

MBH76210 - June 22, 2016

Item # MBH76210 was discontinued on June 22, 2016. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

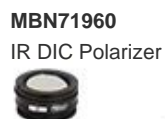
CERNA COMPONENTS: TRANS-ILLUMINATION

- ▶ Observe Thin *In Vitro* Samples with Transmitted Light
- ▶ Condensers and LEDs Provide Bright Trans-Illumination
- ▶ Brightfield, DIC, and Dodt Contrast are Fully Supported

Cerna Microscope Configured for DIC Imaging



WFA1010
Visible Illumination Kit



MBN71960
IR DIC Polarizer



WFA1100
Brightfield Illumination /
DIC Imaging Module



MBN71950
DIC Analyzer



MBL70100
.78 NA Air Condenser



[Hide Overview](#)

OVERVIEW

Features

- Trans-Illumination Modules Enable Brightfield Illumination, DIC Imaging, and Dodt Contrast
- Compatible with Air and Oil-Immersion Condensers from Nikon
- Illumination Provided by Our Visible and NIR LEDs
- Large Selection of DIC Components
 - Polarizers for Visible and NIR
 - Prisms for Objectives with 10X to 100X Magnification
 - Sliders for Plan Fluorite and Apochromatic Objectives
- Fixed Arms Incorporate Lens Tubes and Cage Systems Directly into Optical Path
- Requires 400 mm Tall Microscope Body (Item # CSB1400)

To aid in the study of thin *in vitro* samples, the Cerna platform fully supports the trans-illumination techniques of brightfield illumination, DIC imaging, and Dodt contrast. (These techniques are compared in the *Modalities* tab.) Our Illumination Kits for these techniques include Thorlabs' LEDs, which offer broadband illumination throughout the visible and into the IR regions of the spectrum. The light generated by

Cerna Application Support

[Contact Us](#)

Thorlabs has engineers, application specialists, and a sales team available to discuss the various Cerna options and to work with you to create a system that is optimized for your unique experimental requirements. If you would like to be contacted by a member of our team, please let us know by emailing ImagingSales@thorlabs.com.

Required Accessories for Trans-Illumination

| Imaging Modality | Brightfield | DIC | Dodt |
|--------------------------------|-------------|-----|------|
| Condenser | | | |
| Condenser | √ | √ | √ |
| Focusing Module and Controller | √ | √ | √ |
| Mounting Arm | √ | √ | √ |
| Illumination Source | | | |
| Illumination Kit | √ | √ | √ |
| LED Driver | √ | √ | √ |

these LEDs is collimated, propagated into a Trans-Illumination Module, then focused onto the sample using a condenser. We currently offer two air condensers and one oil-immersion condenser. If you are interested in other options, please contact us with your application requirements.

For customers who are interested in building their own trans-illumination setups, we recommend the CSA2000 Condenser Mounting Arm, which connects Nikon condensers to our Ø2" lens tubes and 60 mm cage systems. We also manufacture fixed arms that attach directly to the microscope body and place Ø1" lens tubes, Ø2" lens tubes, 30 mm cage systems, and 60 mm cage systems into the microscope's optical path. An example microscope that makes use of our fixed arms is pictured below.



Click to Enlarge
User-Built Cerna Microscope
with
Trans-Illumination Using Fixed
Arms

Required Accessories

Several components need to be purchased together to perform trans-illumination with a Cerna microscope. The table to the right outlines which components are needed for various imaging modalities.

In particular, please note that to perform DIC imaging, you must use our MBE74100 Six-Cube Epi-Illuminator and either the MBP71100 or MBP70100 Nosepiece. Our single-cube epi-illuminator module and other nosepieces are not compatible with DIC.

| Trans-Illumination Module | | | |
|--|---|---|---|
| Brightfield Illumination / DIC Imaging Module | √ | √ | |
| Dotd Contrast Module | | | √ |
| Dovetail Clamp (Item # WFA0150) | √ | √ | √ |
| Additional Components | | | |
| 400 mm Tall Microscope Body (Item # CSB1400) | √ | √ | √ |
| Six-Cube Epi-Illuminator (Item # MBE74100) | | √ | |
| Objective Holder (Item # MBP71100 or MBP70100) | | √ | |
| Polarizers, Prisms, Sliders, and Analyzer | | √ | |

| Cerna Components | Step 1 | Step 2 | Step 3 | Step 4 | Step 5 | Step 6 | Step 7 |
|------------------|-----------------|-------------------|------------------|----------------------------------|----------------|----------------|--------------------|
| Overview | Microscope Body | Widefield Viewing | Epi-Illumination | Objectives and Objective Holders | Sample Holders | Motion Control | Trans-Illumination |

[Hide Modalities](#)

MODALITIES

Cerna microscopes support several trans-illumination modalities: brightfield illumination, differential interference contrast (DIC) imaging, and Dotd gradient contrast imaging. Each of these methods requires different accessories and confers different advantages to the microscopist, as described below.

Brightfield Illumination

Brightfield illumination is the simplest method of trans-illumination. In this modality, light from an illumination source is collected by a condenser and passed through a sample, which is observed by its effect on the intensity of the transmitted light. Brightfield illumination microscopy requires an illumination source (i.e., our high-power LEDs) and a condenser to be attached to a Cerna microscope.

DIC Imaging

In differential interference contrast imaging, light transmitted through the sample is manipulated by a number of polarization optics. Light from the illumination source is polarized and then split into two orthogonally polarized beams before it reaches the sample. Small optical path length differences between the two beams cause interference when they are recombined, providing enhanced contrast for samples that would be transparent in basic brightfield illumination.

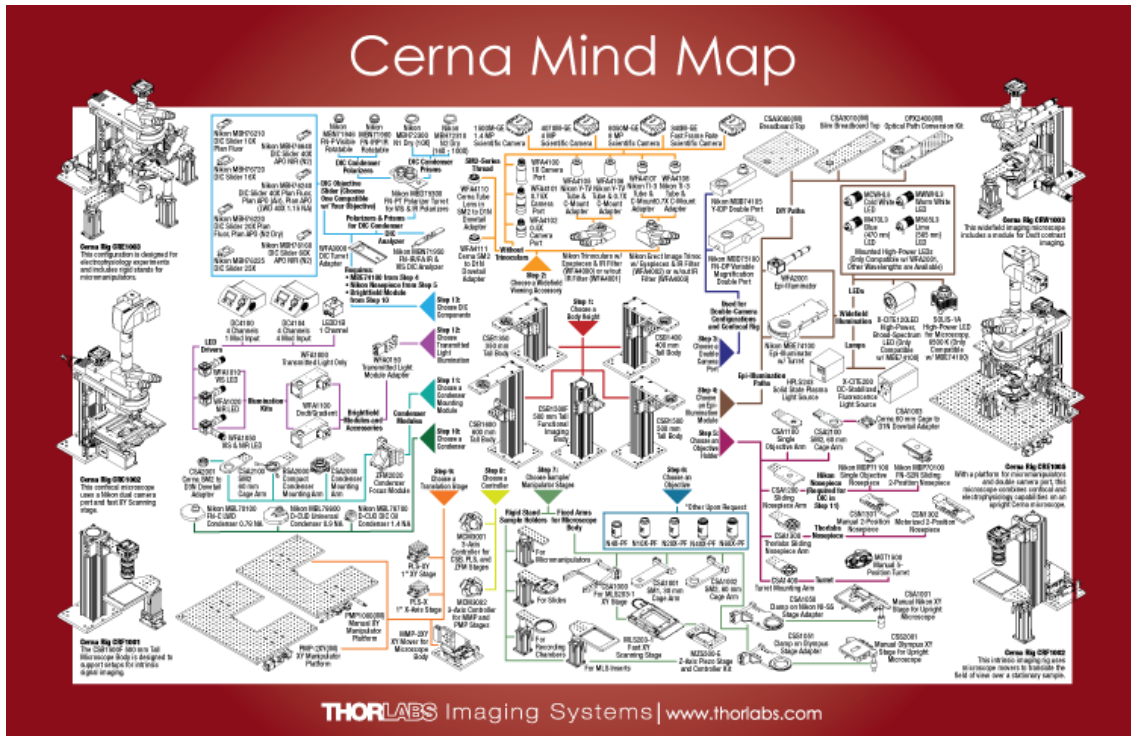
Dotd Contrast

Dotd contrast, which is also known as Dotd gradient contrast, uses an intensity gradient to illuminate the sample. This gradient, which is generated using a specially shaped aperture and diffuser, reduces the amount of stray light scattered by the sample. This reduction in stray light allows for the use of high-NA-oil-immersion objectives. Dotd contrast offers enhanced resolution as compared to basic brightfield illumination and allows thicker samples to be studied.

CERNA MIND MAP

The Cerna Series Mind Map is a visual tool for selecting the modules that make up a complete Cerna microscope. Created as a supplement to the information provided directly on our website, it lays out both the required and optional components in a single 11" x 17" printed sheet. We have designed it to be used as a flowchart, starting from the red arrow at the center of the document and following the steps in order.

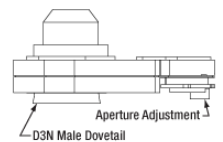
Click here or on the image below to download a printable PDF (6 MB). The fixed arms sold on this page correspond to Step 8 in the mind map, while the other trans-illumination accessories correspond to Steps 11 - 14.



Condensers



- ▶ High Numerical Apertures of 0.78, 0.9, or 1.4
- ▶ Air and Oil Immersion Options
- ▶ Adjustable Diaphragm for Optimizing Illumination Conditions
- ▶ Other Nikon Condensers Available Upon Request



Click to Enlarge Drawing of MBL70100 Condenser

These condensers collect and focus the light from the Trans-Illumination Module onto the specimen. They feature large numerical aperture values for high image contrast and even illumination across the field of view. The MBL70100 and MBL78600 condensers are designed for use in air (i.e., they are "dry" condensers), while the MBL78700 is intended for oil immersion.

All three condensers offer an adjustable diaphragm aperture that is controlled by a side-located lever. This adjustable diaphragm is included so that you can tune the effective numerical aperture (NA) of the condenser to match the NA of your objective. For the brightest illumination, the NA of the condenser you purchase should be equal to or slightly smaller than that of the highest-NA objective you intend to use with your microscope. If the condenser's NA is too large, closing the diaphragm will help compensate, but the illumination intensity will not be as bright as for a condenser with a well-matched NA.

Required Accessories

To mount the condenser to the Cerna microscope body, our Condenser Focusing Module and a Condenser Mounting Arm are required. Both are sold separately below.

Installation

Each condenser's housing includes a male D3N dovetail that mates to the Condenser Mounting Arm; a drawing of the MBL70100 condenser is shown as an example above. D3N is Thorlabs' designation for the dovetail used by the majority of Nikon condensers for upright microscopes.

| Item # | MBL70100 | MBL78600 | MBL78700 |
|--------------------------------------|---|--|---|
| Photo (Click to Enlarge) |  |  |  |
| Air or Oil Immersion | Air | Air | Oil Immersion |
| Numerical Aperture (NA) ^a | 0.78 | 0.9 | 1.4 |
| Object Distance | 8.2 mm | 2.5 mm | 1.6 mm |
| Recommended Objective Magnification | 4X - 100X | 2X - 100X | 10X - 100X |

- For the brightest possible illumination, the NA of your condenser should be equal to or slightly smaller than the NA of your objective.

| Part Number | Description | Price | Availability |
|-------------|---------------------------------------|------------|--------------|
| MBL70100 | Nikon FN-C LWD Condenser, 0.78 NA | \$1,943.00 | Lead Time |
| MBL78600 | Nikon D-CUD Condenser, 0.9 NA | \$1,836.00 | Lead Time |
| MBL78700 | Nikon D-CUO DIC Oil Condenser, 1.4 NA | \$2,227.00 | Lead Time |

[Hide Condenser Focusing Module and Controller](#)

Condenser Focusing Module and Controller



- ▶ Motorized Condenser Adjustment with 1" of Fine Travel
- ▶ Dovetail Clamp Attaches Directly to Microscope Body
- ▶ Connects to Condenser Mounting Arm (Sold Separately Below)
- ▶ Requires 3-Axis Controller (Item # MCM3000)

The ZFM2020 Motorized Condenser Focusing Module provides 1" of fine focusing adjustment for a condenser in a Cerna system. This large motorized travel range simplifies the process of optimizing the illumination conditions at the sample.

Required Accessories

The ZFM2020 only provides translation and cannot hold a condenser directly. Hence, one of our Condenser Mounting Arms (sold below) is required to mount the condenser. In addition, the MCM3000 3-Axis Controller is required for translation of the condenser focusing module. It uses knobs to control up to three axes and offers an adjustable translation speed. For more details, please see the full web presentation for Cerna motion control.

Installation

The module is attached to the microscope body using the dovetail clamp on the rear, which is tightened into place using setscrews that accept a 3 mm balldriver or hex key. It also includes six M4 cap screws (3 mm hex) that secure the module to a Condenser Mounting Arm.

| Part Number | Description | Price | Availability |
|-------------|-------------|-------|--------------|
| | | | |

| | | | |
|---------|--|------------|-----------|
| ZFM2020 | Motorized Condenser Focusing Module with 1" Travel | \$1,687.50 | Today |
| MCM3000 | 3-Axis Controller | \$4,500.00 | Lead Time |

[Hide Condenser Mounting Arms](#)

Condenser Mounting Arms



- ▶ One Condenser Mounting Arm is Required to Attach Condenser to a Cerna Microscope
- ▶ Knobs Provide X and Y Adjustments of the Condenser in the Optical Path
- ▶ Connects to Condenser Focusing Module (Sold Above)

When combined with the ZFM2020 Condenser Focusing Module sold above, these Condenser Mounting Arms position a condenser in the optical path of a Cerna microscope. We offer two options. The compact BSA2000 Mounting Arm has a thickness of just 0.5" (13 mm), conserving space in the optical path for thicker components like our DIC accessories (sold below) and our MLS203-1 Fast XY Scanning Stage. In contrast, although the CSA2000 Mounting Arm has a thickness of 1.9" (47 mm), it was engineered to minimize crosstalk between the X and Y axes, enabling quicker and simpler optimization of the condenser's transverse position in the optical path. Each knob on the BSA2000 provides ± 2.5 mm of positional adjustment, while each knob on the CSA2000 provides ± 2 mm.

Compatibility with Custom Trans-Illumination

For users who wish to use trans-illumination sources from other manufacturers or to develop custom trans-illumination apparatuses (which can be held to the microscope body by our fixed arms), we recommend the CSA2000 mounting arm, which contains four 4-40 tapped holes for our 60 mm cage systems and internal SM2 (2.035"-40) threads for our $\varnothing 2$ " lens tubes.

Required Accessories

The mounting arm holds the condenser and provides coarse adjustment of the condenser in X and Y. To mount the condenser in the optical path of the microscope, the Condenser Focusing Module sold above is required.

Installation

As shown in the picture above, each condenser mounting arm contains six M4 counterbores that are spaced to mate with the bottom of the ZFM2020 Condenser Focusing Module. Each mounting arm also contains a female D3N dovetail that accepts any of the condensers sold above. D3N is Thorlabs' designation for the dovetail used by the majority of Nikon condensers for upright microscopes.

| Part Number | Description | Price | Availability |
|-------------|--|----------|--------------|
| BSA2000 | Compact Condenser Mounting Arm with ± 2.5 mm Travel in X and Y | \$678.00 | Today |
| CSA2000 | Condenser Mounting Arm with ± 2 mm Travel in X and Y | \$678.00 | Today |

[Hide Illumination Kits](#)

Illumination Kits



- ▶ Provides Visible and/or NIR Illumination for Trans-Illumination Modalities
 - ▶ WFA1010: Visible Illumination Kit
 - ▶ WFA1020: NIR Illumination Kit
 - ▶ WFA1050: Visible and NIR Illumination Kit
- ▶ Connects to Trans-Illumination Module (Sold Below)
- ▶ Requires LED Driver (Sold Below)

Illumination Kits for Cerna microscopes integrate Thorlabs' LEDs with the Trans-Illumination Modules sold below. They consist of one or two LEDs attached to a DFM Filter Cube. We currently offer three versions: one for visible illumination (Item # WFA1010), one for NIR illumination (Item # WFA1020), and one that provides both (Item # WFA1050). All kits include lenses that collimate the output of the LEDs, and the WFA1050 additionally includes a dichroic mirror that combines the output of both LEDs.

In addition to the LEDs contained in these kits, we also offer a much wider range of mounted LEDs at wavelengths from 280 nm to 1550 nm, all of which are compatible with Cerna systems. For our full selection of mounted LEDs, please see their full web presentation.

Required Accessories

To provide current and intensity control for the LED, a suitable driver is required. A selection of popular drivers is sold below in the LED Drivers section. Mounting the LEDs to the Cerna microscope body requires a Trans-Illumination Module (sold separately below).

Installation

We recommend attaching the Illumination Kit to the Trans-Illumination Module after the trans-illumination module has been installed on the microscope body. For

details on that step, please see the Trans-Illumination Modules section below.

Our Trans-Illumination Modules are designed for use with ER025 cage rods (sold separately). These cage rods should be threaded into the 4-40 taps on the face of the filter cube through which the light exits. Next, slide the cage rods into the mating Ø6 mm holes on the trans-illumination module, gently pushing until the filter cube makes contact. Finally, secure the cage rods by tightening the button head cap screws on the trans-illumination module, which accept a 2.5 mm balldriver.

| illumination Type | Visible | NIR |
|---------------------------|---------------------|---------------------|
| illumination Kit Item #'s | WFA1010 and WFA1050 | WFA1020 and WFA1050 |
| Included LED ^a | MWWHL3 | M850L3 |
| Nominal Wavelength | 3000 K ^b | 850 nm |
| Typical Power Output | 550 mW | 1100 mW |
| LED Spectrum | | |

- In addition to the LEDs contained in these kits, we also offer a much wider range of mounted LEDs at wavelengths from 280 nm to 1550 nm, all of which are compatible with Cerna systems. For our full selection of mounted LEDs, please see their full web presentation.
- Correlated Color Temperature

| Part Number | Description | Price | Availability |
|-------------|----------------------------------|------------|--------------|
| WFA1010 | Visible Illumination Kit | \$773.26 | Today |
| WFA1020 | NIR Illumination Kit | \$824.77 | Today |
| WFA1050 | Visible and NIR Illumination Kit | \$1,308.13 | Today |

[Hide LED Drivers](#)

LED Drivers

These drivers supply intensity control and current for Thorlabs' LEDs.



[Click to Enlarge](#)

LEDD1B Features

- ▶ Sufficient Current and Voltage to Drive *Most* of Thorlabs' LEDs
- ▶ Allows Intensity Modulation of a Single LED
- ▶ Very Compact Footprint: 60 mm x 73 mm x 104 mm (W x H x D)



[Click to Enlarge](#)

DC2200 Features

- ▶ Sufficient Current and Voltage to Drive *Any* of Thorlabs' LEDs
- ▶ Allows Intensity Modulation of a Single LED
- ▶ Provides Automated LED Current Control
- ▶ Touchscreen Display



[Click to Enlarge](#)

DC4100 Features

- ▶ Sufficient Current and Voltage to Drive *Most* of Thorlabs' LEDs
- ▶ Allows Intensity Modulation of 4 LEDs Together
- ▶ Provides Automated LED Current Control
- ▶ LCD Display



[Click to Enlarge](#)

DC4104 Features

- ▶ Sufficient Current and Voltage to Drive *Most* of Thorlabs' LEDs
- ▶ Allows Independent Intensity Modulation of 4 LEDs
- ▶ Provides Automated LED Current Control
- ▶ LCD Display

| Specifications | | | | |
|---|-----------------------|---|---|--|
| Item # | LEDD1B | DC2200 | DC4100 | DC4104 |
| Number of LEDs | One | One | Up to Four | Up to Four |
| Current Output | 1.2 A (Max) | 10.0 A (Max) | 1.0 A per Channel (Max) | 1.0 A per Channel (Max) |
| Voltage Output | 12 V (Max) | 50.0 V (Max) | 5 V (Max) | 5 V (Max) |
| Modulation Frequency Using External Input | 5 kHz (Max) | 250 kHz (Max) | 100 kHz (Max) (Simultaneous Across all Channels) | 100 kHz (Max) (Independently Controlled Channels) |
| External Control Interface(s) | Analog (BNC) | USB 2.0 and Analog (SMA) (Includes SMA to BNC Cable) | USB 2.0 and Analog (BNC) | USB 2.0 and Analog (8-Pin) |
| Automated LED Configuration | No | Yes | Yes | Yes |
| Display | None | Touchscreen | LCD | LCD |
| Link to Full Web Presentation | Full Web Presentation | Full Web Presentation | Full Web Presentation | Full Web Presentation |
| Required Accessories | KPS101 Power Supply | None | DC4100-HUB Connector Hub | |

| Part Number | Description | Price | Availability |
|-------------|---|------------|--------------|
| LEDD1B | T-Cube LED Driver, 1200 mA Max Drive Current (Power Supply Not Included) | \$293.00 | Today |
| KPS101 | 15 V, 2.4 A Power Supply Unit for One K-Cube or T-Cube | \$25.71 | Today |
| DC2200 | High-Power 1-Channel LED Driver with Pulse Modulation, 10.0 A Max, 50.0 V Max | \$1,995.00 | Today |
| DC4100 | 4-Channel LED Driver, 1 Modulation Input, 1 A, 5 V | \$2,580.00 | Today |
| DC4104 | Customer Inspired!4-Channel LED Driver, 4 Modulation Inputs, 1 A, 5 V | \$2,840.00 | Today |
| DC4100-HUB | Single LED Connector Hub for DC4100 | \$309.00 | Today |

[Hide Trans-Illumination Modules](#)

Trans-Illumination Modules



- ▶ WFA1000: Trans-Illumination Module for Brightfield Illumination and DIC Imaging
- ▶ WFA1100: Trans-Illumination Module for Dot Contrast
- ▶ Modules Require WFA0150 Dovetail Clamp to Connect to Microscope Body

Trans-Illumination Modules direct the visible and/or NIR illumination generated by the Illumination Kits into the optical path of the Cerna microscope. The WFA1000 is used for brightfield illumination and DIC imaging, leaving open the possibility of upgrading a brightfield microscope to DIC later, while the WFA1100 is used for Dot contrast. The WFA0150 Dovetail Clamp, sold separately, is required to connect the trans-illumination module to the microscope body.

As shown in the drawing to the right, rotating the knob on the front of these modules opens and closes an integrated iris, which controls the intensity of the trans-illumination. Each module contains an optical port on the side that is designed to accept the Illumination Kits sold above. To generate the gradient required for Dot contrast (see the *Modalities* tab above for details), the WFA1100 includes five tightly toleranced quarter annuluses (for objective NAs of 0.3, 0.5, 0.65, 0.8, and 1.0) as well as a diffuser.

Installation

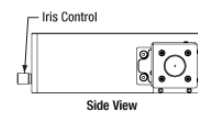
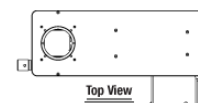
The WFA0150 dovetail clamp includes an adapter plate that connects the trans-illumination module to the Cerna microscope body. First, attach the adapter plate to the trans-illumination module, using the seven M4 counterbores and two alignment pin holes in the center of the plate. It is important to use both of the alignment pins. Next, attach the adapter plate to the dovetail clamp, using the eight M4 x 0.7 tapped holes on the edges of the plate. Finally, connect the completed assembly to the bottom of the support rail. The dovetail clamp tightens using two setscrews that accept a 4 mm balldriver.

At this point, we recommend installing the Illumination Kit to the Trans-Illumination Module. For details on that step, please see the Illumination Kits section above.

| Part Number | Description | Price | Availability |
|-------------|---|------------|--------------|
| WFA1000 | Brightfield Illumination / DIC Imaging Module | \$4,058.42 | Today |
| WFA1100 | Dot Contrast Module | \$4,767.46 | Today |
| WFA0150 | Transmitted Light Module Dovetail Clamp | \$259.66 | Today |



Click to Enlarge
The Dot contrast module includes five quarter annuluses that are matched to specific objective NAs (0.3, 0.5, 0.65, 0.8, or 1.0).



Click for Details
Drawing of Trans-Illumination Module

Additional DIC Accessories: Polarizers, Prisms, Sliders, and Analyzer



The contrast enhancement offered by DIC imaging is generated by adding several additional optical components to the optical path. These components include a polarizer, two birefringent prisms (the second of which is held in a slider), and a second polarizer (known as an analyzer), which together manipulate the polarized transmitted light. In addition to these components, DIC imaging with Cerna microscopes requires the CSB1400 Microscope Body, which holds the condenser and trans-illumination module; the MBE74100 Six-Cube Epi-Illuminator, which holds the analyzer; and either the MBP71100 or MBP70100 Nosepiece, which holds the slider. Our 350 mm tall microscope body, single-cube epi-illuminator module, and other nosepieces are not compatible with DIC.

The process of selecting the polarizers, prisms, sliders, and analyzer is described in the following steps and summarized in the table below named "Required Additional DIC Accessories."

Step 1: Polarizer Turret and Turret Adapter

The MBD75300 DIC Polarizer Turret holds polarizers and prisms for DIC imaging. In a Cerna microscope, it is mounted to the WFA1000 Trans-Illumination Module (sold separately above) using the WFA3000 DIC Polarizer Turret Adapter. The MBD75300 turret, WFA1000 trans-illumination module, and the WFA3000 adapter are all mounted to the microscope body underneath the condenser. All of these components are required for DIC imaging.

Step 2: Polarizers and DIC Prisms

In DIC imaging, light passes through a polarizer and a DIC prism before reaching the sample. The MBN71946 Visible DIC Polarizer is intended for systems with the WFA1010 or WFA1050 Illumination Kits, while the MBN71960 IR DIC Polarizer is intended for systems with the WFA1020 or WFA1050 Illumination Kits. Choose the polarizer(s) that match the illumination kit you select above.

A DIC prism matched to the system's objective is also required. The MBH72300 DIC Prism is intended for use with a 10X objective, while the MBH72310 DIC Prism is intended for use with objectives from 16X to 100X.

Step 3: DIC Slider and DIC Analyzer

The light that is transmitted through the sample passes through a second DIC prism and another polarizer (held in an analyzer) before reaching the widefield viewing apparatus. This second prism is held in a DIC slider that is inserted into the MBP71100 or MBP70100 nosepiece. The DIC slider must match the system's objective; use the table to the right to select the correct slider. The MBN71950 analyzer is held in the MBE74100 six-cube epi-illuminator, and contains both visible and IR polarizers. A matched DIC slider and the DIC analyzer are both required for DIC imaging.

| DIC Slider Item # | Compatible Objectives |
|-------------------|-------------------------------------|
| MBH76210 | Nikon Plan Fluorite, 10X |
| MBH76720 | Nikon, 16X |
| MBH76220 | Nikon Plan Fluorite, 20X |
| MBH76225 | Nikon, 25X |
| MBH76240 | Nikon Plan Fluorite, 40X |
| MBH76640 | Nikon APO NIR, 40X, Water Immersion |
| MBH76160 | Nikon APO NIR, 60X, Water Immersion |

| Required Additional DIC Accessories ^a | | | | | | |
|--|------------------|--------------------------|---|---|--|--------------|
| Accessory | Polarizer Turret | Polarizer Turret Adapter | Lower Polarizer (Choose at Least One) | Lower DIC Prism (Choose at Least One) | DIC Slider | DIC Analyzer |
| Item # | MBD75300 | WFA3000 | MBN71946 Visible Polarizer MBN71960 IR Polarizer | MBN72300 for 10X Objectives MBN72310 for 16X - 100X Objectives | Choose at Least One from the Table Above | MBN71950 |

- In addition to the items in this table, DIC imaging requires the CSB1400 Microscope Body, the MBE74100 Six-Cube Epi-Illuminator, and either the MBP71100 or MBP70100 Nosepiece.

| Part Number | Description | Price | Availability |
|-------------|---|------------|--------------|
| MBD75300 | Nikon FN-PT Polarizer Turret | \$1,346.00 | Lead Time |
| WFA3000 | DIC Polarizer Turret Adapter | \$206.67 | Today |
| MBN71950 | Nikon FN-IR/FA Visible and IR DIC Analyzer | \$1,268.00 | Lead Time |
| MBN71946 | Nikon FN-P Visible DIC Polarizer | \$1,346.00 | Lead Time |
| MBN71960 | Nikon FN-IRP IR DIC Polarizer | \$2,021.00 | Lead Time |
| MBH72300 | Nikon DIC Prism for 10X Objectives, N1 Dry Condenser | \$1,341.00 | Lead Time |
| MBH72310 | Nikon DIC Prism for 16X - 100X Objectives, N2 Dry Condenser | \$1,341.00 | Lead Time |
| MBH76210 | Nikon DIC Slider for Nikon Plan Fluorite 10X Objectives | \$825.00 | Lead Time |
| MBH76720 | Nikon DIC Slider for Nikon 16X Objectives | \$1,122.00 | Lead Time |
| MBH76220 | Nikon DIC Slider for Nikon Plan Fluorite 20X Objectives | \$825.00 | Lead Time |
| MBH76225 | Nikon DIC Slider for Nikon 25X Objectives | \$2,031.00 | Lead Time |
| MBH76240 | Nikon DIC Slider I for Nikon Plan Fluorite 40X Objectives | \$825.00 | Lead Time |
| MBH76640 | Nikon DIC Slider III for Nikon 40X APO NIR Water Objectives | \$1,122.00 | Lead Time |
| MBH76160 | Nikon DIC Slider I for Nikon 60X APO NIR Water Objectives | \$825.00 | Lead Time |

[Hide Fixed Arms for Custom Trans-Illumination Modules](#)

Fixed Arms for Custom Trans-Illumination Modules

Fixed arms use the linear dovetail on the Cerna microscope body to mount lens tubes and cage systems in the optical path. Because the linear dovetail spans the height of the support rail, these arms can be positioned anywhere along the body height, providing flexible positioning options and letting you design your own optical systems.

The CSA1001 has internal SM1 (1.035"-40) threads for Ø1" lens tubes and four 4-40 tapped holes on top and bottom for 30 mm cage systems, while the CSA1002 has internal SM2 (2.035"-40) threads for Ø2" lens tubes and four 4-40 tapped holes on top and bottom for 60 mm cage systems. They are tightened onto the support rail using setscrews that accept a 2.5 mm balldriver or hex key.

| Item # | CSA1001 | CSA1002 |
|------------------------------------|---|--|
| Photo (Click to Enlarge) |  |  |
| Compatible Accessories | Ø1", SM1-Threaded Lens Tubes 30 mm Cage Systems | Ø2", SM2-Threaded Lens Tubes 60 mm Cage Systems |



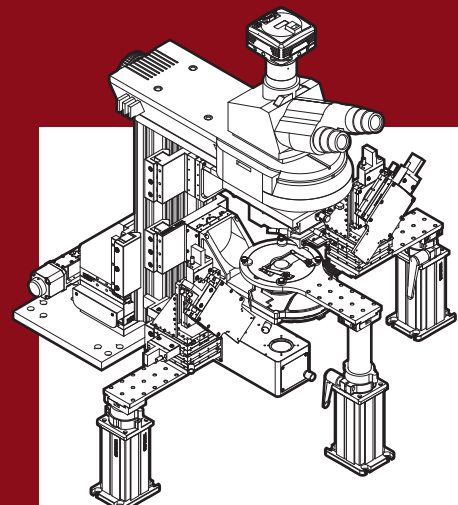
Click to Enlarge
User-Built Cerna Microscope with
Trans-Illumination Using Fixed Arms

| Part Number | Description | Price | Availability |
|-------------|---|----------|--------------|
| CSA1001 | Fixed Arm with Ø1", SM1-Threaded Hole and Taps for 30 mm Cage Systems | \$284.08 | Today |
| CSA1002 | Fixed Arm with Ø2", SM2-Threaded Hole and Taps for 60 mm Cage Systems | \$295.23 | Today |

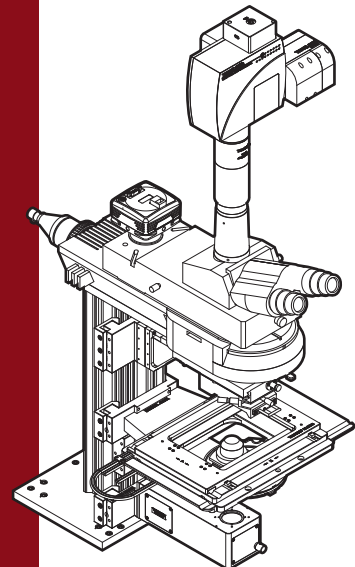
Visit the *Cerna Components: Trans-Illumination* page for pricing and availability information:

https://www.thorlabs.com/newgrouppage9.cfm?objectgroup_id=8569

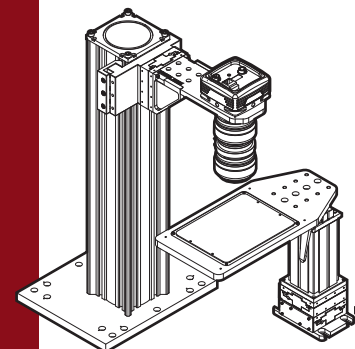
Cerna Series Microscopy Platform



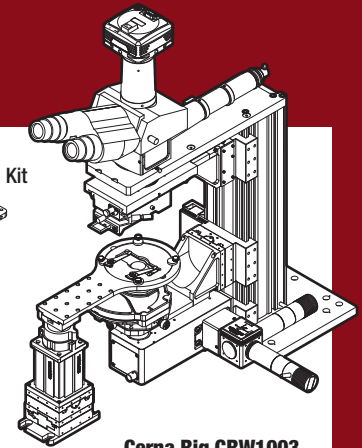
Cerna Rig CRE1003
This configuration is designed for electrophysiology experiments and includes rigid stands for micromanipulators.



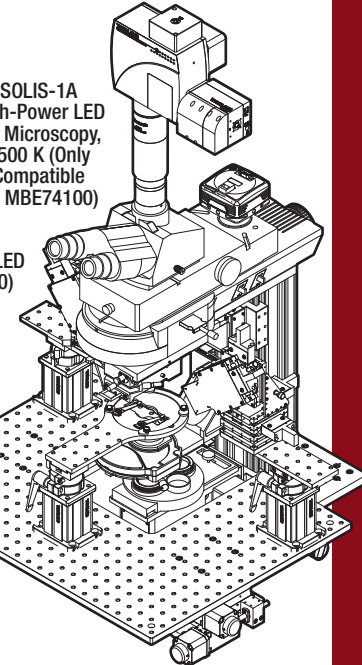
Cerna Rig CRC1002
This confocal microscope uses a Nikon dual camera port and fast XY Scanning stage.



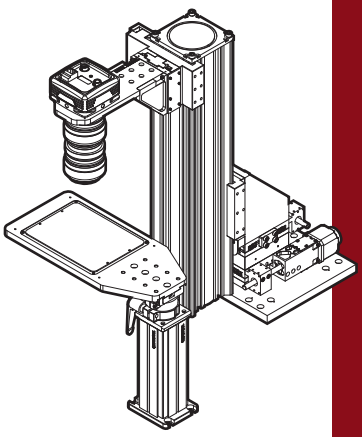
Cerna Rig CRF1001
The CSB1500F 500 mm Tall Microscope Body is designed to support setups for intrinsic signal imaging.



Cerna Rig CRW1003
This widefield imaging microscope includes a module for Ddot contrast imaging.



Cerna Rig CRE1005
With a platform for micromanipulators and double camera port, this microscope combines confocal and electrophysiology capabilities on an upright Cerna microscope.



Cerna Rig CRF1002
This intrinsic imaging rig uses microscope movers to translate the field of view over a stationary sample.

