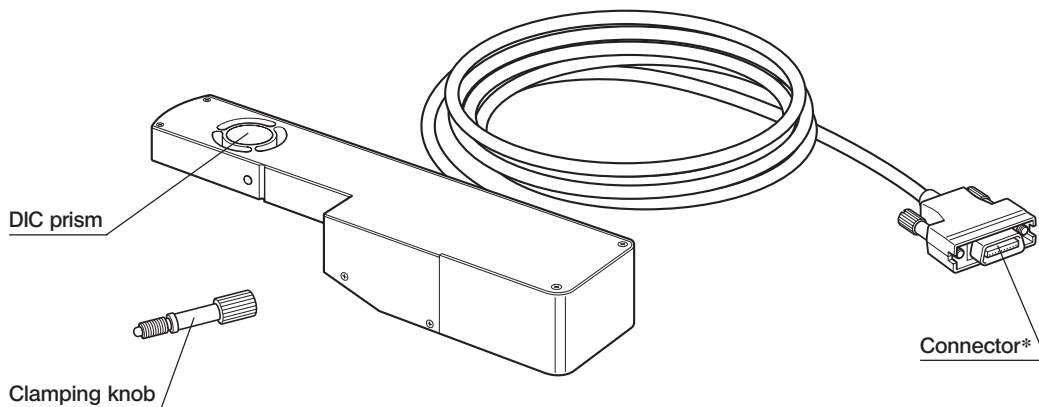


# Motorized DIC Slider U-DICRM

# INSTRUCTIONS

The U-DICRM Motorized DIC (Differential Interference Contrast) Slider has been designed to be mounted in a revolving nosepiece capable of mounting a DIC slider. To achieve observation with good contrast, the U-DICRM offers capabilities for motorized engagement and disengagement of the DIC prism into and from the light path as well as continuous variation of the background interference color (gray sensitive color to purple sensitive color [-100 to 600 nm]).

## 1 External View



\*Connect to the U-DICPCB DIC/DUV option board mounted on the BX-UCB control box.

## 2 Required Modules

The following modules are required to operate the motorized DIC slider and perform reflected light DIC observation.

◎ To use the U-DICRM with the MX61A system, refer to its instruction manual.

### Modules required for operation

- Control box : BX-UCB
- DIC/DUV option board : U-DICPCB
- Software : MX2-BSW (CD-ROM), PC (computer)

◎ For the specifications required for the PC, refer to the instruction manual for the MX2-BSW.

### Modules required for reflected light DIC observation

- Microscope (reflected light type) : MX61/61L/61A, BX41/51/61, etc.
- Revolving nosepiece with DIC slider position : U-D6BDREMC, U-D5BDREMC, U-P5BDREMC, U-D6REMC, U-D5BDREM, U-D6REM, U-D6BDRE, U-D5BDRE, U-P5BDRE, U-D6RE, etc.
- Objective : UIS2 series or MPLFLN/MPLFLN-BD series (5X to 150X), MPLFLN-BDP series.
- Analyzer : U-AN360-3, U-AN, MX-ANM (when the U-AFA2M AF unit is used with an MX61A system), etc.
- Polarizer : U-PO3, etc.
- DIC mirror unit : U-MDIC3 (with built-in analyzer and polarizer), U-MDICA3 (with built-in polarizer, when the U-AFA2M AF unit is used)

◎ For more information on the modules required for reflected light DIC observation, also see the instruction manual for the microscope to be used in combination with the U-DICRM.

### 3 Assembly

▲ Before assembly, be sure to set the main switch of the BX-UCB control box to “O” (OFF) for safety.

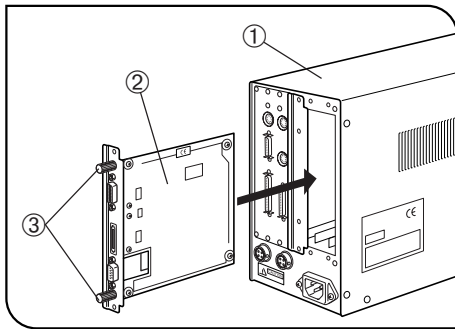


Fig. 1

#### Mounting the U-DICPCB DIC/DUV Option Board (Fig. 1)

1. Loosen the six clamping knobs from the two option slot covers on the rear of the BX-UCB ①.
  - Ⓞ Attach the removed clamping knobs ③ on the U-DICPCB ② to facilitate its insertion and removal.
2. Aligning the orientations of the connector of the U-DICPCB ② with that inside the BX-UCB, insert the U-DICPCB ② into the BX-UCB along the board rails.

Push the U-DICPCB all the way until the connectors are connected firmly.
3. Clamp the U-DICPCB ② with the clamping knobs above.

Also attach one of the option slot covers in the same way.

  - Ⓞ Retain the unused option slot cover in a safe place.

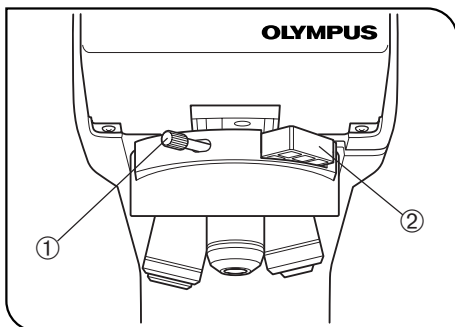


Fig. 2

#### Mounting the U-DICRM Motorized DIC Slider (Fig. 2)

- ★ Insert the DIC slider in the revolving nosepiece carefully. Impact caused by careless insertion may deteriorate optical performance.
1. Loosen and remove the clamping knob ① from the front of the revolving nosepiece. Also remove the dummy slider ②.
    - Ⓞ Retain ① and ② carefully so as not to lose them.
  2. Hold the U-DICRM with the projected side down and insert it into the position for the dummy slider.
  3. Insert the clamping knob provided with the U-DICRM into the position of the clamping knob removed above and tighten.
  4. Connect the connector of the U-DICRM to the connector marked “U-DICRM” on the U-DICPCB DIC/DUV option board mounted on the BX-UCB.

This product is applied with the requirements of standard IEC/EN61326-1 concerning electromagnetic compatibility.

- Emission: Class A

- Immunity: Industrial electromagnetic environment

Emissions exceeding the level required by aforementioned standards may occur if this product is electrically connected to other equipment.

Some interference may occur if this product is used in residential environments.



In accordance with European Directive on Waste Electrical and Electronic Equipment, this symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately.

Refer to your local Evident distributor in EU for return and/or collection systems available in your country.

### Connecting the RS-232C Cable

⊙ For the RS-232C cable, use a commercially available straight cable [with D-sub 9-pin female – D-sub 9-pin female connectors]. If the combined module is a motorized system module (MX61A, BX61, etc.), prepare another RS-232C cable of the same specifications.

Be sure to set also the main switch of the computer to “○” (OFF).

- Connector on the front of BX-UCB  $\longleftrightarrow$  RS232C connector 1 on computer
- Connector on U-DICPCB (marked RS232C)  $\longleftrightarrow$  RS232C connector 2 on computer

### Mounting the Analyzer and Polarizer

⊙ Mount the analyzer, polarizer or DIC mirror unit by following the instructions given in the instruction manual for the microscope in use.

## 4 Reflected Light DIC Observation Procedure

★ The polarizer degrades after it has been exposed to light for long hours (about continuous 2000 hours). In this case, it should be replaced.

★ When observing using a high-intensity light source, always use the U-25L42 filter to prevent the polarizer from being burnt.

1. Install the MX2-BSW software in the computer as described in the instruction manual for the software.
2. Set the main switches of related modules to “I” (ON) and make the microscope system ready for observation.
3. Set the observation light path of the microscope to the DIC observation light path.
4. Perform the cross-Nicol adjustment of the analyzer and polarizer.

The cross-Nicol adjustment is not necessary when the U-MDIC3 DIC mirror unit is used.

5. Using the MX2-BSW software, engage the DIC prism in the light path and adjust the background color contrast.

The background interference color can be varied continuously from the gray sensitive color to purple sensitive color (-100 to 600 nm). Select the interference color that can provide the specimen image with the best contrast.

- Set the background color to gray to obtain a high-contrast image with 3D feeling in the gray sensitive color with the highest sensitivity.
- Set the background color to purple sensitive color to observe even slight differences in phase as changes in color.

⊙ Use a DIC-compatible objective of the MPLFLN/MPLFLN-BD series for DIC observation.

⊙ When an observation method other than DIC observation is used by leaving the DIC prism engaged in the light path, the observed image may look doubled. In this case, disengage the DIC prism from the light path.

⊙ DIC observation has high detection sensitivity. Take care against contamination on the specimen surface.

⊙ The detection sensitivity is sensitive to the orientation. It is recommended to use a rotary stage or rotate the specimen during observation.

⊙ The contrast may sometimes be enhanced by stopping down the aperture iris diaphragm of the microscope.

## 5 MX-ANM Motorized Analyzer

◎ Use the MX-ANM motorized analyzer when motorized control of the analyzer is required for DIC observation combining the U-AFA2M autofocusing unit with the MX61A system or using other combination.

In this case, the U-MDIC3 with built-in analyzer and polarizer cannot be used when the DIC mirror unit is used. It is required to use the U-MDICAF3 in which only the polarizer is built in.

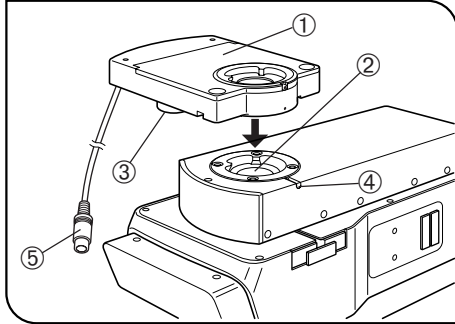


Fig. 3

### Mounting the MX-ANM Motorized Analyzer (Fig. 3)

▲ Be sure to set the main switch of the BX-UCB control box to “O” (OFF) in advance.

◎ When the MX61A system is used, also refer to its instruction manual.

1. Mount the MX-ANM motorized analyzer ① on the U-AFA2M tube mount ② of the U-AFA2M autofocusing unit or on the observation tube mount of the microscope so that the motor ③ is located on the left of the microscope when it is viewed from the front (as shown in Fig. 3), and secure the clamping screw ④ temporarily (because the cross-Nicol adjustment will later be necessary as described below).
2. Connect the connector ⑤ of the connection cable of the MX-ANM motorized analyzer to the connector marked “FW2” on the BX-UCB control box.

### Cross-Nicol Adjustment

1. Set the main switch of the BX-UCB to “I” (ON) and start the MX2-BSW software.
2. Place the specimen and bring it in approximate focus with a 10X or 20X objective.
3. Set the observation light path of the microscope to the DIC light path and engage the DIC prism in the light path. If the analyzer is not engaged in, engage it also.

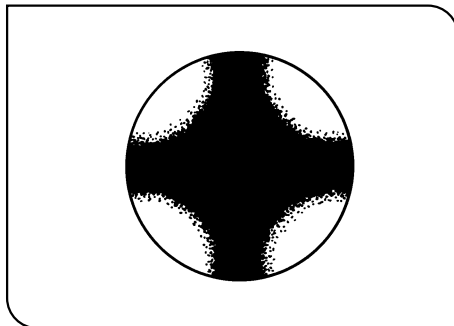


Fig. 4

4. Look into the light path through the tube mount on the top of the MX-ANM and rotate it until the dark cross-shaped isogyre (Fig. 4) becomes the sharpest. Then tighten the clamping screw firmly.
5. Fit the round dovetail on the bottom of the observation tube into the tube mount on the top of the MX-ANM and tighten the clamping screw firmly.

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