Вариоптические линзы A, A-P, A-PE, C-S, C-C, C-T, C-H, C, драйвера, наборы
Описание

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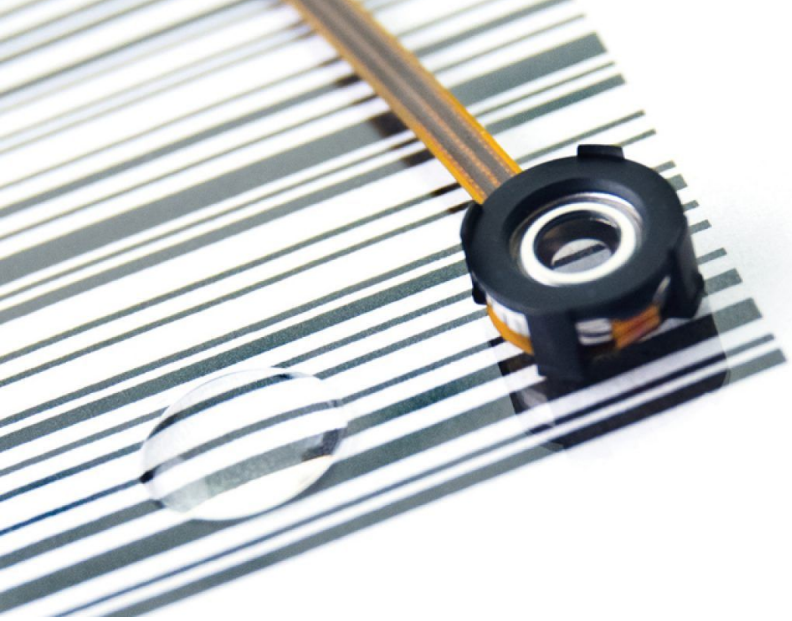


Corning® Varioptic® Lenses rely on the electrowetting principle where the interface of two liquids is modified when a voltage is applied. This eliminates moving parts, bringing a unique competitive advantage to the market, and enabling fast focus.

Our technology is ideal for use in demanding industrial applications that require robust, accurate, fast, and long-lasting lenses.

Varioptic Lenses Technology

For centuries, scientists have combined lenses of very different optical powers, from diverging lenses to highly converging ones to design and manufacture complex optical instruments. Until now, the optical properties of these types of glass or plastic lenses were fixed.

Corning® Varioptic® Lenses has created a programmable lens that can be reconfigured on demand by a voltage change. The lens can adapt rapidly and continuously from diverging to converging and be modeled to support demanding variable focus applications.

Advantages

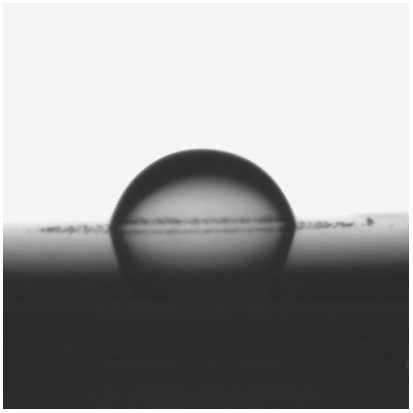
The traditional way to perform the auto focus function is to mechanically move the lens module to adjust the back focal length (distance to the image sensor) depending on object distance. This method presents several drawbacks:

- Requires bulky and fragile motors
- Friction of small parts that can lead to damage and malfunction
- Noise and high power consumption
- Slow focus speed

The unique characteristics of Corning Varioptic Lenses bring an ideal competitive advantage to the market that enables:

- No moving parts, significantly increasing the lens lifespan compared to a mechanical actuator
- Hundreds of millions of cycles endurance
- Faster speed
- Robustness and unmatched vibration and mechanical shock resistance
- Close focus ability
- Low power consumption
- Silent operation

Electrowetting



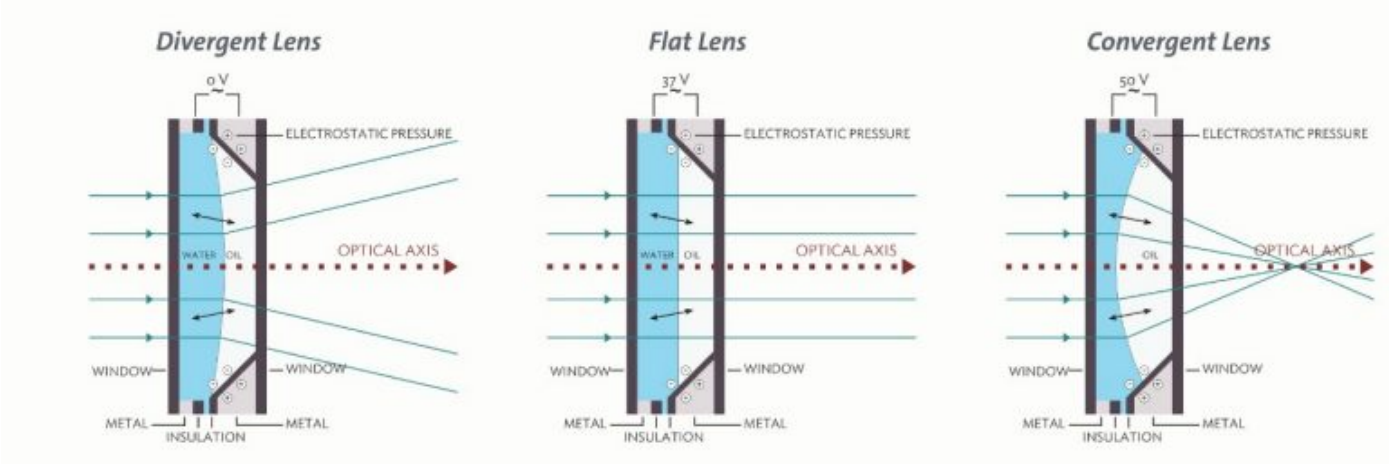
Electrowetting is the key principle behind Varioptic Lenses technology. Electrowetting occurs when a drop of insulating liquid (e.g., oil drop) is deposited on a flat surface made of a conductive material covered with an insulating and hydrophobic layer, and then both the drop and surface are immersed in a conductive liquid (e.g., electrolyte). Voltage is then applied between the conductive substrate and the conductive liquid, causing the insulating liquid drop to change shape.

Lens Structure

The design of the adjustable lens structure ensures:

- Stable optical axis, by a conical centering of the drop
- Non sensitivity to orientation, by using two liquids of equal density
- High shock resistance, by a simple mechanical structure and equal density

Depending on the voltage applied, the lens can be a divergent lens, a flat lens, or a convergent lens.



Product Performance

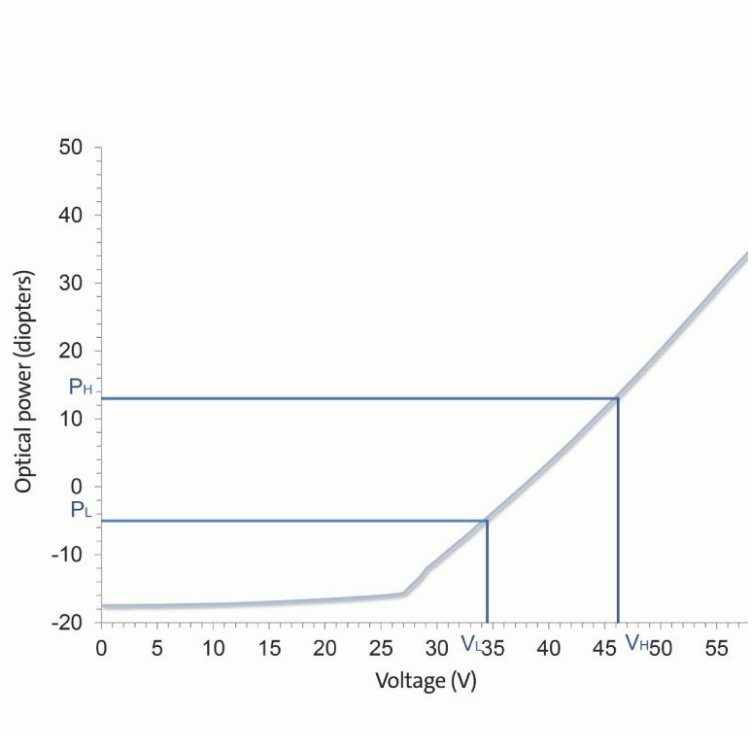
Optical Power vs. Voltage

The optical power (ability of a lens to converge or diverge light) of Corning® Varioptic® Lenses is a linear response versus voltage. See graph on the right.

The relation between optical power (OP, in diopters) and focusing distance (d, in meters) is given by: OP = 1/d

Optical Quality

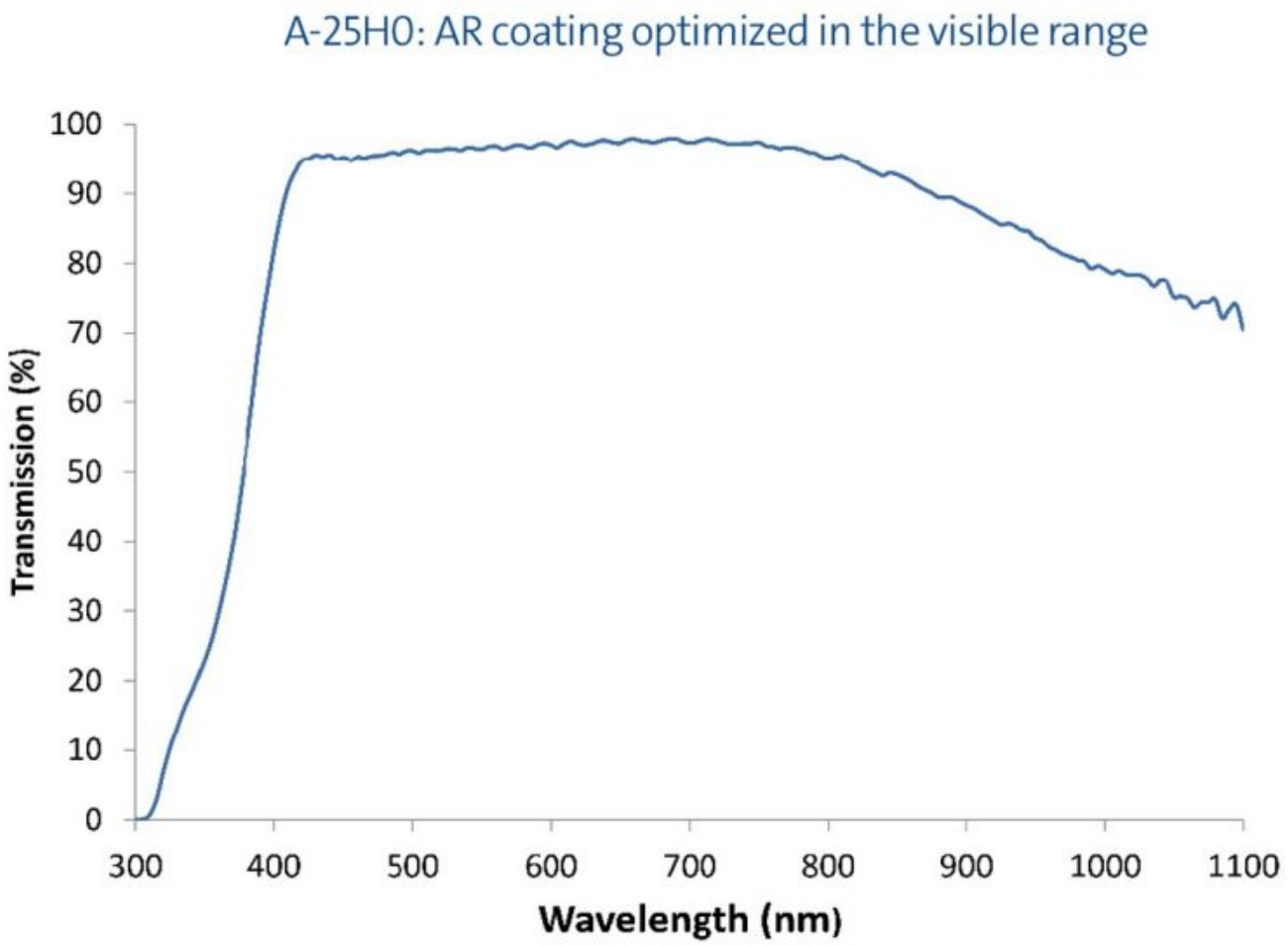
The optical quality of each adjustable lens is specified by the Wave Front Error (WFE). The WFE characterizes the deviation of the actual shape of the lens compared to a perfectly spherical lens (aberrations) – and measured in nanometers rms. The typical WFE of the lens is in the range of 50 nm rms, which is the equivalent of a lambda/10 lens for visible light, commonly accepted as a high-quality grade lens.

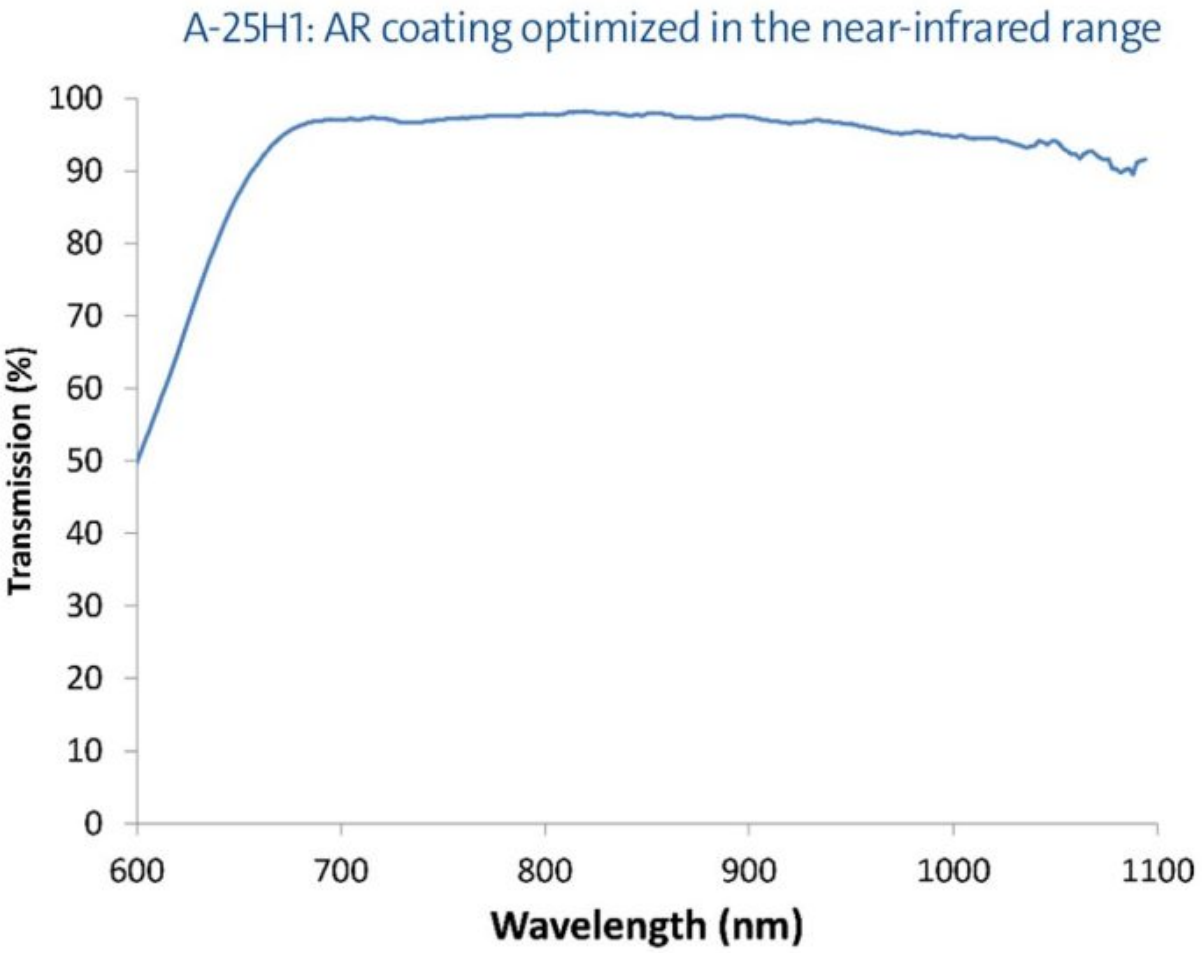


Transmission

The standard version of each lens comes with an anti-reflective coating which is optimized in the visible range. Therefore, the transmission drops slightly in the near infrared. The loss of transmission below 400 nm is linked both to the anti-reflective coating and to the glass that is used in the lenses, which is a standard borosilicate glass.

With an anti-reflective coating optimized in the near infrared, the transmission curve flattens from 700 nm to 1100 nm.





System Integration

Varioptic Lenses can be used in several types of systems:

- **Manual focus:** the user adjusts the focus manually, with a knob for example
- **Closed-loop:** this is the standard auto focus method, where a processor runs a contrast optimization loop to maximize the sharpness of the image
- **Open-loop:** this is a mode where the focus command is directly sent to the lens, from an external distance measurement for instance
- **Mixed mode:** a combination of open loop for coarse search, and closed loop for fine tuning of the focus

Corning® Varioptic® Products

Variable Focus Lenses: A-Series

These liquid lens elements enable variable focus functionality when designed into imaging or beam shaping lenses. They offer a high degree of design freedom for mechanical, electrical and optical integration.

Variable Focus Lenses: A-P-Series

Our packaged A-Series Variable Focus Lenses are designed for easier integration into end user systems.

Auto Focus Lens Modules: C-S-Series

Our C-S Series integrates a fixed lens module and an A-Series Variable Focus Lens in an M12 receptacle S-mount. It can be easily integrated into a standard M12 sensor board and driven by the same drivers as our A-Series lenses.

A-PE-Series

With A-PE-Series, we offer the highest integration level. A-PE-25HX-33 integrates the A-25H lens. It uses a compact electronic board combined with advanced intelligence to ensure optimum performance of the lens.

Auto Focus Lens Modules: C-C-Series

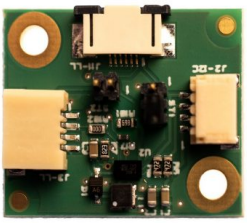
These are electronically focused controllable C-mount lenses based on our A-39N0 Variable Focus Lens. They incorporate all necessary electronic components to drive the liquid lens, and only require a DC power supply.

Microscope Auto Focus Module

This module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. It can be driven by the same drivers as the A-Series 25H0 lens.

Auto Focus Lens Modules: C-T-Series

These are electronically focused, controllable Telecentric lens modules based on the A-39N0-A1 variable focus lenses. The C-T- Series incorporate all necessary electronic components to drive the lenses and only require a DC power supply.



Drivers & Driver Boards

We partner with semiconductor manufacturers to propose driver ICs dedicated to liquid lens driving.

Development Kits

Our Development Kits are specially designed to speed up the evaluation and design process.

AF Explorer Kit

Our latest development kit is a comprehensive platform that produces fast and reliable auto focus based on Corning Varioptic liquid lens technology.

Our **A-16F Variable Focus Lens** is the latest and smallest member of the A-Series family, and the smallest lens currently available. It is specifically designed for ultra-compact cameras, such as barcode engines, industrial and medical endoscopes, etc.

A-16F is based on our breakthrough lens technology, enabling variable focus with absolutely no moving parts.

A-16F comes with two different AR coating options, and also in a pre-packaged type with straight FPC connection.

TYPICAL PERFORMANCE AT 25°C	
Clear aperture	1.6 mm
Low optical power	-5 diopters (m^{-1})
High optical Power	+15 diopters (m^{-1})
Optical quality (Wave Front Error)	20 nm (rms)
Transmission @ 587nm (Arctic 16F0)	97%
Transmission @ 850nm (Arctic 16F1)	97%
Power consumption (actuator only)	1 mW

MECHANICAL DIMENSIONS	
Outer diameter	6.2 mm
Thickness (rear window to front of lens)	1.7 mm
Total thickness	1.8 mm

ENVIRONMENTAL SPECIFICATION	
Storage Temperature	from -40 to 85°C
Operating Temperature	from -20 to 60°C

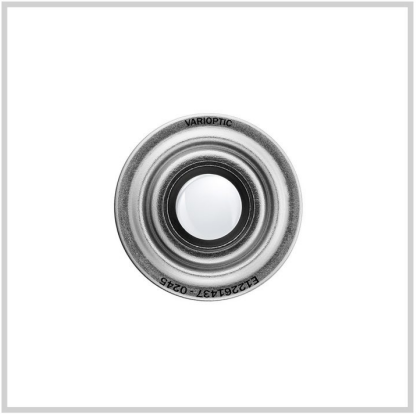
Key Features

- Silent
- Fast response time
- Focus range supports 5 cm to infinity

- Easy to integrate

Ordering Information

- **A-16F0**: A-16F with an Anti-Reflective coating optimized in the visible range
- **A-16F1**: A-16F with an Anti-Reflective coating optimized in the Near Infrared
- **A-16F9**: A-16F with no Anti-Reflective coating
- **A-16FX-P31**: A-16FX (X=0, 1, 9) with FPC-A-31 (straight flex)



Our **A-25H** Variable Focus Lens is an excellent fit for low footprint systems requiring fast response time and large focusing range, and is especially suitable for miniature industrial cameras. It provides a fast-track to market for product designers who need an easy to integrate, high-performance auto focus solution.

A-25H is based on Corning Varioptic's breakthrough lens technology, allowing variable focus with absolutely no moving parts.

The A-25H lens is broadly suited for standard imaging applications. For very close distance imaging needs, the A-25H-D0 is specially designed with a high dynamic range.

A-25H comes with two different AR coating options and also in a pre-packaged type, with straight or bent FPC connection.

TYPICAL PERFORMANCE AT 25°C		
	A-25H	**A-25H-D0**
Clear aperture	2.5 mm	
Low optical power	-5 diopters (m^{-1})	-35 diopters (m^{-1})
High optical Power	+13 diopters (m^{-1})	+35 diopters (m^{-1})
Optical quality (Wave Front Error)	30 nm (rms)	70 nm (rms)
Transmission @ 587nm (A-25H0)	97%	
Transmission @ 850nm (A-25H1)	97%	
Power consumption (actuator only)	1 mW	

MECHANICAL DIMENSIONS		
	A-25H	**A-25H-D0**
Outer diameter	7.75 mm	
Thickness (rear window to front of lens)	1.7 mm	
Total thickness	2.1 mm	

ENVIRONMENTAL SPECIFICATION		
	A-25H	A-25H-D0
Storage Temperature	from -40 to 85°C	
Operating Temperature	from -30 to 85°C	from -20 to 60°C

Key Features

- Silent
- Fast response time
- Focus range supports 5 cm to infinity (down to 1.5 cm for A-25H-D0)
- Easy to integrate

Ordering Information

- **A-25H0/A-25H0-D0**: A-25H/A-25H-D0 with an Anti-Reflective coating optimized in the visible range
- **A-25H1/A-25H1-D0**: A-25H/A-25H-D0 with an Anti-Reflective coating optimized in the Near Infrared
- **A-25H9/A-25H9-D0**: A-25H/A-25H-D0 with no Anti-Reflective coating
- **A-P-25HX-33**: A-25HX (X=0, 1, 9) with FPC-A-33 (straight flex)
- **A-25HX-D0-P33**: A-25HX-D0 (X=0, 1, 9) with FPC-A-33 (straight flex)

Our **A-39N** Variable Focus Lens is designed specifically for variable focus products needing a large clear aperture, long focal objectives, large sensors, C-Mount objective lenses, laser beam shaping, etc. It is perfectly suited for applications such as industrial vision, medical imaging cameras, optical equipment and biometric devices.

A-39N is based on Corning Varioptic's breakthrough lens technology, allowing variable focus with absolutely no moving parts.

A-39N features 20 diopters of dynamic range, guaranteeing 5 cm focus ability and offers the same low power consumption, high shock resistance and fast focus ability that have led to the success of the A-Series Variable Focus Lenses.

TYPICAL PERFORMANCE AT 25°C	
Clear aperture @0° field of view	3.9 mm
Clear aperture @50° field of view	3.5 mm
Low optical power	-5 diopters (m^{-1})
High optical Power	+15 diopters (m^{-1})
Optical quality (Wave Front Error)	50 nm (rms)
Transmission @ 587nm	97%

MECHANICAL DIMENSIONS	
Outer diameter	13 mm
Thickness (rear window to front of lens)	4.05 mm
Total thickness	4.25 mm

ENVIRONMENTAL SPECIFICATION	
Storage Temperature	from -40 to 85°C
Operating Temperature	from -20 to 60°C

Key Features

- Silent
- Fast response time
- Focus range supports 5 cm to infinity
- Easy to integrate-improved yields for camera module production

Ordering Information

- **A-39N0**: A-39N with an Anti-Reflective coating optimized in the visible range
- **A-39N1**: A-39N with an Anti-Reflective coating optimized in the Near Infrared
- **A-39N9**: A-39N with no Anti-Reflective coating
- **A-39NX-P37**: A-39NX (X=0, 1, 9) with FPC-A-37

The A-58N Variable Focus Lens features a large aperture with large dynamic range and a low WFE (Typ. 0.1λ Max. 0.2λ), without compromising on the form factor or ease of integration

A-58N is based on Corning Varioptic's breakthrough lens technology, allowing variable focus with absolutely no moving parts.

A-58N features 15 diopters of dynamic range, guaranteeing 7 cm focus ability and offers the same low power consumption, high shock resistance, and fast focus ability that have led to the success of the A-Series Variable Focus Lenses.

The lens is available with 3 different AR coating options, and in a packaged format with/without integrated thermistor.

TYPICAL PERFORMANCE AT 25°C	
Clear aperture @0° field of view	5.8 mm
Low optical power	-5 diopters (m^{-1})
High optical Power	+10 diopters (m^{-1})
Optical quality (Wave Front Error)	80 nm (rms)
Transmission @ 587nm	97%

MECHANICAL DIMENSIONS	
Outer diameter	13 mm
Thickness (rear window to front of lens)	4.22 mm
Total thickness	4.32 mm

ENVIRONMENTAL SPECIFICATION	
Storage Temperature	from -40 to 85°C
Operating Temperature	from -20 to 50°C

Key Features

- Large aperture within small form factor
- Silent & low power
- No moving part & no internal heating
- Focus range supports 7 cm to infinity

- Easy to integrate

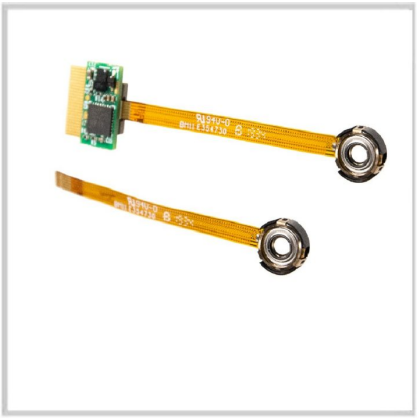
Ordering Information

- **A-58N0**: A-58N with an Anti-Reflective coating optimized in the visible range
- **A-58N1**: A-58N with an Anti-Reflective coating optimized in the Near Infrared
- **A-58N9**: A-58N with no Anti-Reflective coating
- **A-58NX-P37**: A-58NX (X=0, 1, 9) with FPC-A-37 (straight flex)

Our packaged A-Series lenses are designed to make integration easier. There is no need for mechanical and electrical integration of the liquid lens, enabling the variable focus capability to be integrated much faster into the customer's system. The lens is built-in with an FPC cable, and can be connected to a standard FPC connector.

A-16F0-P-12

Packaged version of the A-16F variable focus lens with a straight Flex Cable (FPC-A-12).



A-PE-25H0-33

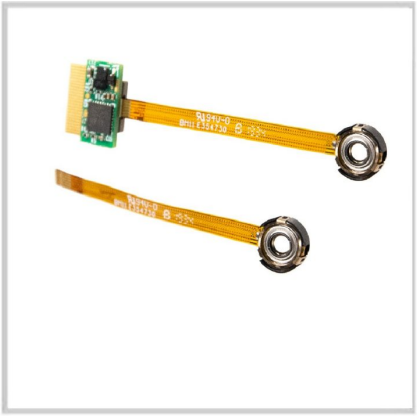
Packaged version of the A-25H variable focus lens with a straight Flex Cable with thermistor (FPC-A-33) and electronics.

A-39N0-P37

Packaged version of the A-39N variable focus lens with a bent Flex Cable (FPC-A-37).

A-58N0-P-20

Packaged version of the A-58N variable focus lens with a bent Flex Cable (FPC-A-20)



A-PE-Series is a higher degree of integration of the Corning® Varioptic® liquid lens based on the combination of an A-P Series lens with a dedicated driving board. This product has been designed such as reducing the integration and development effort on user side (comprehensive hardware, calibrated lens etc…) as well as to enhance the electro-optical performance of the lens embedding temperature compensation algorithm for better open loop operation and providing response time acceleration features to handle ever increasing sensor frame rates.

This platform will be rolled out across the A-Series portfolio, starting with the A-25H0 lens.

Key Features

- A-P- Series lens & electronic board
- Multipoint calibration
- Temperature compensation algorithm (V-Temp)
- Response time acceleration algorithm (V-Speed)
- Optical Power sweep algorithm (V-Sweep)

Ordering Information

- A-PE- 25HX-33: Packaged A-25HX with electronics and FPC-A-33

Getting Started

For more detailed information on optical, mechanical, electrical performance and design, please contact us.

This **C-module** integrates a fixed lens module and an A-25H0 Variable Focus Lens in an M12 receptacle (S-mount). The module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. It can therefore be very easily integrated in a standard M12 sensor board. The module is compatible with imaging sensor formats up to 1/2.5'' diagonal. This module can be driven by the same drivers as the A-25H0 lens.

TYPICAL PERFORMANCE AT 25°C	
Effective Focal Length	2.6 mm
F-number	2.5
Focus Range	4 mm to infinity
Image Circle Diameter	7.2 mm

Key Features

- M12x0.5 thread
- Flex Cable compatible with FCI connector SFW4S-2ST_E9LF
- Built-in AutoFocus actuator from 4 millimeters to infinity
- Optional built-in IR filter, and choice between bent or straight FPC.

Ordering Information

- C-S-25H0-026-06: bent flex cable (FPC-A-6) without IR-cut filter.
- C-S-25H0-026-06I: bent flex cable (FPC-A-6) with IR-cut filter.
- C-S-25H0-026-07: straight flex cable (FPC-A-7) without IR-cut filter.
- C-S-25H0-026-07I: straight flex cable (FPC-A-7) with IR-cut filter.

This **C-module** integrates a fixed lens module and an A-25H0 Variable Focus Lens in an M12 receptacle (S-mount). The module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. It can therefore be very easily integrated in a standard M12 sensor board. The module is compatible with most imaging sensor formats, up to 1/3'' diagonal. This module can be driven by the same drivers as the A-25H0 lens.

Notice
Short mechanical backfocal (MBFL) not compatible with all sensors. Please review associated documentation.

TYPICAL PERFORMANCE AT 25°C	
Effective Focal Length	3.6 mm
F-number	1.8
Focus Range	7 cm to infinity
Image Circle Diameter	5.9 mm

Key Features

- M12x0.5 thread
- Flex Cable compatible with FCI connector SFW4S-2ST_E9LF
- Built-in AutoFocus actuator from 7 cm to infinity
- Optional built-in IR filter (part number: C-S-25H0-036-XXI)

Ordering Information

- C-S-25H0-036-03: bent flex cable (FPC-A-3) without IR-cut filter.
- C-S-25H0-036-03I: bent flex cable (FPC-A-3) with IR-cut filter.
- C-S-25H0-036-06: bent flex cable (FPC-A-6) without IR-cut filter.
- C-S-25H0-036-06I: bent flex cable (FPC-A-6) with IR-cut filter.
- C-S-25H0-036-07: straight flex cable (FPC-A-7) without IR-cut filter.
- C-S-25H0-036-07I: straight flex cable (FPC-A-7) with IR-cut filter.

This **C-module** integrates a fixed lens module and an A-25H0 Variable Focus Lens in an M12 receptacle (S-mount). The module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. It can therefore be very easily integrated in a standard M12 sensor board. The module is compatible with most imaging sensor formats, up to 1/2.4" diagonal. This module can be driven by the same drivers as the A-25H0 lens.

Notice
Short mechanical backfocal (MBFL) not compatible with all sensors. Please review associated documentation.

TYPICAL PERFORMANCE AT 25°C	
Effective Focal Length	4.7 mm
F-number	2
Focus Range	7 cm to infinity
Image Circle Diameter	7.4 mm

Key Features

- M12x0.5 thread
- Flex Cable compatible with FCI connector SFW4S-2ST_E9LF
- Built-in AutoFocus actuator from 7 cm to infinity
- Optional built-in IR filter (part number: C-S-25H0-047-XXI)

Ordering Information

- C-S-25H0-047-03: bent flex cable (FPC-A-3) without IR-cut filter.
- C-S-25H0-047-03I: bent flex cable (FPC-A-3) with IR-cut filter.
- C-S-25H0-047-07: straight flex cable (FPC-A-7) without IR-cut filter.
- C-S-25H0-047-07I: straight flex cable (FPC-A-7) with IR-cut filter.

This **C-module** integrates a fixed lens module and an A-25H0 Variable Focus Lens in an M12 receptacle (S-mount). The module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. It can therefore be very easily integrated in a standard M12 sensor board. The module is compatible with most imaging sensor formats, from 1/4'' to 1/2.5" diagonal. This module can be driven by the same drivers as the A-25H0 lens.

TYPICAL PERFORMANCE AT 25°C	
Effective Focal Length	7.5 mm
F-number	2.9
Focus Range	7 cm to infinity
Image Circle Diameter	7.2 mm

Key Features

- M12x0.5 thread
- Flex Cable compatible with FCI connector SFW4S-2ST_E9LF
- Built-in AutoFocus actuator from 7 cm to infinity
- Optional built-in IR filter (part number: C-S-25H0-075-XXI)

Ordering Information

- C-S-25H0-075-03: bent flex cable (FPC-A-3) without IR-cut filter.
- C-S-25H0-075-03I: bent flex cable (FPC-A-3) with IR-cut filter.

This **C-module** integrates a fixed lens module and an A-25H0 Variable Focus Lens in an M12 receptacle (S-mount). The module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. It can therefore be very easily integrated in a standard M12 sensor board. The module is compatible with most imaging sensor formats, from 1/4'' to 1/1.8'' diagonal. This module can be driven by the same drivers as the A-25H0 lens.

TYPICAL PERFORMANCE AT 25°C	
Effective Focal Length	9.6 mm
F-number	3.7
Focus Range	7 cm to infinity
Image Circle Diameter	9.1 mm

Key Features

- M12x0.5 thread
- Flex Cable compatible with FCI connector SFW4S-2ST_E9LF
- Built-in AutoFocus actuator from 7 cm to infinity
- Optional built-in IR filter (part number: C-S-25H0-096-XXI)

Ordering Information

- C-S-25H0-096-03: bent flex cable (FPC-A-3), without IR cut filter.
- C-S-25H0-096-03I: bent flex cable (FPC-A-3) with IR cut filter.
- C-S-25H0-096-07: straight flex cable (FPC-A-7), without IR cut filter.
- C-S-25H0-096-07I: straight flex cable (FPC-A-7) with IR cut filter.

This **C-module** integrates a fixed lens module and an A-39N0 Variable Focus Lens in an M12 receptacle (S-mount). The module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. It can therefore be very easily integrated in a standard M12 sensor board. The module is compatible with imaging sensor formats up to 1/3'' diagonal. This module can be driven by the same drivers as the A-39N0 lens.

TYPICAL PERFORMANCE AT 25°C	
Effective Focal Length	15.8 mm
F-number	4
Focus Range	7 cm to infinity
Image Circle Diameter	6 mm

Key Features

- M12x0.5 thread
- Flex Cable compatible with FCI connector SFW4S-2ST_E9LF
- Built-in AutoFocus actuator from 5 cm to infinity
- Optional built-in IR filter (part number: C-S-39N0-158-XXI).

Ordering Information

- C-S-39N0-158-04: with bent flex cable (FPC-A-4) and no IR-cut filter.
- C-S-39N0-158-04I: with bent flex cable (FPC-A-4) and IR-cut filter.

The **C-C-39N0-160** is an electronically focus controllable C-Mount objective, based on the A-39N0 Variable Focus Lens. It incorporates all 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 16 mm EFL, and compatible with 2/3" sensors, it is specifically designed for machine vision applications.

TYPICAL PERFORMANCE AT 25°C	
Effective Focal Length	16 mm
F-number	2.8
Sensor Compatibility	2/3"
Image Circle Diameter	11 mm
DC power supply	3.3 - 24 VDC
Current consumption	100mA (3.3V) to 25mA (24V)
Connector	6 pin JST SHR-06V-S-B

Key Features

- Variable focus from 11 cm to infinity
- Silent
- Supports I2C - Analog - RS232 - SPI interfaces
- Supports closed loop operation

Ordering Information

C-C-39N0-160-XXX
where XXX determines objective configuration :

- I2C: I²C or analog operation
- R33: RS232 with 3.3 V signal or analog operation
- R12: RS232 with 12 V signal or analog operation
- SPI: SPI operation only

The **C-C-39N0-250** is an electronically focus controllable C-Mount objective, based on the A-39N0 Variable Focus Lens. It incorporates all 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 EFL, and compatible with 2/3" sensors, it is specifically designed for machine vision applications. It also includes a manual variable iris.

TYPICAL PERFORMANCE AT 25°C	
Effective Focal Length	25 mm
F-number	4 to 22
Sensor Compatibility	2/3"
Image Circle Diameter	11 mm
DC power supply	3.3 - 24 VDC
Current consumption	100mA (3.3V) to 25mA (24V)
Connector	6 pin JST SHR-06V-S-B

Key Features

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

Ordering Information

C-C-39N0-250-XXX
where XXX determines objective configuration :

- I2C: I²C or analog operation
- R33: RS232 with 3.3 V signal or analog operation
- R12: RS232 with 12 V signal or analog operation
- SPI: SPI operation only

The **C-T-39N0-A1-010** is an electronically focused, controllable 1X Telecentric lens module based on the A-39N0-A1 variable focus lenses. The C-T-Series incorporates all necessary electronic components to drive the lenses and only requires a DC power supply, focus can be controlled through either an RS232 or I²C input. This lens, compatible with C-mount cameras featuring sensor sizes up to 1” has been specifically designed for machine vision applications.

TYPICAL PERFORMANCE AT 25°C	
Magnification	1 X
Mount	C-mount
Sensor Compatibility	1"
Image Circle Diameter	16 mm
Telecentricity	≤ 0.1°
TV distortion	≤ 0.1%
Connector	Hirose 6-pin HR10A-7R-6SB

Key Features

- Variable working distance from 102 to 118 mm
- 5.5µm resolution
- Silent
- Supports I2C & RS232 interfaces
- Supports closed loop operation

Ordering Information

C-T-39N0-A1-010

C-T-39N0-A1-010

The C-T-39N0-A1-010 is an electronically focused, controllable 1X Telecentric lens module. The C-T-Series incorporates all necessary electronic components to drive the lenses and only requires a DC power supply, focus can be controlled through either an RS232 or I²C input. This lens, compatible with C-mount cameras featuring sensor sizes up to 1” has been specifically designed for machine vision applications.

This C-module integrates a fixed lens module and an A-16F0 Variable Focus Lens in an M8 receptacle. The module is built with an FPC cable and can be connected to a standard 1 mm pitch FPC connector. It can be easily integrated into a standard M8 sensor board. The C-H-module is compatible with imaging sensor formats, up to 1/3''. The C-H-module can be controlled by the same drivers as the A-Series lenses.

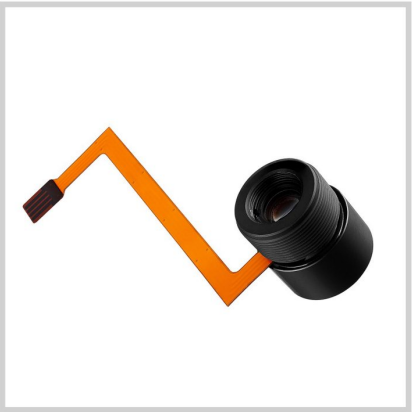
TYPICAL PERFORMANCE AT 25°C	
Effective Focal Length	3.6 mm
F-number	2.2
Focus Range	7 cm to infinity
Image Circle Diameter	5.9 mm

Key Features

- M8x0.35 thread
- Flex Cable compatible with FCI connector SFW4S-2ST_E9LF
- Built-in AutoFocus actuator from 7 cm to infinity
- Optional built-in IR filter (part number: C-H-16F0-036-XXI)

Ordering Information

- C-H-16F0-036-12: straight flex cable (FPC-A-12) without IR-cut filter.
- C-H-16F0-036-12I: straight flex cable (FPC-A-12) with IR-cut filter.



C-u-25H0-075

The C-u-25H0-075 is based on an inverted and modified C-S-25H0-075. Combined with the use of specific extension rings, either for C-Mount or M12, an unexpensive AutoFocus microscope can be built. The module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. This module can be driven by the same drivers as the A-25H0 Variable Focus Lens.

TYPICAL PERFORMANCE AT 25°C	
Mechanical Back Focal	15 mm (X2) to 37 mm (X5)
Working Distance	5.4 mm (X5) to 7.8 mm (X2)
Working Distance range	±0.85 mm (X5) to 0.65 mm (X2)

Key Features

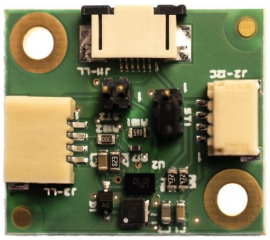
Flex Cable compatible with FCI connector SFW4S-2ST_E9LF

Compact

No moving parts, no vibrations

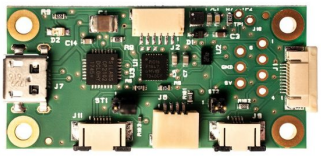
Ordering Information

C-u-25H0-075: with bent flex cable (FPC-A-3) and no IR-Cut filter



Maxim 14574EWL+

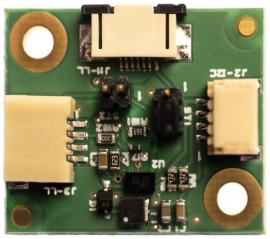
Maxim 14574 driver is a quad-output driver which is compatible with A-Series. The maximum output voltage is 70 Vrms. 1.6x2.6mm package. I2C interface.



USB-M Flexiboard

This board includes a Maxim driver and various FPC connectors for the A-Series, C-S-Series and C-u-Series. Due to the Focuslab Software, it is easily driven through USB and delivered with the development kits. Its very small form factor enables use of this board directly with any PC-driven application with no extra hardware development.

Board size : 48 x 23 x 8 mm.



Maxim Drivboard

This board includes a Maxim driver and various FPC connectors for the A-Series, C-S-Series and C-u-Series. It has a 4 pin JST connector for DC power supply and for I²C

communication. It has been designed for fast driving of the adjustable lens directly from a microcontroller, an FPGA, a DSP, etc. A cabled JST connector is supplied with the board.

Board size : 23 x 18 x 8 mm.

C-C Com Board

This board is a USB to RS232-12 V / RS232-3.3 V / I²C / SPI converter. Connected to a PC with a USB cable on one hand, and to the C-C module on the other hand. It enables

communication directly with any of the C-C versions using Focuslab. A potentiometer also allows direct control of the C- C voltage without a computer.

Board size : 42 x 75 x 16 mm.

AF Explorer

D-AF-EXP-STD-075 is the default configuration of the Corning® Varioptic® AF Explorer kit. It is based on the Sony IMX 335 sensor and Corning® Varioptic® C-S-25H0-075 Auto Focus lens module and includes:

Main board
Sensor Board (Sony IMX335 - 5MP 1/2.8")
Corning Varioptic C-S-25H0-075-10 auto focus lens module
Time of Flight (TOF) sensor
Dedicated software
Documentation Package

Additional options are available for this development kit. Click Here for more information.

D-A-16F

Kit contains:

1 A-16FX
1 A-16FX-P12
1 Maxim Drivboard
1 VHD-09
1 FPC-A-12
1 USB-M Flexiboard, USB cable
Focuslab Software
Documentation Package

D-A-PE-25H

Kit contains:

1 A-PE-25H-33
1 Maxim Drivboard
1 USB-M Universal, USB cable
Focuslab Software
Documentation Package

D-A-25H0-D0

Kit contains:

1 A-25HX-D0
1 A-P-25HX-33
1 Maxim Drivboard
1 VHD-07
1 FPC-A-33
1 USB-M Flexiboard, USB cable
Focusalb Software
Documentation Package

D-A-39N

Kit contains:

1 A-39NX
1 A-39NX-P37
1 Maxim Drivboard
1 VHD-06
1 FPC-A-37
1 USB-M Flexiboard, USB cable
Focuslab Software
Documentation Package

D-A-58N

Kit contains:

1 A-58NX
1 A-58NX-P37
1 Maxim Drivboard
1 VHD-10
1 FPC-A-37
1 USB-M Flexiboard, USB cable
Focuslab Software
Documentation Package

D-S Kits

Kit contains:

2 C-S Modules
1 Maxim Drivboard
1 USB-M Flexiboard, USB cable
Focuslab Software
Documentation Package

D-u-25H0-075-03

Kit contains:

1 C-u-25H0-075
1 Maxim Drivboard
1 C-Series Microscopy Set
1 USB-M Flexiboard, USB cable
Focuslab Software
Documentation Package

D-C-Series

Kit contains:

1 C-C-39N0-XXX-YYY
1 C-C Com board and cable
Focuslab Software
Documentation Package

C-T-39N0-A1-000

Kit contains:

1 C-T-39N0-A1-000
1 cable
Focuslab Software
Documentation Package

D-u-39N0-160

Kit contains:

1 C-C-39N0-XXX-YYY
1 C-C Com board and cable
1 Adaptor ring
2 C-mount tubes (20 & 50mm length)
Focuslab Software
Documentation Package

Detailed Kit Contents

A-25H
The A-25H variable focus lens is dedicated to applications requiring fast response time and high optical power. It is especially suited to industrial applications.

A-25HX-P07

The A-25HX-P07 is a packaged version of the A25H lens. The lens is built-in inside a housing with a straight FPC cable that can be connected to a standard 1 mm pitch FPC connector.

A-25HX-P06

Identical to A-25HX-P07 but with a bent flex cable.

A-39N

The A-39N lens is designed specifically for variable focus products needing a larger clear aperture than A-25H lenses: long focal objectives, large sensors, C-Mount objective lenses, laser beam shaping, etc.

A-39NX-P04

The A-39NX-P04 is the packaged version of the A-39N lens. The lens is built-in inside a housing with a bent FPC cable that can be connected to a standard 1 mm pitch FPC connector.

C-S-25H0-026

The C-S-25H0-026 lens integrates a 2.6 mm EFL fixed lens module and an A-25H0 variable focus lens in an M12 receptacle (S-mount). It is compatible with imaging sensors up to 1/2.5'' diagonal.

C-S-25H0-036

The C-S-25H0-036 integrates a 3.6 mm EFL fixed lens module and an A-25H0 variable focus lens in an M12 receptacle (S-mount). It is compatible with imaging sensors up to 1/3'' diagonal.

C-S-25H0-047

The C-S-25H0-047 integrates a 4.7 mm EFL fixed lens module and an A-25H0 variable focus lens in an M12 receptacle (S-mount). It is compatible with imaging sensors up to 1/2.4'' diagonal.

C-S-25H0-075

The C-S-25H0-075 integrates a 7.5 mm EFL fixed lens module and an A-25H0 variable focus lens in an M12 receptacle (S-mount). It is compatible with most imaging sensor formats up to 1/2.5'' diagonal.

C-S-25H0-096

The C-S-25H0-096 integrates a 9.6 mm EFL fixed lens module and an A-25H0 variable focus lens in an M12 receptacle (S-mount). It is compatible with most imaging sensor formats up to 1/1.8'' diagonal.

C-S-39N0-158

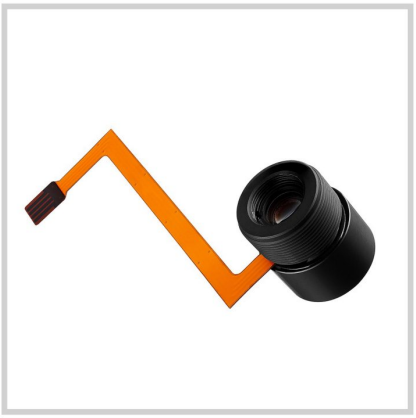
The C-S-39N0-158 integrates a fixed lens module and an A-39N0 variable focus lens in an M12 receptacle (S-mount). The module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. It can therefore be very easily integrated in a standard M12 sensor board. The module is compatible with imaging sensor formats up to 1/3" diagonal.

C-C-39N0-160

The C-C-39N0-160 is an electronically focus controllable C-Mount objective, based on the A-39N0 lens. It incorporates all 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 16 mm EFL, and compatible with 2/3'' sensors, it is specifically designed for machine vision applications.

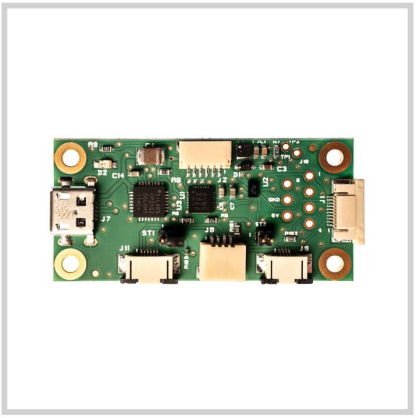
C-C-39N0-250

Same as C-C-39N0-160 but with a 25mm EFL, and an integrated manual iris.



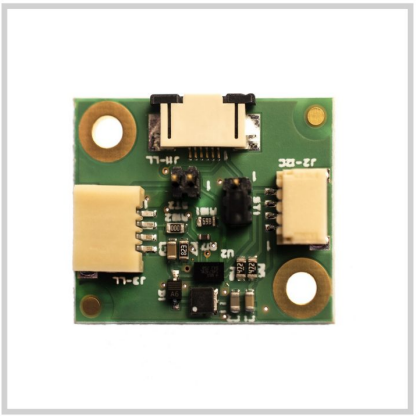
C-u-25H0-075-03

The C-u-25H0-075-03 is based on an inverted and modified C-S-25H0-075. Combined with the use of specific extension rings, either for C-Mount or M12, an inexpensive AutoFocus microscope can be built. The module is built-in with an FPC cable, and can be connected to a standard 1 mm pitch FPC connector. This module can be driven by the same drivers as the A-25H0.



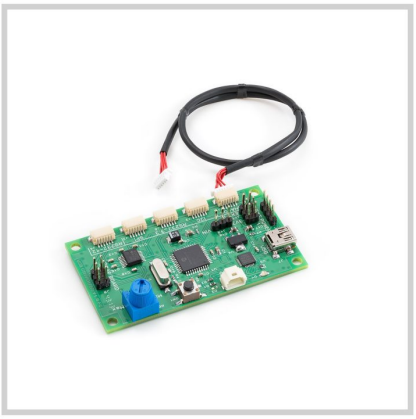
USB-M Flexiboard

This board includes a Maxim driver and various FPC connectors for the A-Series, C-S-Series and C-u-Series. Due to the Focuslab Software, it is easily driven through USB and delivered with the development kits. Its very small form factor enables use of this board directly with any PC-driven application with no extra hardware development. Board size : 48 x 23 x 8 mm.



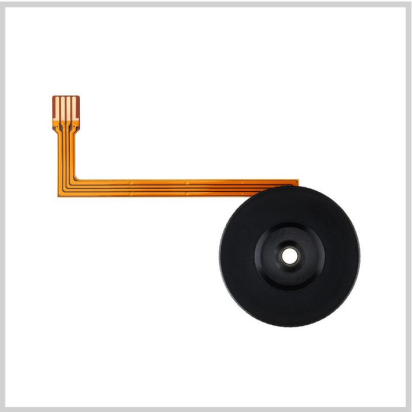
Maxim Drivboard

This board includes a Maxim driver and various FPC connectors for the A-Series, C-S-Series and C-u-Series. It has a 4 pin JST connector for DC power supply and for I²C communication. It has been designed for fast driving of the adjustable lens directly from a microcontroller, an FPGA, a DSP, etc. A cabled JST connector is supplied with the board. Board size : 23 x 18 x 8 mm.



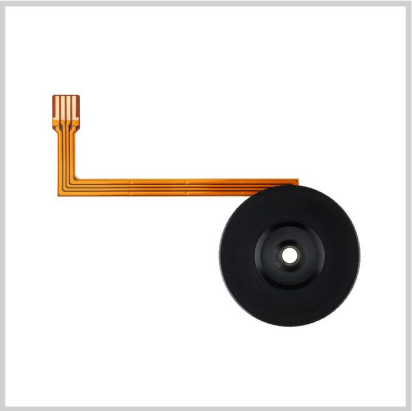
C-C Series Com Board

This board is a USB to RS232-12 V / RS232-3.3 V / I²C / SPI converter. Connected to a PC with a USB cable on one hand, and to the C-C module on the other hand. It enables communication directly with any of the C-C versions using Focuslab. A potentiometer also allows direct control of the C- C voltage without a computer. Board size : 42 x 75 x 16 mm.



VHD-09

The VHD-09 is compatible with the A-16F0 lens. It is used in conjunction with FPC-A-12, and can be connected directly to the USB-M Drivboard, the Maxim- or Microchip HV892 Drivboard. A M4 thread is located on the outer diameter, in order to fix the holder on a standard M4 mounting device. A 14 mm diameter recess is located on the rear side of the holder, which eases integration with a compact objective lens.



VHD-07

The VHD-07 is compatible with the A-25H0 lens. It is used in conjunction with the FPC-A-3, and can be connected directly to the USB-M Drivboard, the Maxim- or Microchip HV892 Drivboard. An M4 thread is located on the outer diameter, in order to fix the holder on a standard M4 mounting device. A 14mm diameter recess is located on the rear side of the holder, which eases integration with a compact objective lens.

VHD-06

The VHD-06 is compatible with the A-39N0 lens. It is used in conjunction with FPC-A-4 or FPC-A-5, and can be connected directly to the USB-M Drivboard, the Maxim- or Microchip HV892 Drivboard. An M4 thread is located on the outer diameter, in order to fix the holder on a standard M4 mounting device. A 14 mm diameter recess is located on the rear side of the holder, which eases integration with a compact objective lens.

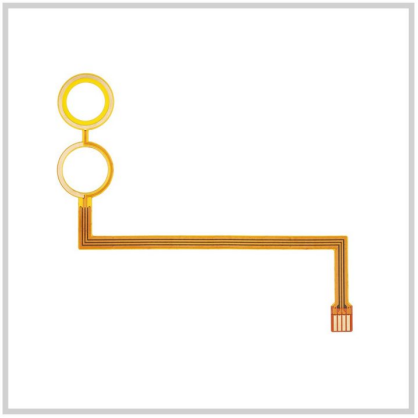
C-Series Microscopy Set

This set is delivered with the C-Series Microscopy DK - it allows to achieve various magnifications, both for M12 and C-Mount cameras. It includes :

1 microscope spacer
1 set of M12 and C-Mount adapters allowing X2, X3 and X5 magnifications.
1 locking nut for M12 adapters

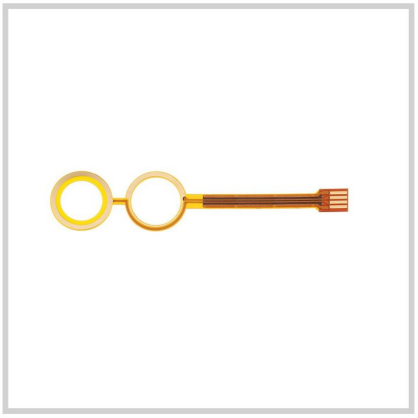
FPC-A-3

This foldable flex is compatible with the A-25H0 lens, and can be connected to the 3-AFM board or to the VFC-1 cable. The flex tip is compatible with the FCI SFW4S-2ST_E9LF flex connector. Bent type.



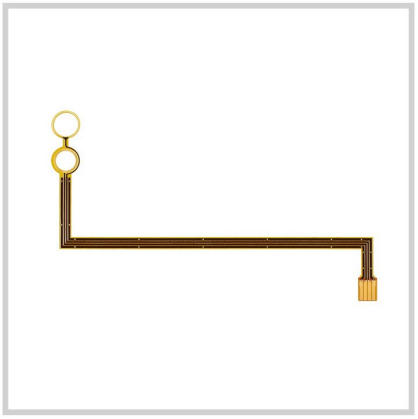
FPC-A-4

This foldable flex is compatible with the A-39N0 lens, and can be connected to the USB-M Drivboard, the Maxim- or Microchip HV892 Drivboard. The flex tip is identical to the FPC-A-3. Bent Type.



FPC-A-5

This foldable flex is compatible with the A-39N0 lens, and can be connected to the USB-M Drivboard, the Maxim- or Microchip HV892 Drivboard. The flex tip is identical to the FPC-A-3. Straight type.



FPC-A-6

This foldable flex is compatible with the A-25H0 lens, and can be connected to the USB-M Drivboard, the Maxim- or Microchip HV892 Drivboard. The flex tip is identical to the FPC-A-3. Bent type.

FPC-A-7

This foldable flex is compatible with the A-25H0 lens, and can be connected to the USB-M Drivboard, the Maxim- or Microchip HV892 Drivboard. The flex tip is identical to the FPC-A-3. Straight type.

FocusLab

FocusLab allows controlling the C-Mount lens through the C-C Series Com Board. The software controls the output voltage on the lens. A specific dialog box enables to send advanced commands to the C-Mount lens. A LabView VI is also provided to control the C-Mount lens through a LabView program. A specific documented DLL allows integrating this in a C-code program. Focuslab allows also to control the USB-M Drivboard.

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231
Ангарск (3955)60-70-56
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Брянск (4832)59-03-52
Владивосток (423)249-28-31
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Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
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Курган (3522)50-90-47
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Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
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Омск (3812)21-46-40
Орел (4862)44-53-42
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