



**Digital Slide Scanner**

**MT5000/DSS 4**

User manual

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# 1 Introduction



Fig. 1. Digital Slide Scanner 4

## 1.1 MT5000/DSS 4 contents

1. Scanning microscope for 4 slides.
2. Personal computer.
3. Monitor.
4. Vision software.



**Working with mouse and keyboard might harm the operator and cause body impairment (carpal tunnel syndrome and other medical conditions).**

## 1.2 About the user manual

This manual is intended for doctors and laboratory assistants performing scanning on the Digital Slide Scanner 4. The manual contains general information about the system's intended use and its components. The manual will be useful for general work with the adjusted system.

If you have any questions regarding the assembly or disassembly of the system, adjustment of equipment, installation, management or maintenance of the software, please contact your support services or the supplier.

## 1.3 Intended use

Digital Slide Scanner 4 is an optic unit consisting of a scanning microscope with a camera and a computer system containing software for automated scanning of different samples.

Digital Slide Scanner 4 is intended for in-vitro diagnostics.

## 1.4 Specifications

| <b>General specifications</b>         |                                                                                                                                                    |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Working modes                         | <ul style="list-style-type: none"> <li>— Queue</li> <li>— Random access</li> <li>— STAT testing</li> <li>— 24/7</li> </ul>                         |
| Capacity                              | Up to 4 slides in a holder                                                                                                                         |
| Slide handling                        | Manual via slide replacement                                                                                                                       |
| Immersion oil dispensing <sup>1</sup> | Manual                                                                                                                                             |
| Slide identification                  | Manual                                                                                                                                             |
| <b>System components</b>              |                                                                                                                                                    |
| Contents                              | <ul style="list-style-type: none"> <li>— Scanning microscope</li> <li>— Personal computer</li> <li>— Monitor</li> <li>— Vision software</li> </ul> |
| <b>Technical specifications</b>       |                                                                                                                                                    |
| Simultaneous loading                  | Up to 4 slides                                                                                                                                     |
| Optical system <sup>1</sup>           | 10x, 20x, 40x, 50x Oil, 100x Oil                                                                                                                   |
| Microscopy method                     | Bright field                                                                                                                                       |
| Illumination                          | Koehler, LED                                                                                                                                       |
| Communications                        | Bidirectional LIS, LIS2-A2 (ASTM), HL7, Ethernet                                                                                                   |
| Throughput <sup>2</sup>               | ~2.5 min (15x15 mm, 20x)                                                                                                                           |
| Multiple user access                  | 4 preset types of users: Administrator, Doctor, Technician, Receptionist; new types of users can be added; adjustable access rights for users.     |
| Database                              | Multiple systems can share one database. Possibility to archive analysis results via transfer to external storage media                            |
| Power supply                          | 110–240 V/50–60 Hz                                                                                                                                 |
| Work temperature                      | 15–30 °C                                                                                                                                           |
| Acceptable relative humidity          | 20–80 %                                                                                                                                            |
| <b>Options</b>                        |                                                                                                                                                    |
| Analysis modules <sup>1</sup>         | <ul style="list-style-type: none"> <li>— Cyto — cytological analysis</li> <li>— Histo — histological examination</li> </ul>                        |
| Remote access                         | Vision Remote — remote work with analysis results                                                                                                  |

<sup>1</sup> Depends on delivery package

<sup>2</sup> Depends on the scanning method (magnification, focus mode, ...)

| Additional                |                                                                                                                                                                                                                                  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment and accessories | <ul style="list-style-type: none"><li>— Immersion oil</li><li>— Microscopic slides</li><li>— External barcode reader</li><li>— Printer for barcode label printing</li><li>— Barcode labels</li><li>— Automatic stainer</li></ul> |

**Attention!**

**Using MS SQL Server Express limits the number of stored samples.**

## 1.5 System requirements

- Generation Intel Core i7 processor, quality processor cooling, providing cooling down to no more than 80 % of max temperature;
- 16 GB RAM;
- NVIDIA GTX x50 or better video card with at least 4 GB video memory;
- NVIDIA graphics driver 381.65 or higher;
- 1 TB hard drive;
- Windows 7 64-bit or Windows 10;
- DVD drive;
- USB interfaces for external equipment and a protection dongle;
- Full HD monitor [1920x1080];
- Mouse, keyboard.

## 2 System Operation

### 2.1 Starting the system



Fig. 2. Power supply

1. Turn on the computer and the controller.

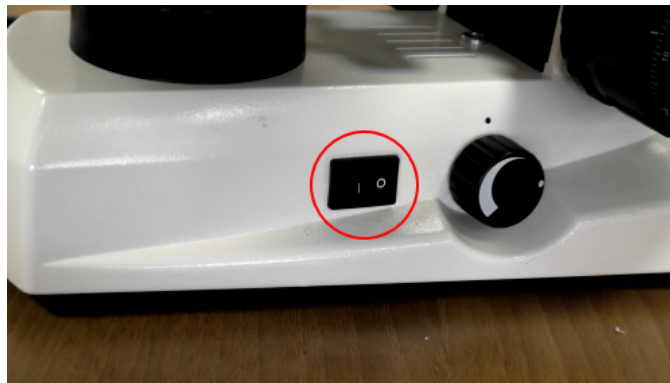


Fig. 3. Microscope light

2. Turn on the power supply and the light of the microscope. The button is on the right side of the microscope.

### 2.2 Preparing the system

Wait for the PC to boot-up.



**Please wear protective gloves when working with immersion oil to prevent skin irritation.**

### 2.3 Preparing for sample scanning



Vision

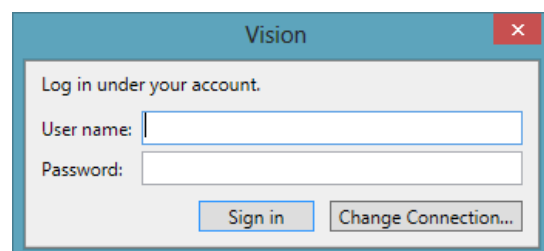


Fig. 4. Logging in to your account

Double-click on the Vision icon. Enter your user name and password in the corresponding fields and click the “Sign in” button to start the application.

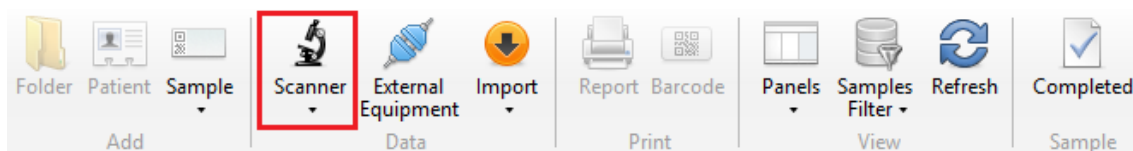


Fig. 5. "Scanner" button

Click the "Scanner" button and choose a sample.

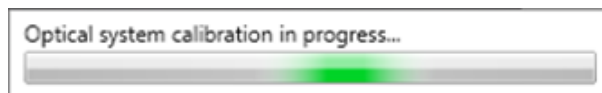


Fig. 6. Calibration process

Wait until the system is calibrated.

## 2.4 Scanning slides

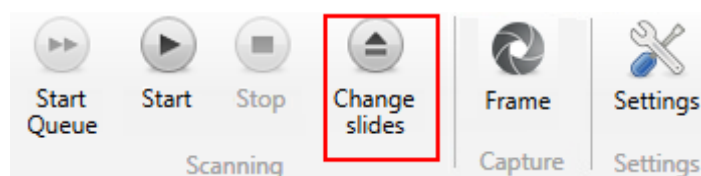


Fig. 7. "Change slides" button

Click the "Change slides" button.

The motorized stage will go down.

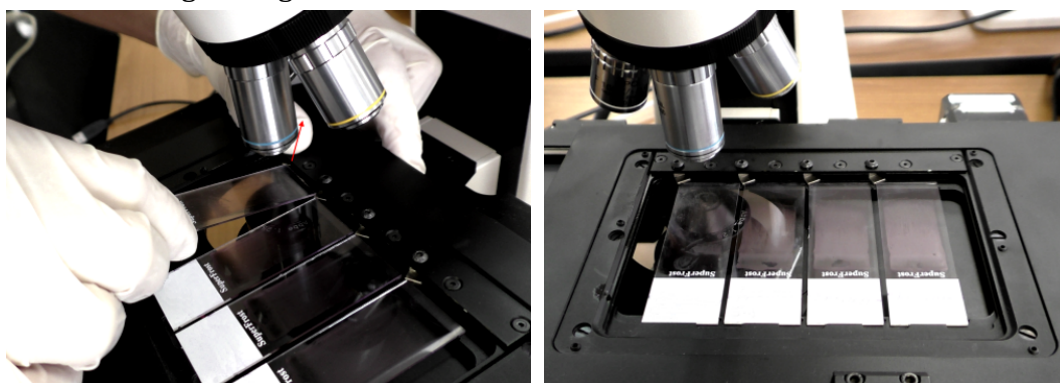


Fig. 8. Placing slides on the stage

Place slides on the motorized stage as shown above. Make sure that the slides are placed correctly.

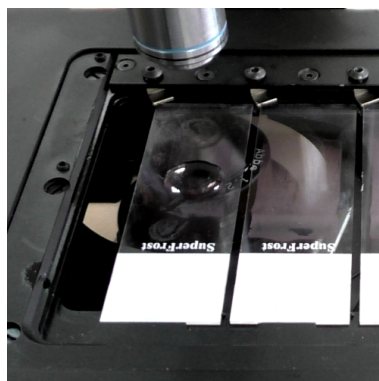


Fig. 9. Immersion oil on a slide

If you are using an immersion objective, apply immersion oil manually on each slide.



**Please wear protective gloves to prevent irritation of skin when working with immersion oil.**

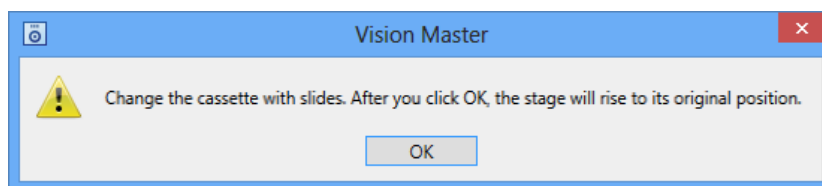


Fig. 10. Changing the cassette with slides

Click "OK".

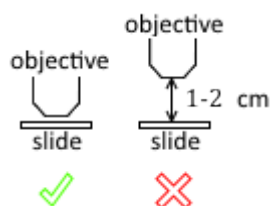


Fig. 11. Position of the stage

Check the position of the stage prior to the first scanning. If necessary, move the stage to the correct position.

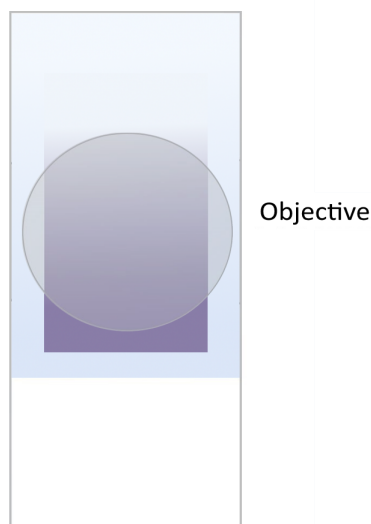


Fig. 12. Correct position of the objective

Prior to the first scanning, make sure that the objective is in the middle of the slide #1.

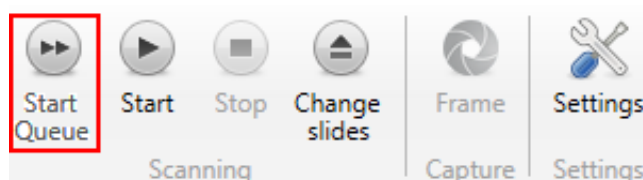


Fig. 13. "Start Queue" button

Click the "Start Queue" button to begin the scanning process.  
To place new slides, click "Change slides" and repeat the process.

## 2.5 Validation

Wait until the end of scanning (“Scanned” status).

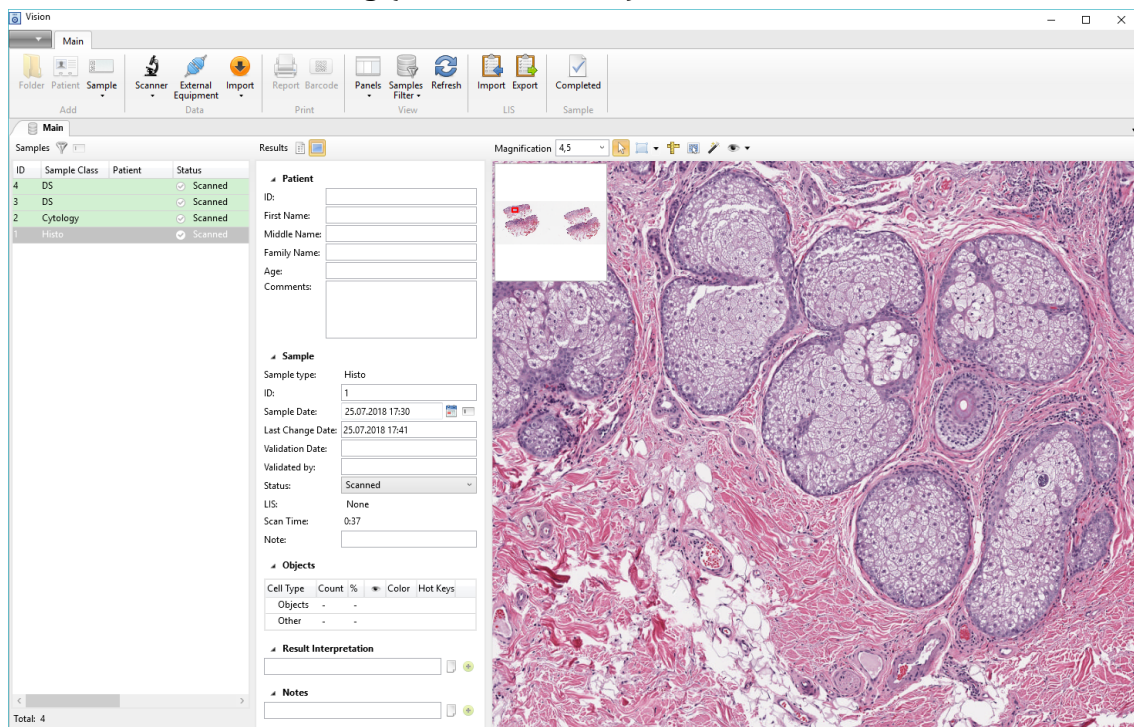


Fig. 14. Sample results

Validate the pre-classification.

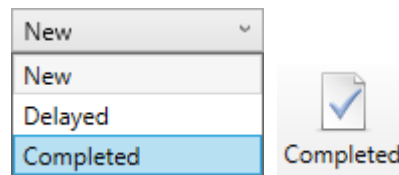


Fig. 15. Changing the status of a sample

Change the status to “Completed”.

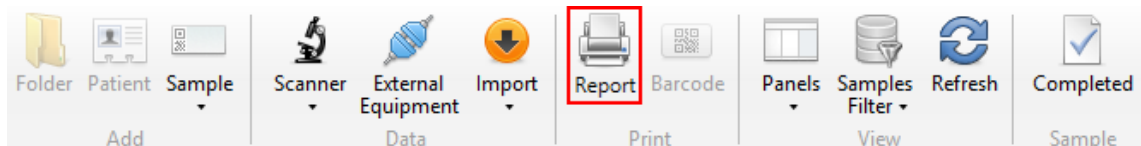


Fig.

16. “Report” button

Click the “Report” button once the status is set to “Completed”. Print a report or save it in PDF.

## 2.6 Finishing operation

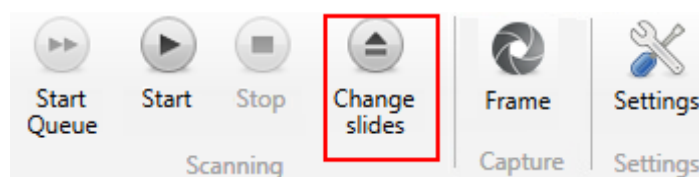


Fig. 17. “Change slides” button

1. Click the “Change slides” button to lower the motorized stage and remove the slides. After that, click “OK” to move the stage to its original position. Close the Vision application.



**Please wear protective gloves to prevent irritation of skin when working with immersion oil.**

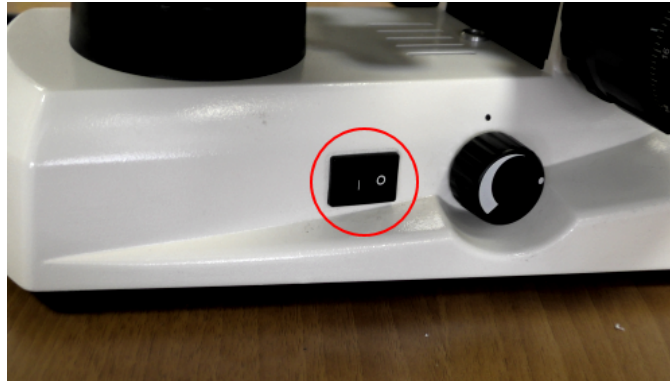


Fig. 18. Microscope power supply

2. Turn off the microscope. The button is on the right side of the microscope.
3. Clean the objectives and the stage, cover the system with a protective sheet.



**Attention!**

**Use alcohol for cleaning no more than once a week. Use diluted alcohol solution for daily cleaning.**

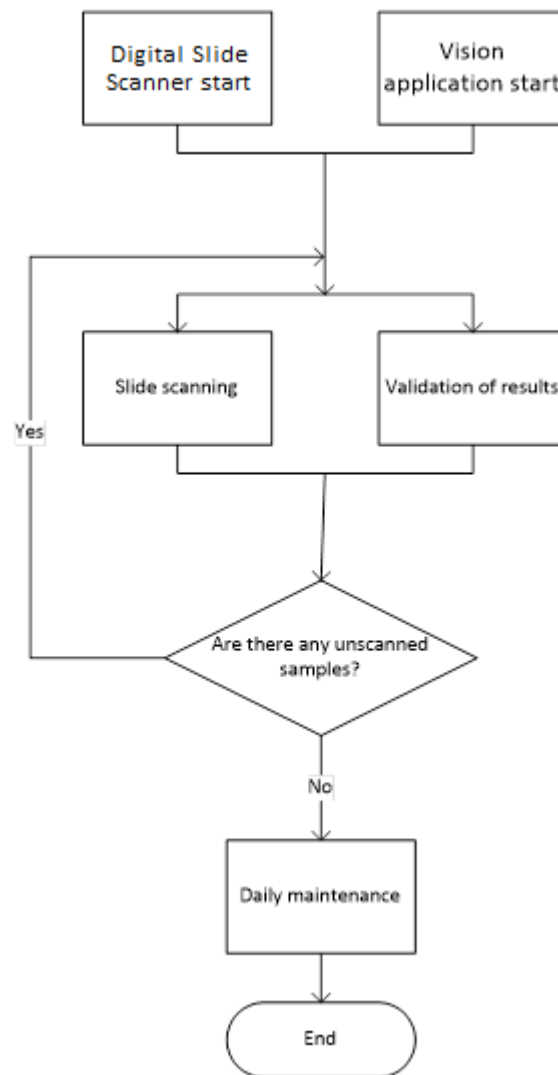


Fig. 19. Power supply

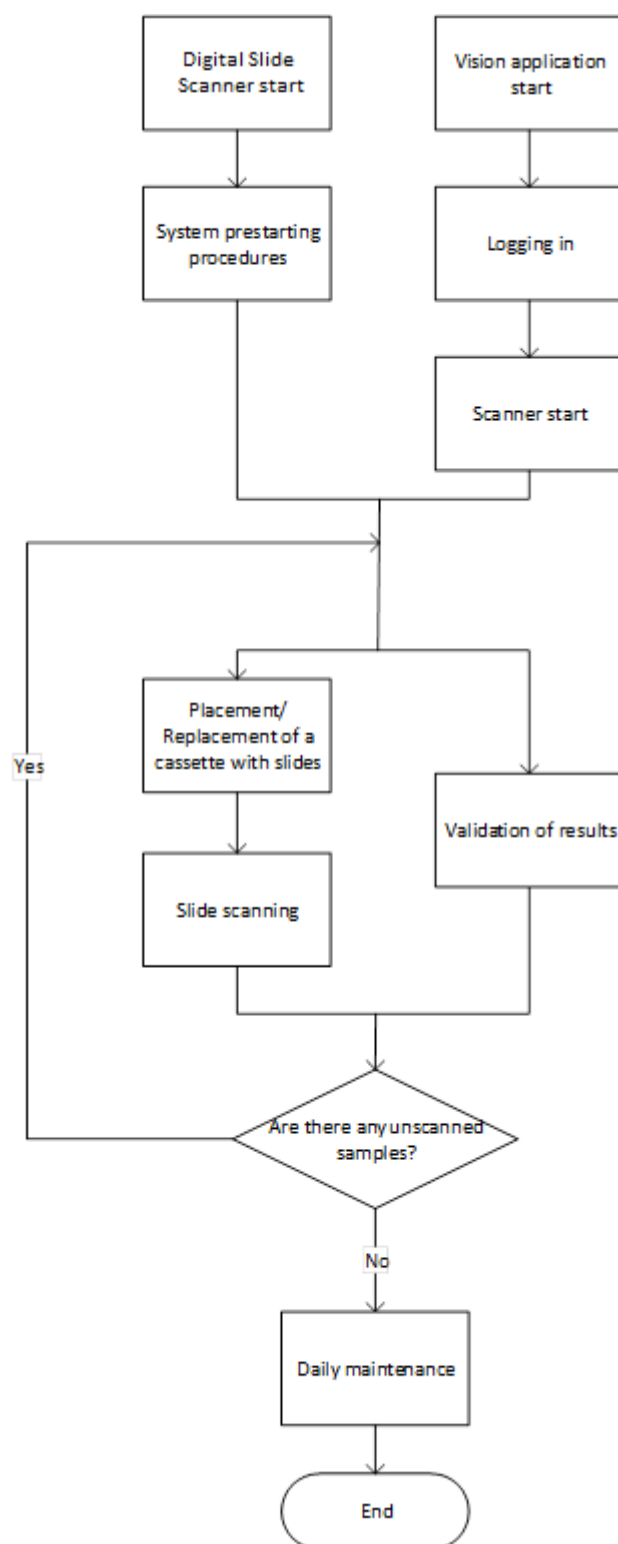
4. Turn off the controller and the computer.

## 3 Recommended Workflow

### 3.1 Simplified view



### 3.2 Detailed workflow



## 4 System Maintenance



### **Attention!**

**Do not update the OS.**

### 4.1 Daily maintenance

1. Cleaning should be performed on shut down equipment.
2. Clean the objectives and the stage.



### **Attention!**

**Use alcohol for cleaning no more than once a week. Use diluted alcohol solution for daily cleaning.**

3. Do not touch the centering screws of the condenser during cleaning.
4. Check the condenser, the diaphragm setting value should not be higher than 1.

### 4.2 Service maintenance

An engineer should come at least once a year for service maintenance of the system: cleaning, mechanical check-up, software and settings checks.

## 5 Notation



### **Attention!**

**Notice that defines a condition or an action that may result in damage to the system or its functions.**



**Warning about actions or conditions that may result in health risk or life hazard.**

## 6 Contact Information



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