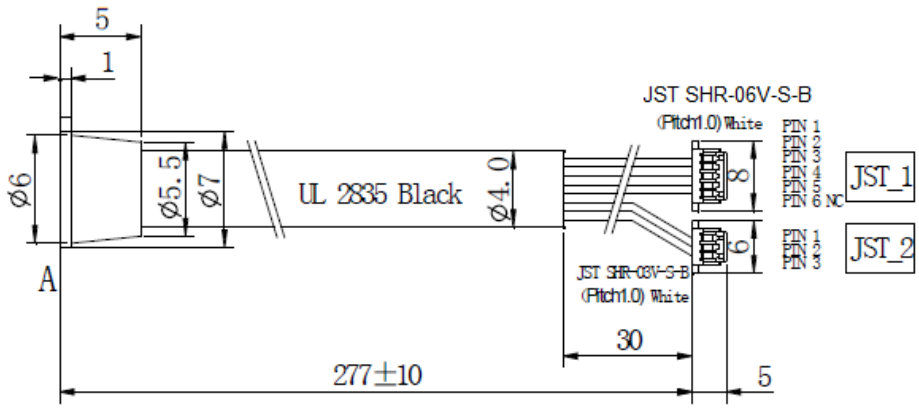
Temperature Range

Parameter	*Unit*	*Min*	*Typ*	*Max*	*Notes*
Operating temperature range	°C	0°C	25	+50°C	TBC
Storage temperature range	°C	-40°C	25	+85°C	TBC

Mechanical Dimensions



Weight: 137.5g

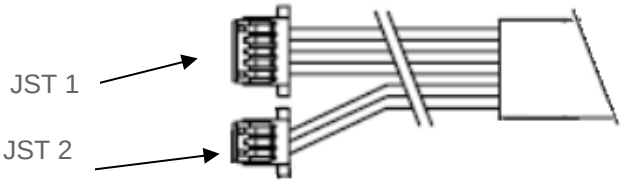


Electrical Connection

The module has a 6-pin connector for power and control (JST_1).

Connector reference: *JST SHR-06V-S-B*
Wire reference: *JST SH3-SH3-28300*

These pins have different functions depending on the module version.



Communication Terminal JST_1

Pin	*Name*	*Description*
1	VIN	Positive power supply (+3.3 to +24 VDC/ red wire)
2	GND	Ground (black wire)
3	I2Csda_Rx_SDI	Multipurpose pin (depending on the part/ yellow wire)
4	I2Cscl_Tx_SCK	Multipurpose pin (depending on the part/ blue wire)
5	SDO_Ana	Multipurpose pin (depending on the part)
6	MCLR	Programming pin (must be unconnected)

The function of the multipurpose pins depends on the part number:

		Corning® Varioptic® C-C-39N0-250-			
Pin	*Name*	*R12*	*R33*	*SPI*	*I2C*
3	I2Csda_Rx_SDI	Rx (RS232)	Rx (3.3V)	SDI	SDA
4	I2Cscl_Tx_SCK	Tx (RS232)	Tx (3.3V)	SCK	SCL
5	SDO_Ana	Analog input	Analog input	SDO	Analog inp

Programming Terminal JST_2

Pin	*Name*	*R12*	*R33*	*SPI*	*I2C*
1	ICSPDAT	Rx (RS232)	Rx (3.3V)	SDI	SDA
2	ICSPCLK	Tx (RS232)	Tx (3.3V)	SCK	SCL
3	MCLR	Analog input	Analog input	SDO	Analog input

Electrical Specifications

Parameter	*Symbol*	*Min*	*Typ*	*Max*	*Unit*	*Notes*
Power supply						
Input voltage	V_{cc}	3.3	5	24	V	
Current consumption - Active mode	I_{cc}		50		mA	(1)
Current consumption – Standby mode	$I_{cc\ Stb}$		12		mA	
Control voltage						
RS12						
I2Csda_Rx_SDI / I2Cscl_Tx_SCK pins		-25		25	V	(2)
RS33/I2C/SPI						
I2Csda_Rx_SDI / I2Cscl_Tx_SCK pins		-0.3		3.6	V	(2)
SDO_Ana pin		-0.3		3.6	V	(2)
MCLR pin		-0.3		3.6	V	

Notes:

(1) Current consumption depends on the voltage applied to the lens. Value given for 4.5 V power supply. See below chart for more details.

Typical current consumption Icc (mA)

Driver state and voltage applied to Lens		(standby)	25 V	70 V
Power supply	3.3V	16.4	70	100
	4.5V	12	50	71
	12V	4.5	27	34
	24V	2.2	20	23

(2) Absolute maximum ratings.

Analog Control

Corning® Varioptic® C-C-39N0-250 modules, except the SPI version, can be controlled by an analog voltage. In this case, the voltage seen by the lens is given by the following equation:

$$V_{rms} = (V_a * 22.5) + 24 \qquad \text{with } 0V < V_a < 2V$$

With:

- V_{rms} : rms value of the voltage seen by the lens (AC voltage)
- V_a : analog input voltage (DC voltage)