



Instructions Manual



Digital Capillaroscope USB3.0

as supplied in Inspectis delivery kits DM-01, DM-02, MD-03 and DM-04

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1. CAUTION

This Inspectis Digital Capillaroscope Instructions Manual is not a guarantee or warranty. It is intended only as an operational guide. For additional information and questions, please contact Inspectis AB at +46-(0)8-270 191 or by Email to info@inspect-is.com.

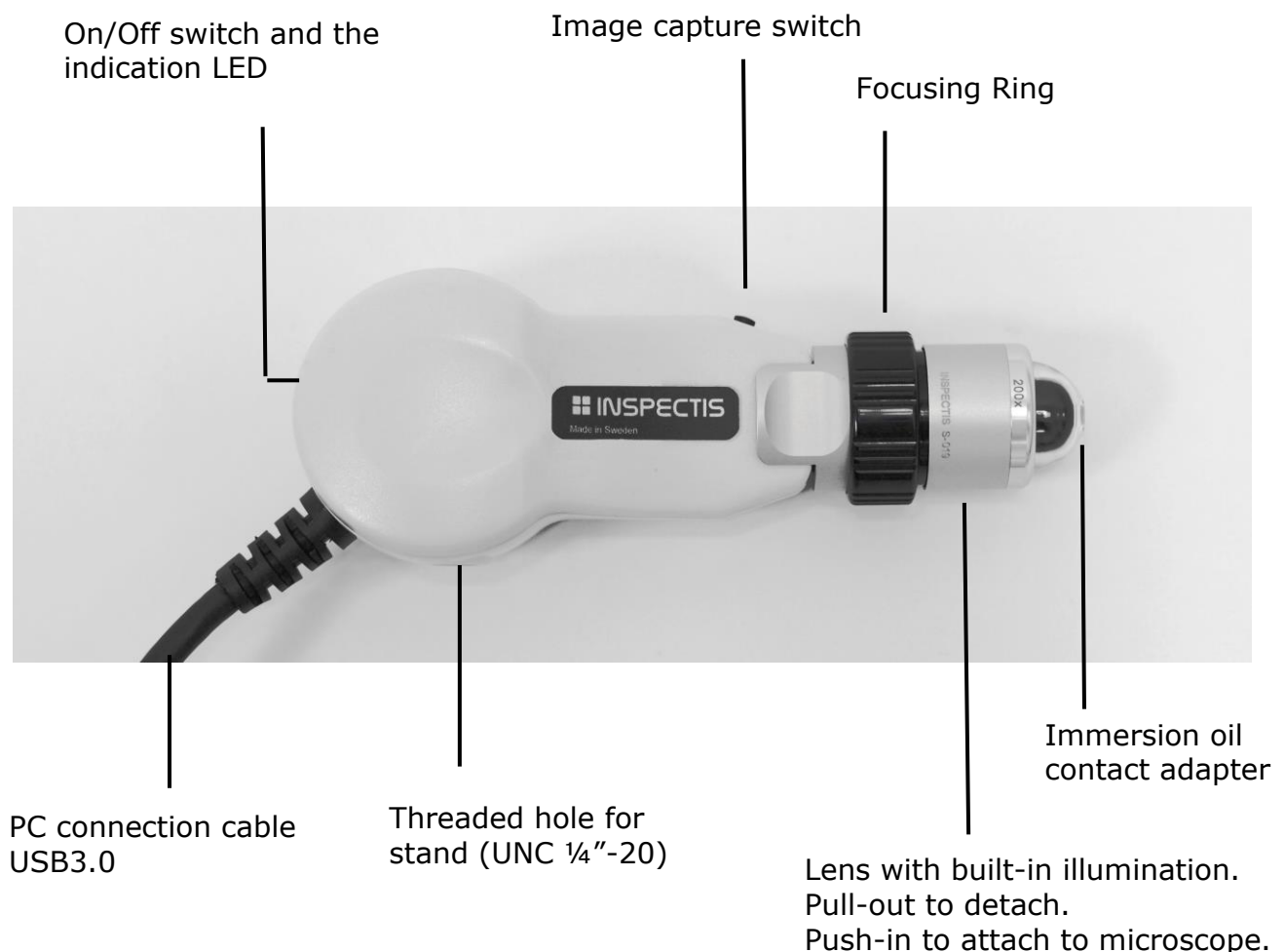
There are no user serviceable components in the Digital Capillaroscope. All assembly, adjustment, modifications and/or repair must be carried out only by qualified personnel authorized by Inspectis AB. The electrical installation of the room in which the device will be used must comply with the appropriate national electrical standards. The product must be used in accordance with this manual and all associated labeling. Any device that does not function as expected must be returned to Inspectis AB.

2. Description

The product is designed to illuminate and image the intact skin of nailfold for Capillaroscopy examinations.

Inspectis Digital Capillaroscope USB3.0 is a hand-held digital video microscope for non-invasive Capillaroscopy examinations e. g. monitoring of small vessels of the microcirculation. The device is designed for use by professionals, i.e. doctors, physicians and other personnel dealing with health care.

3. Device Structure



4. Installation and Connections

- Before connecting the Digital Capillaroscope to the computer, make sure the provided camera drivers and INSPECTIS software are installed.
- Remove the protection caps from the Lens and the Microscope device and gently push the Lens inwards to click onto the Digital Microscope.
- Plug the Capillaroscope to an available USB3.0 port of the Computer.
- Press the ON/OFF switch to turn on the illumination.
- Refer to INSPECTIS CAP Software User's Manual for how to operate the Capillaroscope with the software.

5. Using Digital Capillaroscope

Apply one drop of provided Immersion Oil to the nailfold of the desired finger of the patient to be examined. For best result and ergonomics, it is recommended to hold the Capillaroscope as a pencil and place the Lens tip on the patient's nailbed, slightly angled, as shown in the image below.



Focusing can be adjusted by the focusing ring on the Capillaroscope, or by angling the device towards/backwards relative to the patients nailfold.

Capture still images with the Image Capture Switch on the device or by provided Footswitch.

To detach the Immersion oil contact adapter for cleaning, gently turn the threaded contact adapter counter clockwise, and remove it from the lens. To attach the contact adapter back to the lens, gently push threaded adapter inwards and turn clockwise.

6. Safety and Maintenance Instructions

- a) Avoid looking directly into the lens when illumination is turned on.
- b) Do not scratch or hit optical surfaces of the Capillaroscope!
- c) Only use accessories provided or approved by Inspectis AB.
- d) Keep the equipment clean. Use Lens Cleaning Tissue and pure alcohol for cleaning optical surfaces of the device.
See cleaning instructions below.
- e) Keep the device away from direct sunlight, heat and extreme humidity.
- f) Store the equipment inside its transport case when not used.
- g) Protect the lens, objective lens by the supplied protection rubber caps or store them inside their boxes when the equipment is not used.

7. Cleaning Instructions

NOTE: Cleaning procedures should not be performed when unit is connected to its power source. Disconnect the unit from the power source before cleaning or servicing.

- a) Anti-bacterial cleaners to be used so long as they are aqueous based products.
- b) Suitable Products: Clinell Universal Sanitising Wipes, Microzid Sensitive Wipes (Schülke and Mayr).
- c) Use soap and water for cleaning immersion oil from the dome.
- d) Never use acetone or other similar strong solvent-based products to clean the immersion oil off the contact adapter.
- e) Wipe inside and outside surfaces of the Contact adapter by a soft disinfection tissue to clean.
- f) Do not use alcohol to clean the immersion oil contact adapter. Never use Acetone or other similar strong solvents for cleaning.
- g) Do not dip the device in liquids nor spray liquids on the unit. Only wipe the microscope unit to clean.
- h) Do not use autoclave.

Minimal cleaning requirements: Mild soap and water cleaning of contact adapter. Wipe microscope unit dampened with soap and water.

This device is precision optical equipment and shall be handled with great care!



Avoid looking directly into the lenses when illumination is turned on!

Inspectis Digital Capillaroscope USB3.0 is a CLASS 1 medical device.

8. Minimum System Requirements

Component	Minimum specification
CPU	Intel Core i5 Recommended: Core i7
Operating System	Windows 7/8.1/10
Memory	4 GB or higher of RAM Recommended: 8 GB RAM
Hard disk	200 GB of Free Space
Display	Laptop: 15.6" / 1920 x 1080 (Full HD) PC: 22"-27" / 1920 x 1080 (Full HD)
Ports	One USB 3.0 port Two USB 2.0 port

Recommended computers by Inspectis:

Station: HP Workstation Z240, Intel Core i7, 16 GB

Laptop: HP ProBook, Intel Core i7, 15.6", 8 GB, Full HD

9. Specifications

8.1 Microscope

Component	Dimension/details
Microscope body	Capillaroscope (IN-001)
Video Output	USB 3.0
Image Sensor	1/2.5" CMOS, 2592H x 1944V Pixels, 5.0 Mp (5 million pixels)
Resolution	Possible resolutions: 2592 x 1944 (5 MP) 2000 x 1500 (3MP) 1920 x 1080 (Full HD) 640 x 480 (VGA) Default format 2000 x 1500 (3MP)
Pixel Size (sensor)	2.2 μm x 2.2 μm
Frame Rate	For 15 fps: 2592x1944 (5 MP) For 22 fps: 2000 x 1500 (3MP) For 30 fps: 1920 x 1080 (Full HD) For 57 fps: 640 x 480 (VGA)
Field of View with 200x lens	1.68 x 1.26 mm \pm 0.05mm (HxV) at 2000x1500
Power Source	The microscope takes the necessary current from USB port of the computer. Maximum 500mA.
On/off switch	On/off switch for lens illumination with LED indication
Size (with lens)	135 x 50 x 37 mm
Weight	Maximum 205 g including lens
API	Available upon request
Cable length	1.8 m

8.2 Lens

Component	Dimension/details
Lens	200x lens (IN-012) with integrated LED light
Illumination	Integrated pure white LED ring light.
Color Temperature	4500K
Illumination LifeTime	2 years illumination warranty
Light safety	LED light sources do not contain ultraviolet wavelengths λ 250 to λ 400nm nor infrared wavelengths λ >770 nm. Light Intensity Safety Statement according to DOC_1832_A.
Storage and operational conditions:	Operational temperature 5°C to 40°C. Humidity for operation is 20 to 90% rH – non-condensing. Storage temperature is -10° to 60°C Humidity for storage is 20 to 80% rH – non-condensing.

10. Explanation of Symbols



Illumination LED, On / Off



Freeze and capture Image



Manufacturer



Lot/Batch number



Waste Electrical and Electronic Equipment.



Medical Device



Conforms with the Medical Devices Regulation (2017/745) and has been subject to the conformity procedures laid down in the council directive.