



# 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

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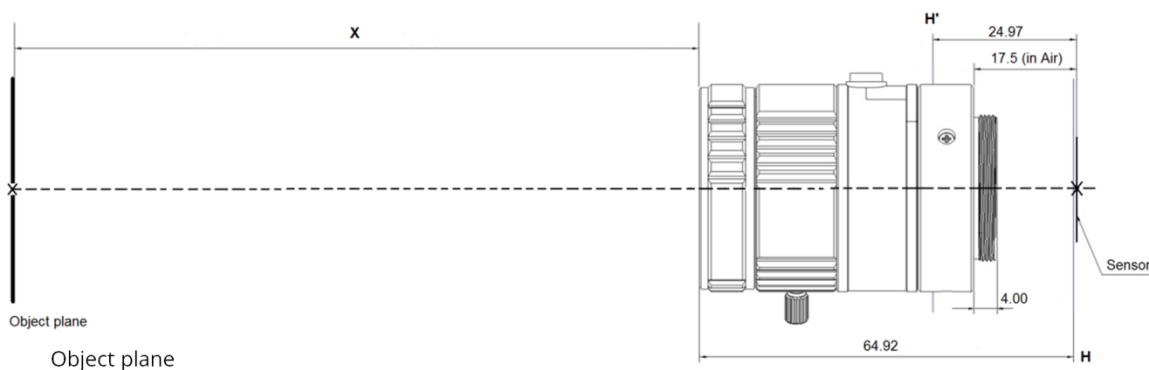
## Opto-Electrical Performance

Performances described below are for 25°C

| <i>Optical Performances at <math>V_{\infty}</math></i> | <i>Symbol</i> | <i>Min</i> | <i>Typ</i> | <i>Max</i> | <i>Unit</i> | <i>Notes</i> |
|--------------------------------------------------------|---------------|------------|------------|------------|-------------|--------------|
| Voltage for infinite focus                             | $V_{\infty}$  |            | 46         |            | V           | (2)          |
| Focal length at $V_{\infty}$                           | 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)          |
| <b><i>Focus control performances</i></b>               |               |            |            |            |             |              |
| Focus distance                                         | x             | 12         |            | $\infty$   | 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:

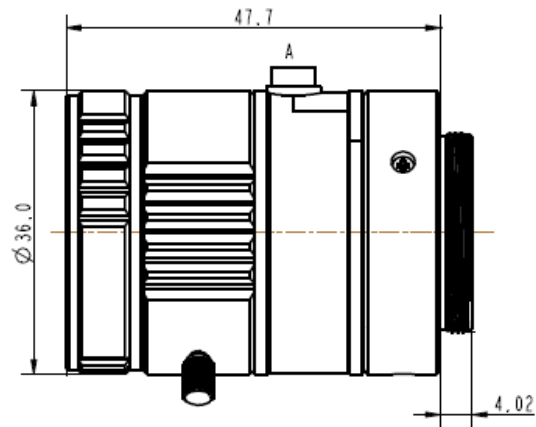


- (3) Refer to ISO 10935.
- (4) For a sensor size of 2/3".

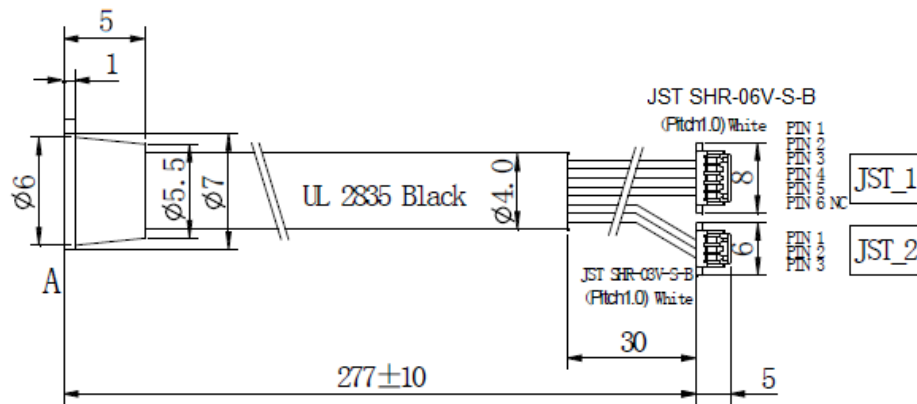
## Temperature Range

| <i>Parameter</i>            | <i>Unit</i> | <i>Min</i> | <i>Typ</i> | <i>Max</i> | <i>Notes</i> |
|-----------------------------|-------------|------------|------------|------------|--------------|
| 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

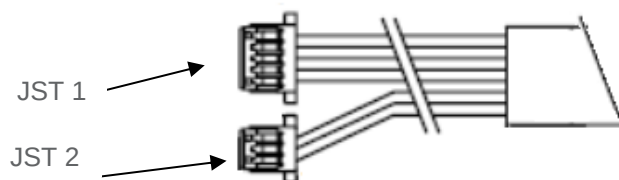


## Electrical Connection

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   | I2Csd_a_Rx_SDI | Multipurpose pin (depending on the part/ yellow wire) |
| 4   | I2Csc_l_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   | I2Csd_a_Rx_SDI | Rx (RS232)   | Rx (3.3V)    | SDI | SDA          |
| 4   | I2Csc_l_Tx_SCK | Tx (RS232)   | Tx (3.3V)    | SCK | SCL          |
| 5   | SDO_Ana        | Analog input | Analog input | SDO | Analog input |

## 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 |
|------------------------------------|---------------------|------|-----|-----|------|-------|
| <b>Power supply</b>                |                     |      |     |     |      |       |
| Input voltage                      | V <sub>cc</sub>     | 3.3  | 5   | 24  | V    |       |
| Current consumption - Active mode  | I <sub>cc</sub>     |      | 50  |     | mA   | (1)   |
| Current consumption – Standby mode | I <sub>cc Stb</sub> |      | 12  |     | mA   |       |
| <b>Control voltage</b>             |                     |      |     |     |      |       |
| 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 I<sub>cc</sub> (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-30N0-250 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:

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

With:

- V<sub>rms</sub> : rms value of the voltage seen by the lens (AC voltage)
- V<sub>a</sub> : analog input voltage (DC voltage)

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