



Leica Automated Smart Condenser

for Leica DM IRE2 with
Intelligent Contrast
Management

Instructions

Leica
MICROSYSTEMS

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The information contained in the following documentation represents the latest stage of technology and knowledge. We have composed the texts and illustrations with great care. However, as it is impossible to eliminate the risk of slip completely, no kind of liability for the correctness of the contents of this manual can be accepted. Nevertheless, we are always grateful to be notified of any errors.

The information in this manual may be altered without prior notice.

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Important notes on this manual

This manual is an integral part of the Leica DM IRE2 microscopes and must be read together with the manual for the Leica DM IRE2 carefully before you start using the microscope.

This manual contains important instructions and information on the operating safety and maintenance of the system. It must therefore be kept in a safe place.

Text symbols and their meaning:

(1.2)

Numbers in brackets, e. g. (1.2) refer to illustrations, in this example Fig. 1, item 2.

→ P.20

Numbers with an arrow, e. g. →p. 20 refer to a particular page in this manual.



Special safety information is indicated by the triangular symbol on the left and is given a grey background.



Caution! Operation errors can damage the microscope and/or its accessories.



Warning of hot surface.



Explanatory note.



Not part of all configurations.

General safety information

This instrument of safety class 1 has been built and tested according to EN 61 010-1/IEC 1010-1/VDE 0411-1, safety standards for electrical measurement, control and laboratory equipment.



Attention:

To keep the microscope in this safe condition, it is essential to note the advice and warnings given in this manual.

The mains plug must only be inserted into a grounded outlet.

If an extension cord is used, it must be grounded as well. Any interruption of the ground connector inside or outside the microscope or disconnecting the ground connector can make the microscope potentially dangerous. Intentional interruption is forbidden!



Attention:

Using the ground connection, any accessories connected to the microscope which have their own and/or a different power supply can be given the same ground conductor potential. Please consult our servicing personnel if you intend to connect units without a ground conductor.

Make sure that only fuses of the specified type and rating are used as replacements. It is forbidden to use mended fuses or to shortcircuit the fuse holder.

The instruments and accessories described in this manual have been safety-tested and checked for possible hazards.

Before modifying the instrument in any way or combining it with non-Leica products not dealt with in this manual, it is essential to consult the Leica agency for your area or the main factory in Wetzlar!

Any unauthorized alteration to the microscope or use for which it was not intended will automatically terminate any warranty claim.



Attention:

The electric accessories of the microscope are not waterproof. If water gets inside them, it may cause electrical shock. Do not put the microscope and its accessories too near a water supply or anywhere else where water may get inside them.



Attention:

Protect the microscope from major temperature fluctuations. These may lead to condensation which can damage the electric and optical components.



Attention:

Avoid skin contact when using immersion oil! Ask the supplier for a safety information sheet!



Attention:

Before changing fuses or lamps, always turn the mains switch off and disconnect the mains cable.

Field of application

The Leica Smart Condenser is the logical further development of the successful inverted research microscope Leica DM IRE2. It is used for examinations of cells and tissue, for micromanipulation and microinjection techniques all the way through to microdissection or confocal microscopy. The Leica DM IRE2 in combination with the Smart Condenser has universal application potential, incorporating all the contrasting techniques of brightfield, darkfield, phase contrast, DIC, and fluorescence, which are all easy to use and switch between. Variable illumination and imaging light paths, HCS optics, modular accessories and a wide range of peripherals make the Leica DM IRE2 research microscope a versatile and powerful product.

Assembly of the transmitted light (TL) illumination column

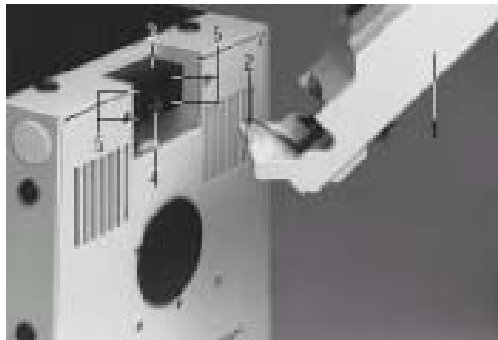
Wipe off the interface surface (1.3) with a dry cloth. Tilt the illumination column (1.1) slightly to the back and insert so that the pin (1.2) engages in the groove of the interface surface (1.4).

Erect the TL illumination column and secure with the 4 screws.

When fixing on the TL illumination column, do not hold onto/against it so that optimal alignment to the optical axis is guaranteed. The angle of tilt of the illumination column can be varied or clamped securely in the vertical position with the knurled screw (2.1).

The lamphousing for transmitted light illumination for 12 V 100W halogen lamps with single-lens aspherical collector and heat protection filter is an integral part of the transmitted light illumination column. The halogen lamp is preassembled. The chapter on Troubleshooting (see Manual Leica DM IRE2) includes a description of how to assemble and change halogen lamps. The cable on the illumination column can then be connected to the 12 V 100W socket on the back of the CRT MIC box.

Fig. 1 Assembly of transmitted light illumination column
1 Transmitted light illumination column, **2** Pin of TL illumination column, **3** Interface surface, **4** Groove of support surface, **5** Drill holes for fixing screws



Assembly of condensers

The technical description of the condensers can be found in the chapter "Performance data" in the Manual Leica DM IRE2.

The Smart Condenser of the Leica DM IRE2 is equipped with a 6 position rotating disc (fig. 3.2, fig. 5, fig. 7) and can be individually fitted with the corresponding annular diaphragms for phase contrast (PH), darkfield (DF) or IC prisms for TL Differential Interference Contrast (DIC). Usually the annular diaphragms are already inserted in the condenser disc in the factory, so you will not normally have to fit them yourself.

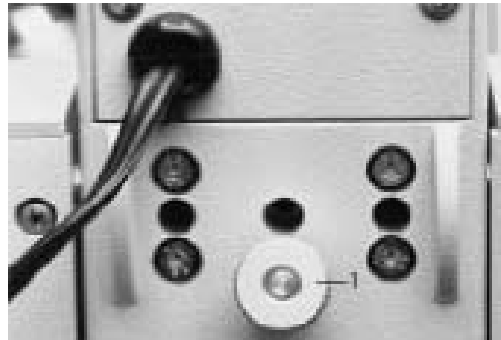
If you want to add or remove parts of the turret you have to get the rotating disc out of the condenser body. Remove the disc by slacking the screw (6.3)



Attention

When removing the turret from the condenser, as the perimeter of the turret passes through the center, it may feel tight. Gently pull out the turret without forcing it. When replacing the turret, align the notch on the turret with the bearing in the condenser, and push in the turret gently. When properly placed, the turret should turn smoothly.

Fig. 2 Transmitted light illumination column, back view
1 Knurled screw for clamping the transmitted light illumination column



Insert the light rings for Phaco (identified by the code numbers 0, 1, 2, 3 and the intercept distance S of the corresponding condenser top, e. g. 2 S1) and the DF diaphragm (identified by D for darkfield and the intercept distance S of the corresponding condenser top, e. g. D S1, see table page 129 in the Manual of DM IRE2 as follows:

- Slightly unscrew the two centring screws (5.11) with supplied centring key (7.1).
- Insert the diaphragms so that the mount fits under the spring (5.3) of the slot.
- When the light rings are assembled, their identification code must be visible i.e. pointing upwards (7.3, 7.4 and 7.5).
- Insert the light rings in the order 0, 1, 2, 3. The DF diaphragm can only be inserted in a large hole.
- Using the centring keys, screw the centring screws back in until they no longer protrude over the outer edge of the disc.

- Fit IC condenser prisms if appropriate (see assembly of DIC objective prisms p.9).
- Fix the labels in the disc, allocating them to the corresponding diaphragms.

Insert the disc into the condenser with notches (5.6) facing upwards – towards the filter holder (3.3) – and screw down (6.3).



Attention

When removing the turret from the condenser, as the perimeter of the turret passes through the center, it may feel tight. Gently pull out the turret without forcing it. When replacing the turret, align the notch on the turret with the bearing in the condenser, and push in the turret gently. When properly placed, the turret should turn smoothly.

Fig. 3 Smart Condenser 0.53 S23

1 Condenser top 0.53 S23, 2 Condenser disc, 3 Filter holder, 4 Condenser base, 5 Dovetail guide

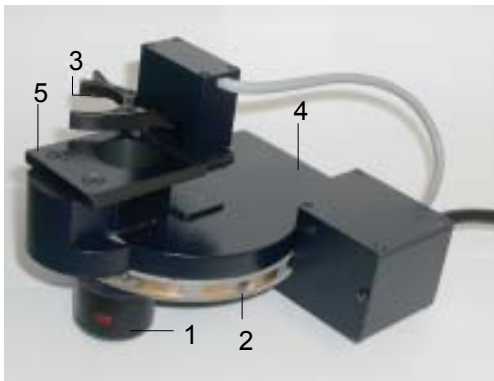
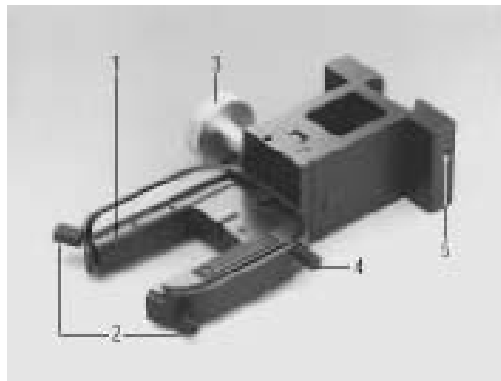


Fig. 4 Condenser holder

1 Condenser slide changer, 2 Condenser centring screws, 3 Condenser height adjustment, 4 Condenser clamp screw, 5 Screw for clamping the condenser holder



Assembly of DIC condenser prisms

The IC condenser prisms are assembled at the factory. The following steps are only necessary in case of a retrofit:

Remove the condenser disc (6.4) by slackening the screw (6.3) on the underneath of the condenser. Please see Warning indications on pages 7 and 8.

- Using the centring keys (7.1), slightly unscrew the two centring screws (5.11).
- IC condenser prisms can only be inserted into the large holes of the condenser disc which have guide grooves (5.2).
- Insert the IC condenser prisms in ascending order, e. g. K1, K2 and so that the mount fits under the spring (5.3) in the slot and the 2 guide cams engage in the grooves of the condenser disc (5.2).
- When the prisms are inserted, their identification code, e. g. K10, must be visible and pointing towards the centre of the disc (7.6 and 7.7) *Inverted = Into Center*.
- Using the centring keys, screw the centring screws back in until they no longer protrude over the outer edge of the disc. The prism is adjusted with the left centring screw only (see operation of DIC). The right centring screw must never restrict the adjustment range.
- Assemble the light rings and DF diaphragm if appropriate (see previous section).

Fig. 6 Condenser 0.53 S23 (bottom up)

1 Condenser base, 2 Condenser top 0.90 S1, 3 Fixing screw for condenser disc, 4 Condenser disc

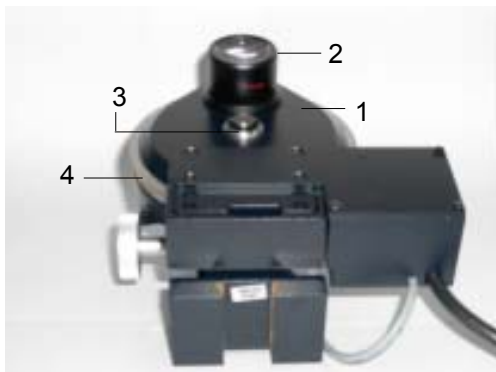


Fig. 5 6-position condenser disc, empty

1 Condenser disc with slots for light rings and IC condenser prisms, 2 Guide groove for IC condenser prisms (2nd groove is concealed), 3 Spring, 4 Holes for centring keys, 5 Spaces for label plates, 6 Notches, 8 Light ring for darkfield, 9 IC condenser prism with 2 guide cams, 10 Light ring for phase contrast, 11 Centring screws

- Fix the supplied labels corresponding to the relevant IC condenser prism. The large opening adjacent to the small opening is defined as BF position. If stickers are not at hand, please carefully write down the prisms or phase rings for each position relative to the BF position, which will be used to set up the SDK software.
- Remove any finger marks or dust on the prisms carefully.
- Put the condenser disc back in the condenser with the notches (5.6) facing upwards – towards the filter holder (3.3). Screw down the fixing screw (6.3).

Please see Warning indications on pages 7 and 8.

Fig. 7 6-position condenser disc, fully equipped

1 Centring keys for centring screws (in working position), 2 Label plates, 3, 4 Light rings for phase contrast, 5 Light ring for darkfield, 6, 7 IC condenser prisms, 8 Hole for brightfield



Condenser top

The condenser top 0.53 S23 (8.1) is screwed straight on to the condenser base (3.4). A spacer ring (8.4) must be used for assembling the condenser tops 0.90 S1 and P 1.40 OIL S1 (8.2 and 8.3).



Fig. 8 Condenser tops for condenser base (8.1)

1 Condenser top 0.53 S23, 2 Condenser top 0.90 S1, 3 Condenser top P 1.40 OIL S1, 4 Spacer ring for assembling 8.2 and 8.3

Assembly of the condensers to the illumination column

Condensers 0.53 S23 and 0.90 S1

With the illumination column tilted to the back, insert the condenser holder (10.4) into the dovetail guide of the illumination column from below (10.2).

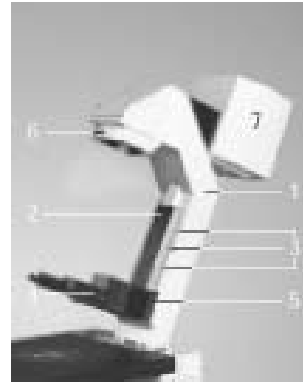


Fig. 10 Assembly of condenser holder

1 Transmitted light illumination column, 2 Dovetail guide, 3 Condenser height markings S1, S23 and S70, 4 Condenser holder, 5 Clamp screw for securing the condenser holder, 6 Clamp screw for field diaphragm module, 7 Transmitted light lamphousing

Fig. 9 Assembly of condenser 0.53 S23

1 Transmitted light illumination column (tilted), 2 Dovetail guide, 3 Condenser height markings S1, S23 and S70, 4 Condenser 0.53 S23, 5 Condenser clamp screw, 6 Field diaphragm clamp screw, 7 Transmitted light lamphousing

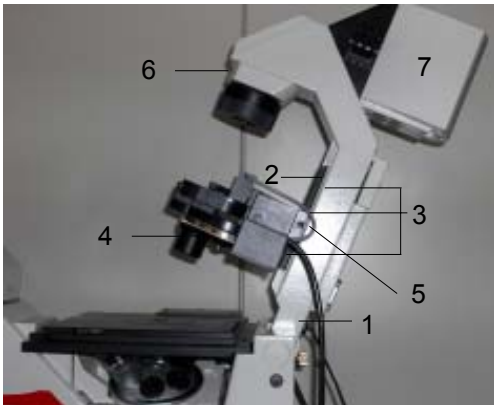


Fig. 11 Assembly of condenser holder

1 Condenser holder in working position for condenser 0.53 S23 (upper edge of condenser holder coincides with condenser height marking S23)



The condenser height adjustment should point to the left. Adjust the height of the condenser holder until its upper edge coincides with the condenser height marking S23 or S1 on the illumination column (12.3), depending on the condenser top used. Secure the condenser holder with the 3mm Allen-key and clamp screw (11.1). Mount the base part of the condenser with the dovetail guide (3.5) to the slide change mechanism (4.1) of the condenser holder (12). The condenser top should point downwards and the motor to the right. Slacken the clamp screw (12.5) and push the condenser back as far as the stop. Retighten the clamp screw (12.5) slightly.

Assembly of field diaphragm

To enable Koehler illumination when using condensers 0.53 S23 and 0.90 S1, a field diaphragm has to be assembled. Insert the field diaphragm module (13.1) into the mount (Fig.13.4) from below. The diaphragm adjustment (13.2) should point in the direction of the tube. Secure with clamp screw (13.3).

Fig. 12 Assembly of condenser 0.53 S23

1 Condenser base, 2 Condensor Top 0.53 S23, 3 height markings, 4 contrast method display, 5 Condensor clamp screw

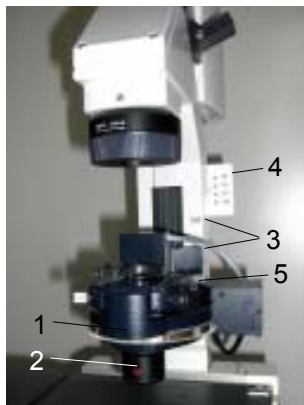


Fig. 13 Assembly of field diaphragm

1 Field diaphragm module, 2 Field diaphragm adjustment, 3 Clamp screw for securing the field diaphragm module, 4 Mount



Assembling the DIC objective prisms

Assembling the motorized IC module with Wollaston IC-objective-prisms

The IC prism disc with the IC prisms ordered by the customer are already assembled in the microscope at the factory. In case you want to retrofit the IC prism disc, please proceed as follows:

Fig. 14 IC objective prism disc upside down
1 IC objective prism in mount, 2 Code letter (e. g. C),
3 Washer and screw, 4 Stop pin, 5 connecting cable

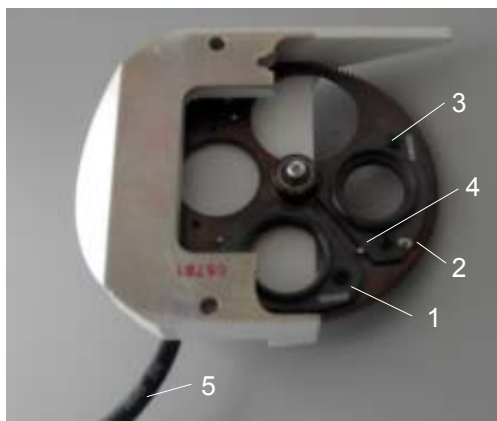
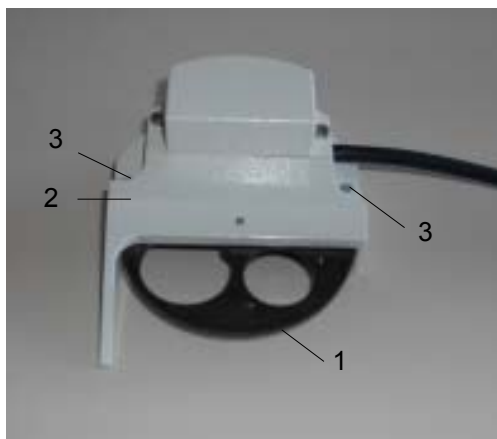


Fig. 15 Assembly of IC objective prism module
1 IC objective prism disc, 2 Prism turret, 3 Hole for fixing screws,



In case no DIC turret has been installed yet, remove the front cover (15.2) under the objective nosepiece (16.1) after slackening the Allen screws (15.3).

An eventually existing coded turret is removed in the same way.

Retrofitting individual IC prisms:

Please align prisms against the stop pin (14.4) and only screw down lightly to avoid strain. Insert the prisms so that the code letter, e. g. A (14.2) points upwards and is readable.

Insert the IC prism into the disc (15.1) and tighten with the two Allen screws. n. b.: insert the prism disc with the prism mount pointing downwards.

Make a note where you placed the prisms. This information is needed later on in the MIC Wizard software.

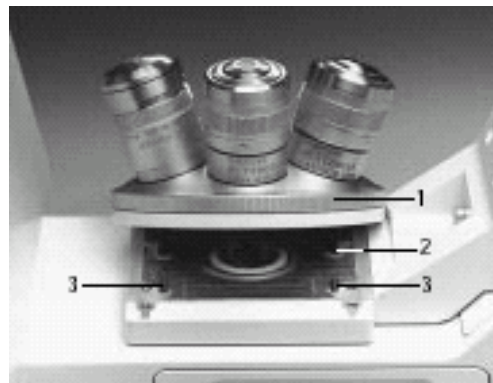
The complet mount is moved into the stand under the nosepiece (16.2) and fixed with 2 Allen screws. Use the screws comming with the IC prism turret. They have a different length to the screws you removed with the cover.

Examples of prisms:

Prism A – for objectives N PLAN 5x, 10x.

Prisms D and D1 – both for objectives N PLAN 20x, 50x, 100x and HC PL FLUOTAR 5x – 100x.

Fig. 16 Assembly of IC objective prism module
1 Objective nosepiece, 2 Mount for IC objective prism module, 3 Stop pins



Differences between prism D and D1

Prism D is the standard prism with greater shearing and therefore higher detection sensitivity for minute topological and refractive index variations in the specimen. Prism D1 has smaller shearing than prism D.

However, prism D1 is better at resolving details of fine specimen structures.

Inserting the analyser

Remove the blind slide and insert the analyser (17.2) from the left as far as the 1st clickstop.

Inserting the polariser

The polariser is inserted into the filter holder of the condenser (18.1). In addition a whole-wave compensator is applied to the back of the polariser. It is activated by turning the polariser over, in order to enable colour contrasting in polarisation or interference contrast (the compensator is active when the lambda symbol λ is visible from above).

Fig. 17 Polariser/analyser

1 Polariser POL, 2 Analyser ICT \leftrightarrow

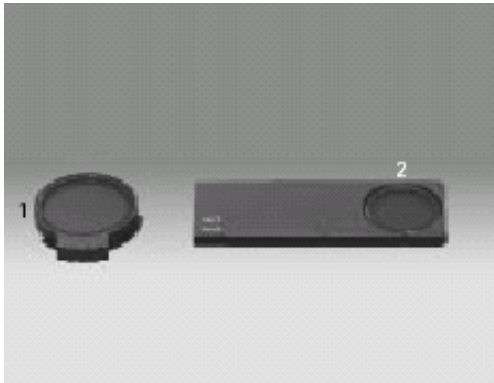
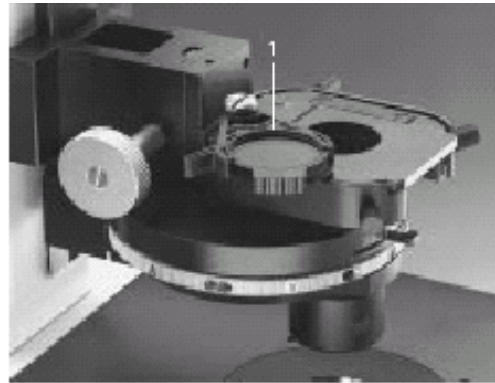


Fig. 18 Condenser 0.53 S23

1 Filter holder with polariser inserted (swung out)



The LEICA CTR MIC Electronics Box

The control of the Smart Condensor is carried out with the Leica CTR MIC Box in combination with the Leica x/y/z control

The Electronics Box Leica CTR MIC (Fig. 19) contains the external power unit for the lamp as well as the electronics cards for driving the motorized functions on the microscope.

The On/Off switch (19.1) is on the front. A green LED (19.2) indicates the operation status.

Cable connections see page 16.



Attention!

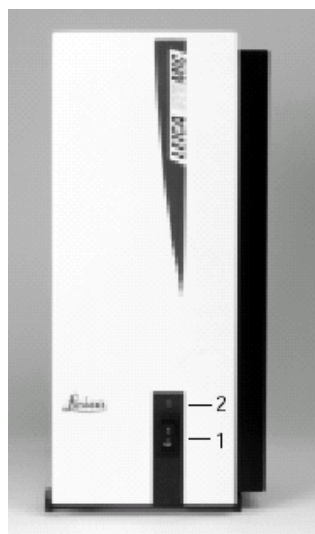
The Electronics box must be installed at least 10 cm away from walls and other inflammable objects.



Attention!

On no account should you connect the Electronics box to the mains before the whole system has been assembled! Check that all switches are at „OFF“.

Fig. 19
LEICA CTR MIC
Electronics box
1 Mains switch
2 Pilot indicator



The x/y/z control

The x/y/z-Controller (SmartMove) controls in case of DMIRE2 the focus, the objectives, the light and scanning stage (see DMIRE2 manual). As soon as the SmartCondenser is installed to the DMIRE2 the Leica CRT MIC Box will change the use of this controller. Still the focus knob (20.3) is active for focussing and the buttons UP/Down (20b.6) are changing the objectives. The button UP/Down (20b.5) are now used for the condenser. Light you have to change at the Microscope (see DMIRE2 manual).

For a comfortable operation the height position of the knobs (20a) can be set to an individual level by turning the adjustment knob 20.4

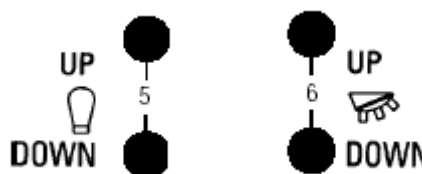
Fig. 20a x/y/z control

1, 2 Movement in x/y direction (for special applications),
3 Setting the focus, 4 Individual knob height position



Fig. 20b x/y/z control keys

5 Changing the contrast method, 6 Magnification change



Changing the contrasting method

Having completely installed the Smart Condenser and started the SDK software, the contrast mode for the actual objective will be automatically set to Brightfield - all other parts such as prisms or light rings etc. will be swung out of the light path.

Press and hold UP-button (20b.5) and turn the knob 20.1. The LEDs on the condenser board (Fig12.4) will change.

- o BF
- o DF
- o PH
- o DIC

Meaning of the colours of LEDs:

- Off = this contrasting method is **not** possible with the objective in place
- Green = **active** contrasting method with the objective in place
- Yellow = **possible** contrasting method with the objective in place

Green blinking = objective and contrasting method don't match you have to choose another objective or another contrasting method.

As soon as you leave the UP-button (20b.5) the contrasting method will be activated and the turrets, diaphragms, prism etc. will move in place.

Changing the shear of DIC

Press and hold DOWN-button (20b.5) and turn the knob 20.1. The objective prisms will move slightly and change therefore the impression of the DIC image.

Open and close the aperture diaphragm

Press and hold UP and DOWN-button (20b.5) and turn the knob 20.1. The aperture diaphragm closes or opens.

Cabling

Before the other components are assembled, the components installed and assembled so far have to be connected up to the electronics box.

- Connect the Smart Condensor 15 pin cable with the condensor socket at the rear side of the transmitted light arm (21.1).
- Connect the contrast mode socket (21.2) to the FX-Bus socket of the Leica CTR MIC box (22.6). A F-Bus cable is part of the condenser delivery.
- Connect the ICT objective prism cable (14.5) to the ICT socket (21.3)
- Connect the microscope (21.4) to the Microscope socket (22.3) with the cable with a 50-pin plug.
- The x/y/z control is connected to x/y/z Control socket (22.2).
- Connect the lamphousing to the 12V 100W lamp input (22.5).

Fig. 21 Backside Leica DM IRE2

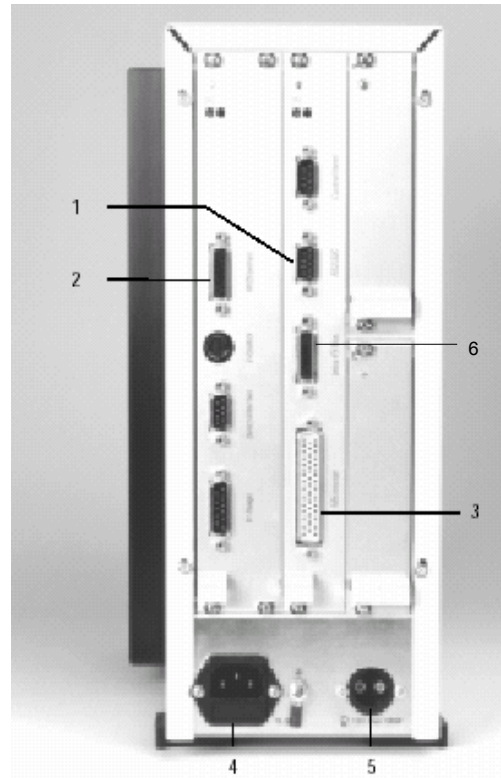
1 Condensor socket, 2 Contrast mode socket, 3 ICT objective prism socket, 4 Microscope socket



- To connect a PC, use the serial cable supplied. Connect the serial interface of the PC to the RS 232C interface of the electronics box (22.1).
- Connect the electronics box to the power supply with the mains cable (22.4).

Fig. 22 Terminal panel of electronics box

1 PC (RS 232)
2 x/y/z control
3 Microscope
4 Power supply
5 Lamp (halogen 100W)
6 Contrast modes (FX-Bus socket)



Software operation for Leica DM IRE2

The Leica DM IRE2 is normally delivered fully configured so that you can start using it right away. However, if the configuration is changed (by adding objectives, for example) or if you want to install a firmware update, you will need the Leica DM SDK Leica Software Development Kit. The current firmware is already installed on your electronics box. If you install a firmware update, please read the updated information supplied with it.

First of all, connect your PC or laptop to the Electronics Box (22.1) using the serial cable supplied (RS232 socket).

Installing the software

If an earlier version of Leica DM SDK is already installed, please deinstall this first with Settings/Control Panel/Software.

Now put the CD in your CD drive and start the SETUP program. Follow the instructions given. You can obtain further information by clicking the help keys of the individual windows.

After the Setup you will find the programs for installing and operating the Leica DM IRE2 under the folder you have set up (e.g. Leica DM SDK 4.11).

Firmware Update
Readme
Mic Config
Mic Control
Mic Wizard

If a later version of the „Leica DM SDK“ software has been installed you can reinstall the entire firmware or just parts of it using the "Firmware Update" program.

In "Readme" you will find up-to-date information and notes on the software which were written after this manual was printed.

The "MicConfig" program is used for configuring the individual microscope components.

The microscope components can be driven and tested with the "MicControl" program.

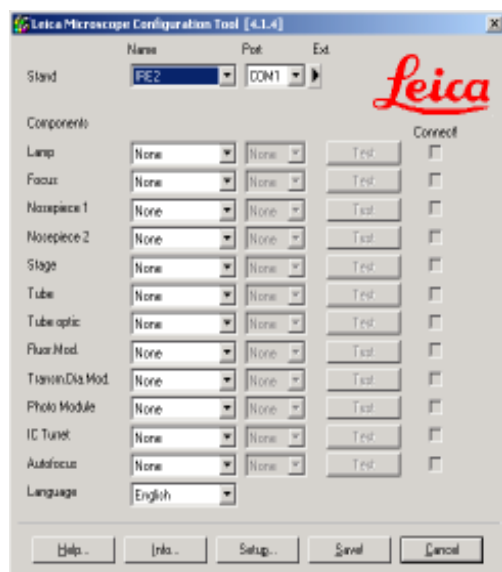
"MicWizard" is the microscope assistant that takes you through the configuration of the individual microscope components step by step.

The microscope configuration program

Starting the program

Start the configuration program by clicking *Mic Conf* in the Leica DM SDK menu or by double clicking the corresponding program icon.

The „LEICA Microscope Configuration Tool“ window appears.



At the moment, you have the choice of two languages for the dialog texts: English and German. The default value in the dialog box at the bottom left is "English" and the texts are written in English.

The first time the program is started, all microscope components are run in a simulation mode in which the corresponding hardware is merely simulated. The software can be tested without connecting microscope components in this demo mode.

The list box "Stand" contains the name "OTHER", all the other boxes contain the word "None". Also, the keys marked 'Test' are inactive, and the check boxes under "Connect!" appear dark.

Choice of language

You can switch between the languages as dialog language (in the language selection list at the bottom left).

The language selection only takes effect when you leave the configuration program with "Save!" and then restart the MIC Conf program.

You can call up further details on this and the following settings any time you like by clicking the "Help" key.

Setting the configuration

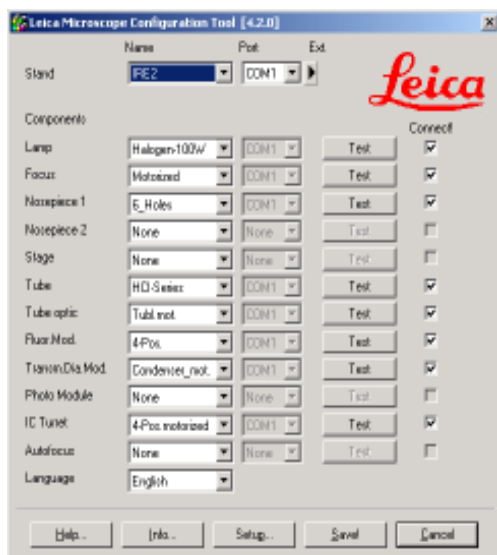
Choose the **IRE2** stand from the "Stand" list box. Then select the interface of your computer that you want to use for the communication with the Leica CTR MIC, e.g. **COM1**.

For the Leica DM IRE2 with Smart Condenser you now have to choose e.g. the following components:

Lamp 1:	Halogen-100W
Lamp 2:	None
Focus :	Motorized
Nosepiece 1 :	6_Holes
Nosepiece 2:	None
Stage:	None
Tube:	HCI-Series
Tube optics:	Tubl.mot.
Fluor. Mod.:	4-Pos.
Transm.Dia.Mod.:	Condenser_mot.
Photo module:	None
IC turret:	4-Pos. motorized
Autofocus:	None
Language:	English

After completing this selection, activate the white squares under "Connect!" by clicking into the box.

The "LEICA Microscope Configurator" dialog window now looks like this:



After activating the interface in this way, you can press the "Test" key to check whether communication between the computer and the microscope has been established.

If the installation has been successful, the message: "The component "xxx" works properly." will appear.

Otherwise, "Communication Error" is displayed. In this case, check whether the Leica CRT MIC is switched on and whether all cable connections are correct.

Terminating the program

The Microscope Configurator offers the possibility of just storing the new configuration or of switching directly to the Microscope

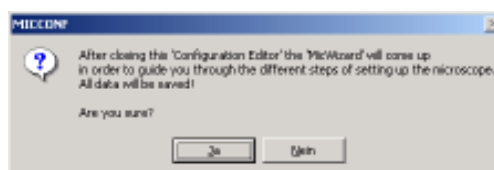
Assistant in order to perform a fine configuration. If you are installing the program for the first time, you have to do the fine configuration.

Storing the configuration

Click the "Save!" key. The data will be stored and the MIC Conf program terminated.

Starting the Microscope Assistant

Click the "Setup" key and select "Yes" in the following dialog:



The MIC Conf program is now terminated and the MIC Wizard program is started.

If you select "No", the new configuration is just stored and MIC Conf is terminated.

The Microscope Assistant

Starting the program

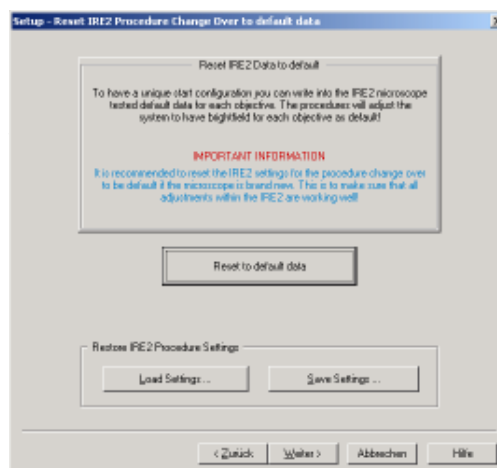
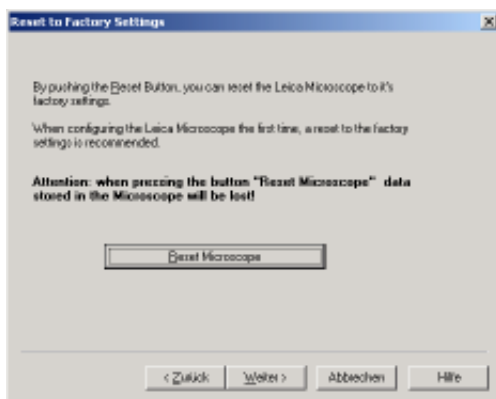
If you have not started the Microscope Assistant from the Microscope Configurator, you can start it by clicking **MIC Wizard** in the Leica DM SDK menu or by double clicking the corresponding program icon instead.

It is therefore possible to perform a fine configuration of the available components at any time.



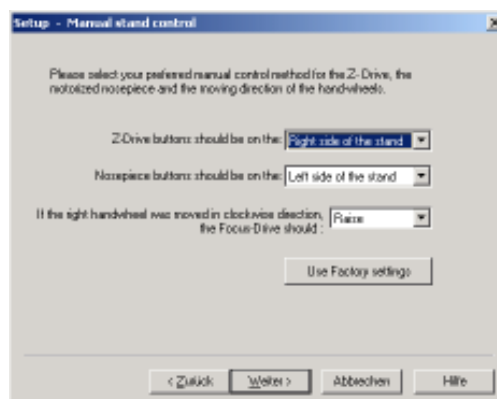
Start the routine by clicking the "Start" key.

The following dialog appears:

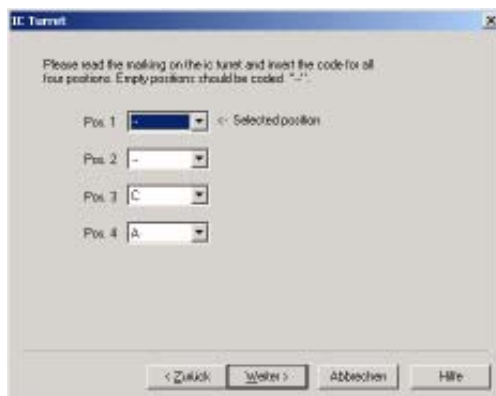


To have a unique start configuration you can write into the DM IRE2 microscope already tested default data for each objective. This procedure will adjust the system to have Brightfield for each objective as default.

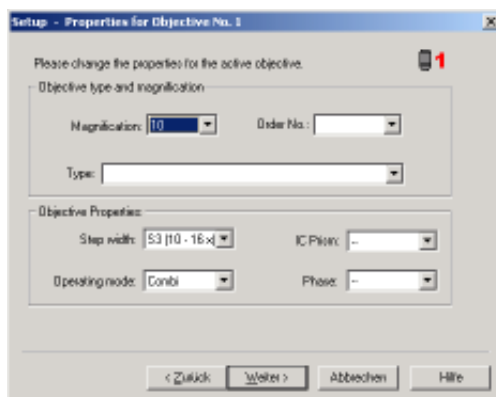
It is recommended to reset the DM IRE2 settings for the procedure change over to be default in case the microscope is brand new. By hitting the button „Reset to default data“ the procedure will adjust the system accordingly. Pressing „Continue“ the next window appears.



Follow the instructions given there. You can find additional information by clicking the Help key. After pressing „Continue“ the next dialog will be displayed.



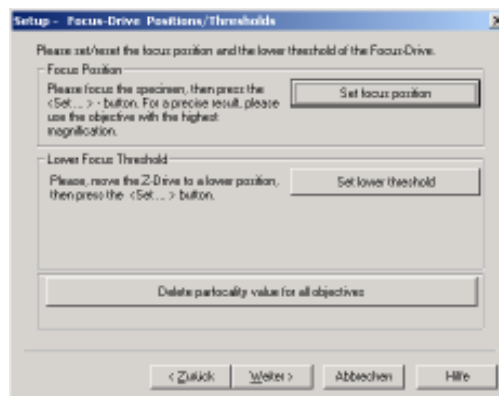
In this display the indications which are marked on the IC inserts are given to the system. Having chosen an indication, the system automatically travels to the next position. After all 4 positions are completed, the button „Continue“ displays the next dialog.



Objective settings

Using this dialog, the objective settings are taught in. To support this process, the actual objective is rotated to the right side (not in the working position) of the microscope. The information about the actual objective can be integrated using the order number or teaching in the magnification, the objective class (e.g. PL FLUOTAR, PLAPO, etc.) and the objective properties.

Using the „Continue“ button, the data are saved and the next dialog appears.



Focus position / Threshold

In this dialog the focus position and the lower threshold are taught to the system. In order to achieve most precise results, the objective with the highest magnification should be chosen for focussing.

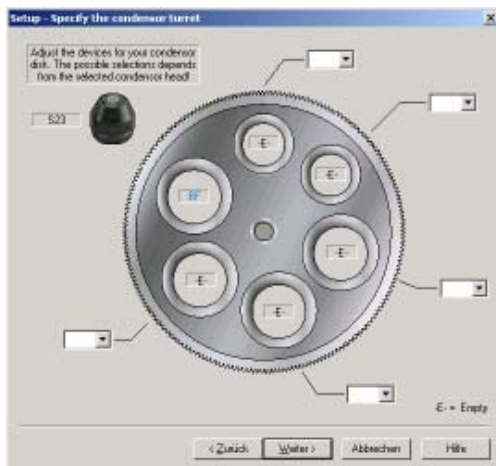
With the „Set focus position“ button the data are saved and the stage can be driven to the lower Z-drive position. Using the button „Set lower threshold“ the data for the lower Z-drive position is saved.

The button „Delete parfocality value for all objectives“ should be pressed, e.g. when a new objective is inserted into the nosepiece. With the button „Continue“ the next display appears and the system automatically travels the referring objective into the working position. Having finished the Focus position/Threshold sequence the „Continue“ button leads to the next window.



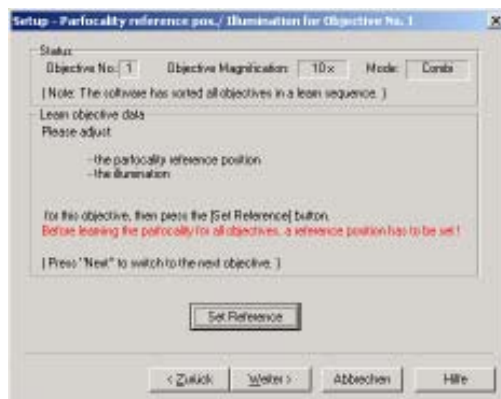
Specify the condenser head

By pressing onto the relevant button, the used condenser head is teach into the system.



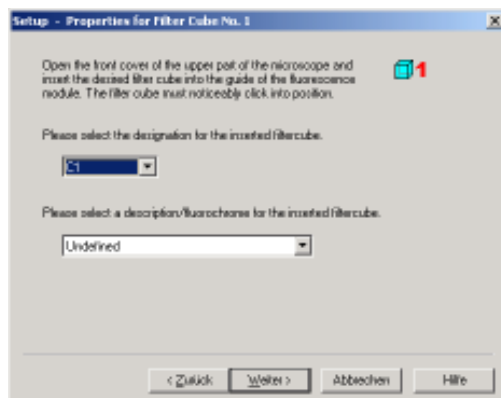
Specify the condenser turret

In this window the devices for the condenser turret are adjusted. The possible selection depends on the selected condenser head! By pressing onto the black triangle from a list of possible devices can be chosen. Having completed the tech in of the condenser turret, the „Continue“ button opens the next window.



Parfocality reference position

In this window both the parfocality and the illumination are setted with the „Set reference“ button. Pressing the button „Continue“ the system automatically brings the next objective into the working position and the same window for this objective (e.g. objective No. 2) opens. After the data for all available objectives are teached in, the button „Continue“ opens the next window.

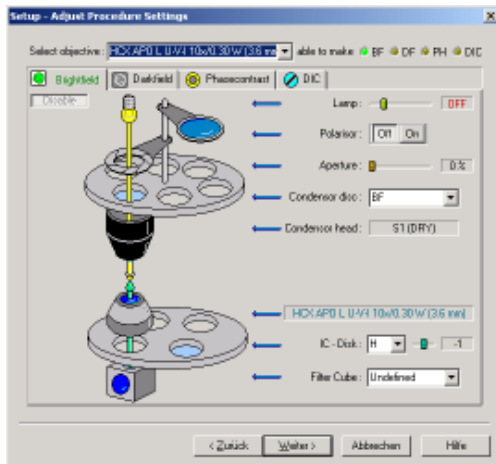


Properties for Filter Cubes

Together with this window the filter cubes of the fluorescence module are brought into the working position onto the turret. The indication which is printed onto the cube has to be

selected using the scroll bar. With the button „Continue“ the next filter cube (e.g. „2“) is automatically selected.

Having teached in all 4 positions after a push onto the button „Continue“ a warning message opens: This is to inform the user, that it will take some seconds before the next window opens. Pressing the „OK“ button, the microscope adjusts the configuration of the actual procedure settings.



Adjust Procedure Settings

In this display the microscope's contrast settings are teached in.

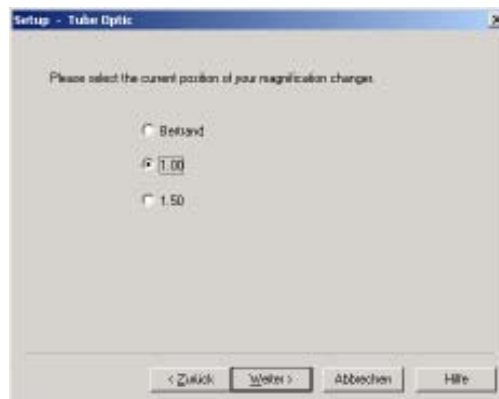
Attention: The values which are teached in will not be verified by the system, therefore this step needs to be carried out with care.

In the box „Select objective“ the objectives are listed, which have been selected in the window „Properties for objective“. One of these objectives has to be selected and the objective capabilities are teached in by pressing the mode-buttons „Brightfield“, „Darkfield“, „Phase Contrast“ or „DIC“. Having selected one of the mode-buttons, the adjustment for the lamp can be pre-setted by moving the slider.

The polarisor, which is required for e.g. DIC can be switched „on“ or „off“ for the actual objective mode by pressing the referring button. A pre-setting of the aperture is carried out using the aperture slider. In the box „condensor disc“ the configuration which has been teached in with „Specify the Condenser turret“ are listed. For each combination objective/contrast mode one insert (DIC prism or Phase ring) of the disc can be selected. For the DIC mode one of the IC-dsic prisms, which have been teached in with the dialog „IC Turret“ are selected.



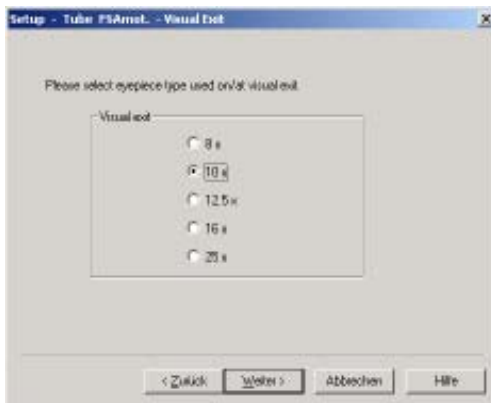
To tell the system, that a specific contrasting mode is possible or not, the bottom on the left („enable“ or „disable“) is used.



Tube Optic

In this display the actual position of the magnification changer has to be teached by clicking onto the specific button.

Pressing the button „Continue“ the next display opens.



Visual exit

In this display the magnification of the integrated type of eyepieces is taught in. Pressing the button „Continue“ the next display opens.



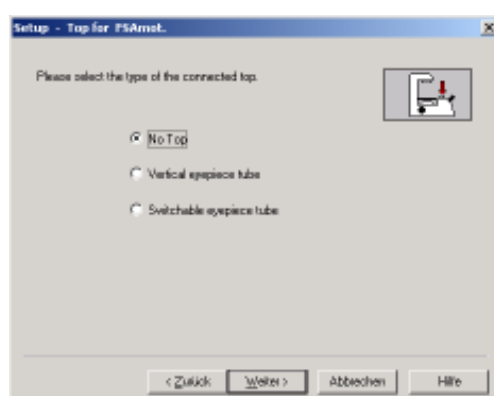
Bottom Port

With this dialog specific bottom port camera adapters in use can be taught in. In case no camera will be mounted, the button „Not in use as camera exit“ has to be pressed. Pressing the button „Continue“ the next display opens.



Side Port

With this dialog specific side port camera adapters in use can be taught in. In case no camera will be mounted, the button „Not in use as camera exit“ has to be pressed. Pressing the button „Continue“ the next display opens.



Top for FSAmot.

Using this dialog output ports at the tube can be defined.

Pressing the button „Continue“ the data will be saved and the teach-in process will be finished.

MIC control

When the Mic Wizard program has been completed, the Leica DM IRE2 is ready for use and can be operated with the x/y/z control. However, it is advisable to operate the Leica DM IRE2 from the computer first to check and, if necessary change, the settings.

In the next step the Mic Control (Start/Programs/Leica DM SDK/Mic Control) can be started. The following display appears:



When the SDK software is started, the contrast mode for the actual objective will be automatically set to Brightfield - all other parts such as prisms or light rings etc. will be swung out of the light path. This is carried out for the adjustment of the software to the system and only happens once the software is started.

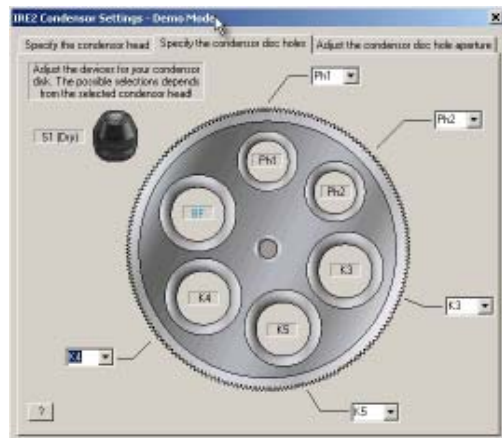


Pressing the „Condenser“ button, the following display appears:



Condenser Settings (page 1)

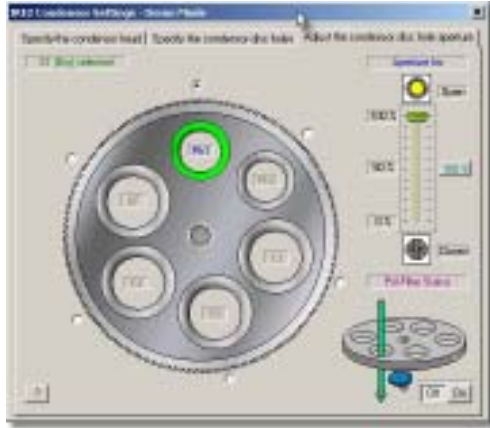
In the first window of this display the mounted condenser head is selected. By pressing one of the buttons, the condenser head is teached in.



Condenser Settings (page 2)

In the second window of the condenser settings the configuration of the condenser disc is teached in. Whilst one position is fixed for BF,

2 positions (small holes) of the condenser disc are available for Phase Contrast. Into the other 3 holes DIC prisms or a light ring for Darkfield are inserted (fig. 5 and fig. 7).



Condenser Settings (page 3)

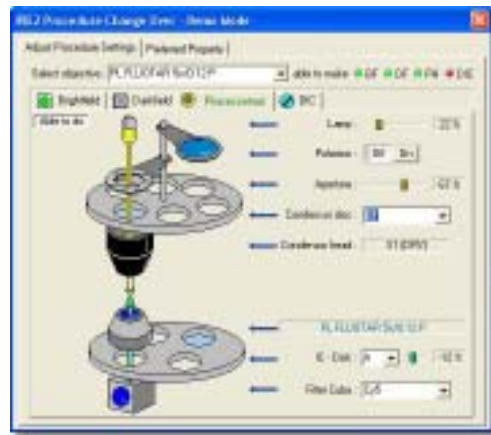
The third window of the condenser settings adjusts the aperture diaphragm of the condenser. Additionally the user can decide, for which condenser position the POL filter is switched in.

To adjust the aperture diaphragm the referring disc hole has to be activated with a click. Using the slider on the right side, the percentage value of the aperture opening can be taught in. For Phase Contrast and Darkfield the diaphragm should be fully opened.

After the adjustment of the diaphragm is carried out, the user decides to switch the Pol-filter in („On“) or leave it out („Off“) .

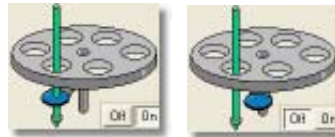


Pressing the „Contrast Mode“ button, the following display appears:



Contrast Mode - Adjust Procedure Settings

In the first window of the Contrast Mode dialog the contrast settings are taught in. In the box „Select objective“ the objectives are listed, which have been selected in the window „Properties for objective“. One of these objectives has to be selected and the objective capabilities are taught in by pressing the mode-buttons „Brightfield“, „Darkfield“, „Phase Contrast“ or „DIC“. Having selected one of the mode-buttons, the adjustment for the lamp can be pre-setted by moving the slider. The polarisor, which is required for e.g. DIC can be switched „on“ or „off“ for the actual objective mode by pressing the referring button.



A pre-setting of the aperture is carried out using the aperture slider. In the box „condenser disc“ the configuration which has been taught in with „Condenser settings page 2“ are listed. For each combination objective/contrast mode one insert (DIC prism or Phase ring) of the disc can be selected. For the DIC mode one of the IC-dsic prisms, which have been taught in with the dialog „IC Turret“ can be selected.