data·pixel

Interferometry
Daisi/Daisi MT/3DScope

User manual

Systems for the measurement of geometrical parameters of fibre-optic connectors

Table of contents

CE AND FCC COMPLIANCE STATEMENTS

EC Declaration of Conformity

Document Number: Daisi v1.1

We, the undersigned,

Manufacturer or representative**:**	Data-Pixel
Address:	27 rue Saturne, ZAC Altaïs , 74650 Chavanod
Country:	France
Phone number:	+33 4 50 67 39 80
Fax number/e-mail:	info@data-pixel.com

Designated product,

Description:	Interferometer
Brand name or trade mark:	Daisi
Identification / Designation:	Daisi, Daisi v2, Daisi MT, Daisi MT v3, Daisi MTRJ

Certify and declare under our sole responsibility that the designated product is in conformity with the essential requirements and provisions of the following European Directives:

Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to **electromagnetic compatibility (EMC).**
The conformity of the designated product(s) with the provisions of this European Directive is given by the compliance with the following European Standard(s):
- EN 61326-1 (2013)
- EN 61000-3-2 (2014) / EN 61000-3-3 (2013)

Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of **radio equipment (RED).**
The conformity of the designated product(s) with the provisions of this European Directive is given by the compliance with the following European Standard(s):

Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits **(Low voltage directive)**
The conformity of the designated product(s) with the provisions of this European Directive is given by the compliance with the following European Standard(s):
- EN 61010-1 (2010)

Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products **(Ecodesign / ERP directive)**

Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances **(ROHS)** in electrical and electronic equipment.

Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Data-Pixel could void the user's authority to operate the equipment.

Name and position of person binding the manufacturer or his authorised representative
Mr. Eric Tanguy

Signature:

CE AND FCC COMPLIANCE STATEMENTS

EC Declaration of Conformity

Document Number: 3D Scope v1.0

We, the undersigned,

Manufacturer or representative**:**	Data-Pixel
Address:	27 rue Saturne, ZAC Altaïs , 74650 Chavanod
Country:	France
Phone number:	+33 4 50 67 39 80
Fax number/e-mail:	info@data-pixel.com

Designated product,

Description:	Interferometer
Brand name or trade mark:	3D Scope
Identification / Designation:	3D Scope v1 3D Scope v2

Certify and declare under our sole responsibility that the designated product is in conformity with the essential requirements and provisions of the following European Directives:

Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to **electromagnetic compatibility (EMC).**
The conformity of the designated product(s) with the provisions of this European Directive is given by the compliance with the following European Standard(s):
- EN 61326-1 (2013)
- EN 61000-3-2 (2014) / EN 61000-3-3 (2013)

Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of **radio equipment (RED).**
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NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Data-Pixel could void the user's authority to operate the equipment.

Name and position of person binding the manufacturer or his authorised representative
Mr. Eric Tanguy

Signature:

Disclaimer

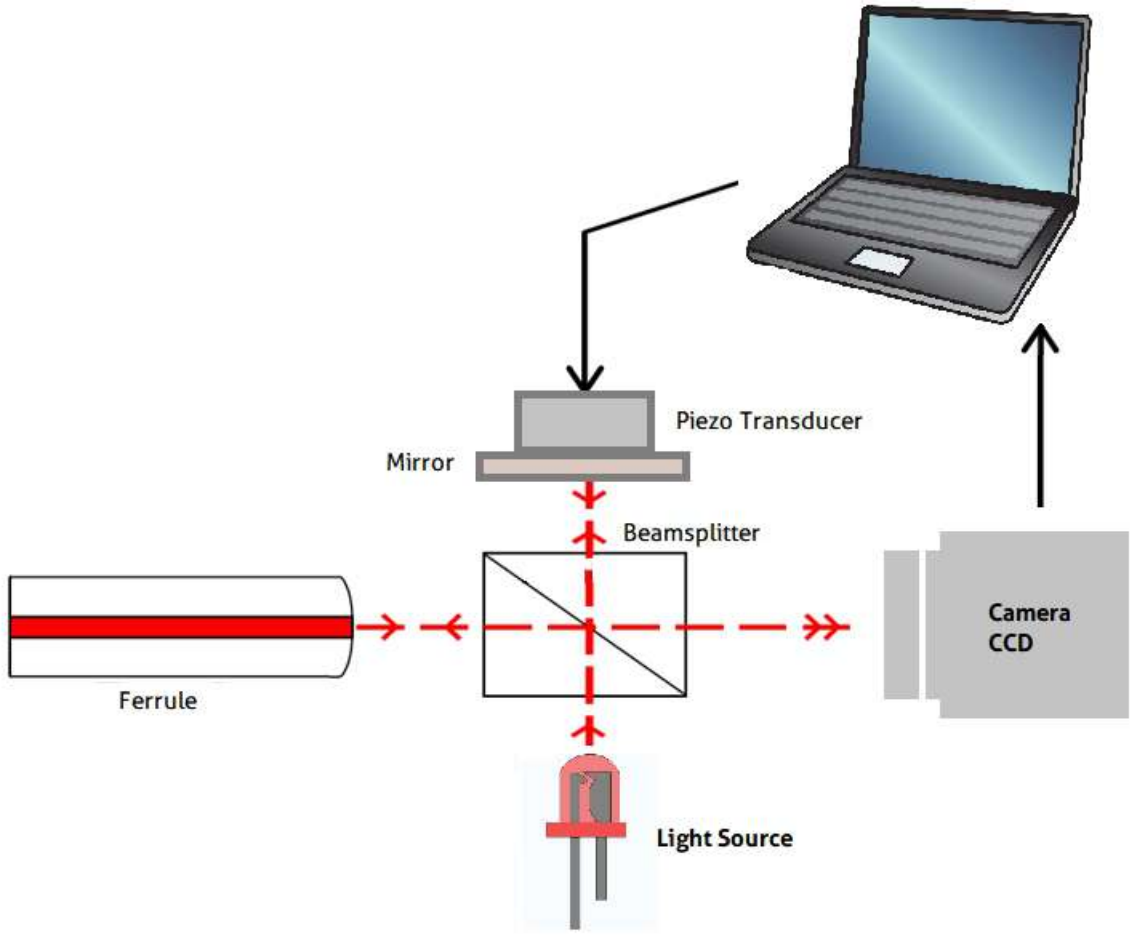
Changes or modifications onto the system not expressly approved by Data-Pixel could void the user's authority to operate the equipment.
This system shall be exclusively used with the provided power supply. Data-Pixel does not guaranty the proper functioning of the system otherwise.

Interferometry Basics

What Is Interferometry ?

Interferometry is a measurement technique that uses the light wave-properties to calculate the topography of a surface, for example a fibre optic's surface.

Principle



The above sketch shows how a Michelson interferometer works.

The camera of the interferometer is simultaneously focused on the end-face of the ferrule and on the reference mirror, resulting in the superimposition of two images on the CCD sensor, thanks to the beamsplitter :

- The image of the reference mirror (assimilated to a perfect plane),
- The image of the face of the ferrule, which is very close to the reference mirror.

Using a broad spectrum light source (white light), parts of the sample-surface that are at the exact same distance from the beamsplitter as the reference mirror will exhibit some interference fringes. During a

measurement, the sample is scanned through a large number of Z positionsand images of each position are recorded. The surface shape can then be reconstructed by checking for each pixel when the interference fringes occured compared to the Z position of the sample at that time.

Introduction

Daisi unit

DAISI is a fully automated system dedicated to the measurement of geometrical parameters of optical fiber connectors end-face such as "Radius of polishing", "Fiber Height" and "Apex Offset", using an optical interferometry technique.

DAISI uses the quality and the non-contact property of optical measurements associated with the power of numerical data processing to provide measurements of great accuracy.

It is made of software linked to an opto-mechanical hardware system, which it drives automatically through a USB2.0 (USB3.0 Required for the Daisi V3)

The optical part of the hardware forms an image of the end face of the ferrule on a high resolution camera. The actual magnification factor of the ferrule end face when displayed on the computer monitor is approx. x400 with a default field of view of approx. 350 x 350 square-microns.

Front Panel

We can see that no micrometer screw is available for adjusting the X, Y or Z (focus) position of the connector. This is done internally in the hardware and in the software. This feature brings much more stability into the interferometer and as a consequence, measurements can be performed in almost any industrial environment.

On the left side, a square red button is used to launch a measurement once the connector has been inserted into the clutch.

In the middle, a large stainless steel square plate is held by four screws. (2 screws for the Daisi V2/V3)

This is the clutch into which the connector is inserted. This clutch can be interchanged for accommodating various ferrule sizes (1.25 and 2.50 mm).

On top of the clutch is a plastic cap. It can be removed so that various connector-key adaptors (for SC, FC, LC, Mu, E2000, etc. types) can be easily inserted.

Rear Panel

The power-supply plug (12V DC), the USB2.0 plug, the fuse (1.6 Amps) and the ON/OFF button are located on the rear panel.

The ANGLE HANDLE is also located there. It enables to switch the interferometer observation angle from 0 to 8 degrees (for PC and APC measurements).

ANGLE HANDLE for orientating the internal optical system of DAISI. Before using this handle, the LOCK/RELEASE handle on the right side of DAISI must be operated.

Daisi v2/v3

Note. The Daisi V2/V3 has only 2 fixation screws for the flange (compared to 4 screws on the original Daisi) therefore allowing a larger range of movement on the Y axis.

1. Install the flange (clutch) on the front of the Daisi and then install the two screws but do not tighten. Leave the screws loose enough to allow the flange (clutch) to slide up and down.

2. With a connector in the flange (clutch), slowly slide the flange up and down until the connector is central on the screen and then fully tighten the two screws

Pressing "F11" in the software will allow a full screen view of the connector. You may also need to manually adjust the focus with the arrow/page-up or page down keys to view the connector clearly

3. Right click and select "centre fiber manually" to fine tune the position

4. Perform an Apex calibration to finish

PC/APC Position

ANGLE HANDLE for orientating the internal optical system of DAISI. Before using this handle, the LOCK/RELEASE handle on the right side of DAISI must be operated.

ANGLE HANDLE for orientating the internal optical system of **DAISI**
Before using this handle, the LOCK/RELEASE handle on the right side of **DAISI** must be operated.

LOCK/RELEASE handle in locked position.
The ANGLE HANDLE is now fixed in position.

LOCK/RELEASE handle in release position.
The ANGLE HANDLE position can now be adjusted.

Important The Handle Must always be in the LOCK POSITON for measurement, leaving the handle in the RELEASE position for per longed periods can damage the locking system

Daisi MT unit

The mains power for the computer should be 240 Volts / 50Hz for Europe or 110 Volts / 60 Hz for certain countries (for instance: US, Japan…). Please check the standards which apply in your country before plugging your computer to the mains power supply.

The PC and the hardware are simply connected via a high-speed USB2.0 connection (USB3.0 Required for the Daisi MT V3)

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Rear Panel

The power-supply plug (12V DC), the USB2.0 plug, the fuse (1.6 Amps) and the ON/OFF button are located on the rear panel.

The ANGLE HANDLE is also located there. It enables to switch the interferometer observation angle from 0 to 8 degrees (for PC and APC measurements).

ANGLE HANDLE for orientating the internal optical system of DAISI. Before using this handle, the LOCK/RELEASE handle on the right side of DAISI must be operated.

ANGLE HANDLE for orientating the internal optical system of **DAISI-MT**.
Before using this handle, the LOCK/RELEASE handle on the right side of **DAISI-MT** must be operated.

LOCK/RELEASE handle in locked position.
The ANGLE HANDLE is now fixed in position.

LOCK/RELEASE handle in release position.
The ANGLE HANDLE position can now be adjusted.

PC/APC Position

ANGLE HANDLE for orientating the internal optical system of DAISI. Before using this handle, the LOCK/RELEASE handle on the right side of DAISI must be operated.

ANGLE HANDLE for orientating the internal optical system of **DAISI-MT**.
Before using this handle, the LOCK/RELEASE handle on the right side of **DAISI-MT** must be operated.

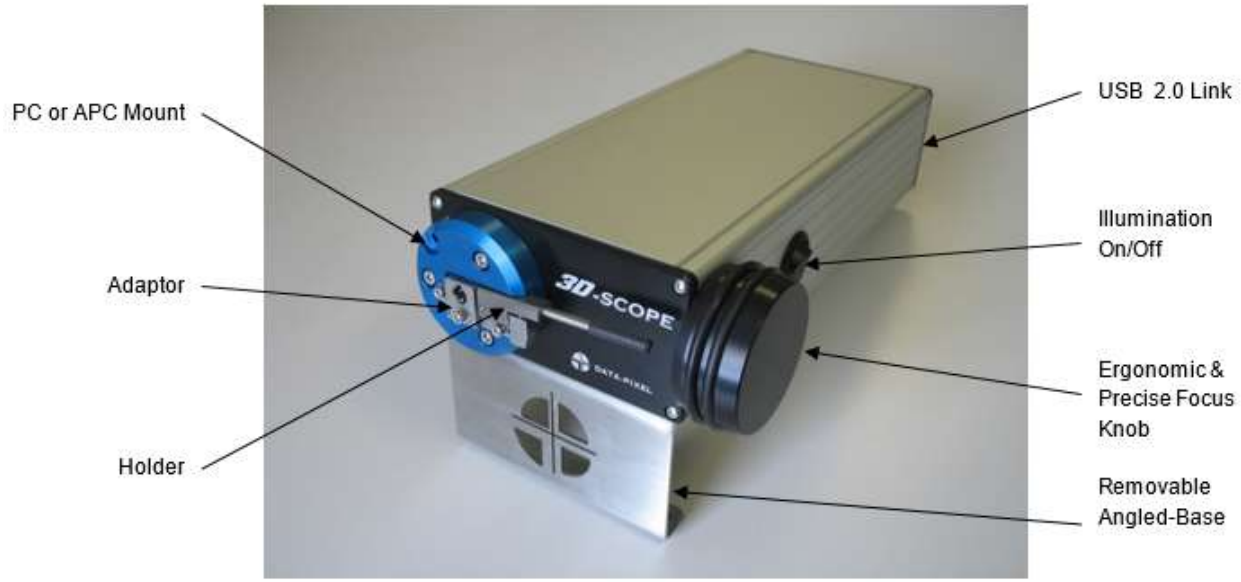
LOCK/RELEASE handle in locked position.
The ANGLE HANDLE is now fixed in position.

LOCK/RELEASE handle in release position.
The ANGLE HANDLE position can now be adjusted.

Important The Handle Must always be in the LOCK POSITON for measurement, leaving the handle in the RELEASE position for per longed periods can damage the locking system

3D Scope unit

3DScope is an interferometer dedicated for the use in the production environment. It was designed with speed, precision, simplicity, robustness and cost in mind.

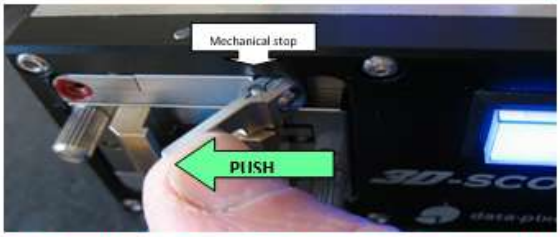


3D Scope V2 unit

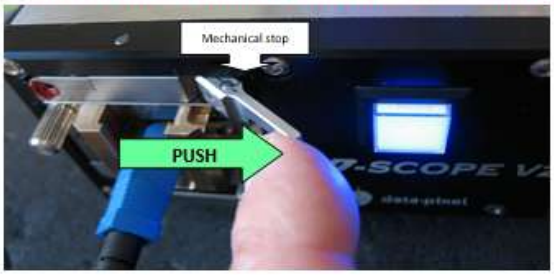
Flange Guidelines

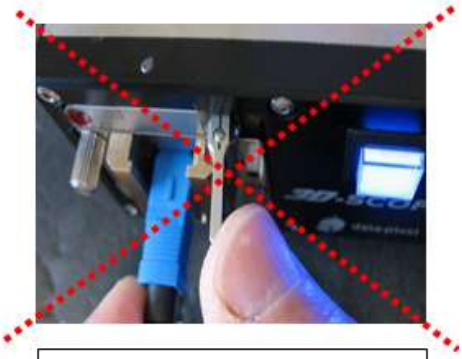
IMPORTANT NOTICE : how to use 3DScope V2 flanges correctly

1. To Lock the clutch: push to full mechanical stop (left side):



2. To release the clutch: push to full mechanical stop (right side):

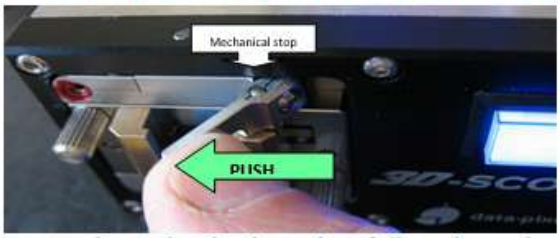




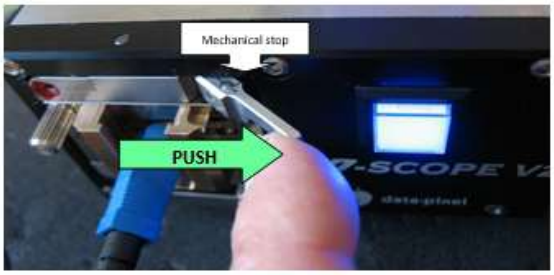
Any other positions of the lever should not be used in order to insert or remove a connector.

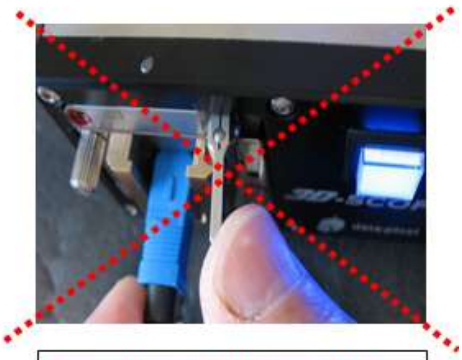
IMPORTANT NOTICE : how to use 3DScope V2 flanges correctly

1. . To Lock the clutch: push to full mechanical stop (left side):



2. To release the clutch: push to full mechanical stop (right side):





Any other positions of the lever should not be used in order to insert or remove a connector.

Hardware Requirements

1. PC Specifications

For information, if you wish to supply the computer by yourselves, the recommended specifications are the following:

• For Daisi MT (V2):

Operating System : Windows XP or Vista or 7, 8, 10
Dual Core INTEL Processor, 1.5GHz at least,
4Gb RAM or more
x1 free USB2.0 port

• For Daisi MT (V3):

Operating System : Windows XP or Vista or 7, 8, 10
Quad Core INTEL i7 Processor, 1.5GHz at least,
4Gb RAM or more
x1 free USB2.0 port + x1 free USB3.0 or 2.0 port

• For Daisi (V2) - 3DScope V2

Operating System : Windows XP or Vista or 7, 8, 10
Dual Core INTEL Processor, 1.5GHz at least,
4Gb RAM or more
x1 free USB2.0 port

• For Daisi (V3, equipped with USB 3 camera)

Operating System : Windows XP or Vista or 7, 8, 10
Quad Core INTEL Processor, 1.5GHz at least,
4Gb RAM or more
x1 free USB2.0 port + x1 free USB3.0 or 2.0 port

2. USB Recommendations

Data Pixel has the following guidelines regarding USB devices in our products:
- For all Data Pixel Products using a USB2 component, we recommend a dedicated USB2 port on your PC/Laptop.
- For all Data Pixel Products with USB3 components, we recommend the use of the USB 3.0 PCI Express x4 ports supplied by Data-Pixel
(Quote available on request. 10-EL-001678)

- If the product uses both USB3/USB2 components we recommend the use of the USB 3.0 PCI Express x4 ports supplied by Data-Pixel
(Quote available on request. 10-EL-001678)

- The use of the motherboard integrated USB ports may lead to lower performances : in this case, for all Data Pixel Devices with USB3 components,
a USB3 port is required .

If the product uses both USB3/USB2 components, one of each port type is required.

In certain cases, a USB3 port might function correctly with our USB2 devices but this is dependent on many factors (USB driver/Manufacturer/USB Chipset).

Software Installation

Installing the software for your interferometer is done in three steps:

1. Installing the Blink software and hardware drivers
2. Plugging in the hardware (USB 2.0 cable to PC)
3. Starting the software and selecting the hardware devices

Blink software installation

Run the “Blink setup vx.x (build yyy.exe)” package.

Note. We recommend that any anti virus/security agent is temporary disable during the installation of the Blink software to avoid installation errors.

Motor and camera drivers

Blink setup will automatically install required hardware drivers as well. When asked, always accept installation of unsigned drivers.

Plugging-in the hardware

First plug the power supply and/or USB cable to the back-panel of the unit, switch it ON, and then plug the interferometer to the computer using the provided USB2.0 cable. Do not connect it to the computer through a USB hub.

After the connection, the Windows wizard will appear several times as it has found new hardware devices. Always choose “automatic setup” and accept unsigned drivers if you see this kind of warning.

Hardware devices attribution

- Run Blink software and open the settings panel (Tools > Settings or icon). 
- In the Hardware tab, select your camera and make sure a device with a valid license is listed. *(Figure 1 - Settings: hardware tab*)
- For autofocus units, you can also specify a motor controller in the same tab.

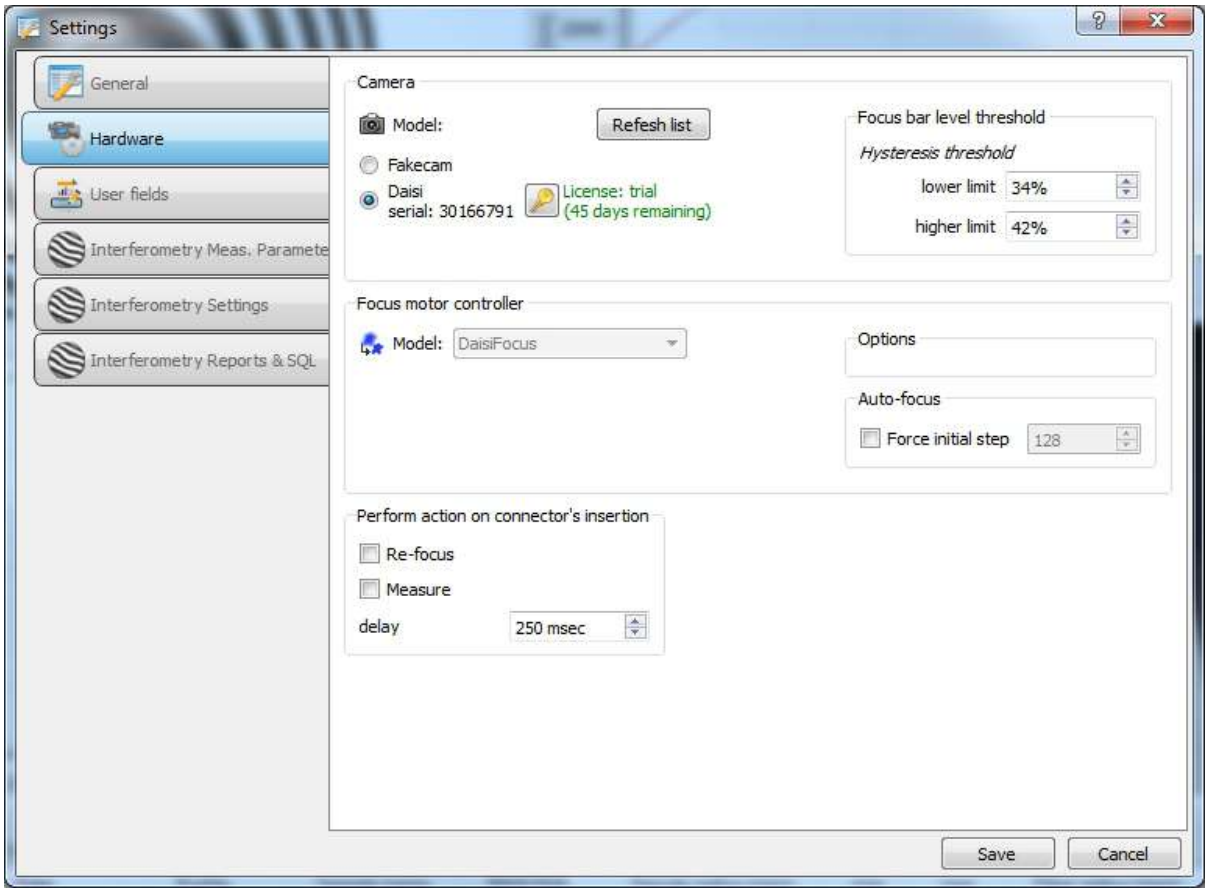


Figure 1 - Settings: hardware tab

Updating Software Licence

Obtaining your license code

If the software has been time-locked, an updated license will be required for the software to work after a certain time.
Please contact your distributer to obtain this code. It will look like this:

```
50B50B49B48B50B48B49B50B218B97B
57B192B71B31B166B45B64B101B46B233B
174B20B63B28B223B102B62B197B76B36B
171B50B10B145B24B159B119B254B133B93B
228B107B67B202B81B41B176B55B15B150B
29B164B124B3B138B98B233B112B72B207B
86B46B181B60B20B155B34B169B129B8B
143B103B238B117B77B212B91B51B186B65B
25B160B39B174B134B13B148B108B243B122B
82B217B96B56B191B70B30B165B44B4B
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196B75B35B170B49B9B144B23B158B118B
253B132B92B227B106B66B201B80B40B175B
54B14B149B28B163B123B23B253B61B198B
52B166B11B43
```
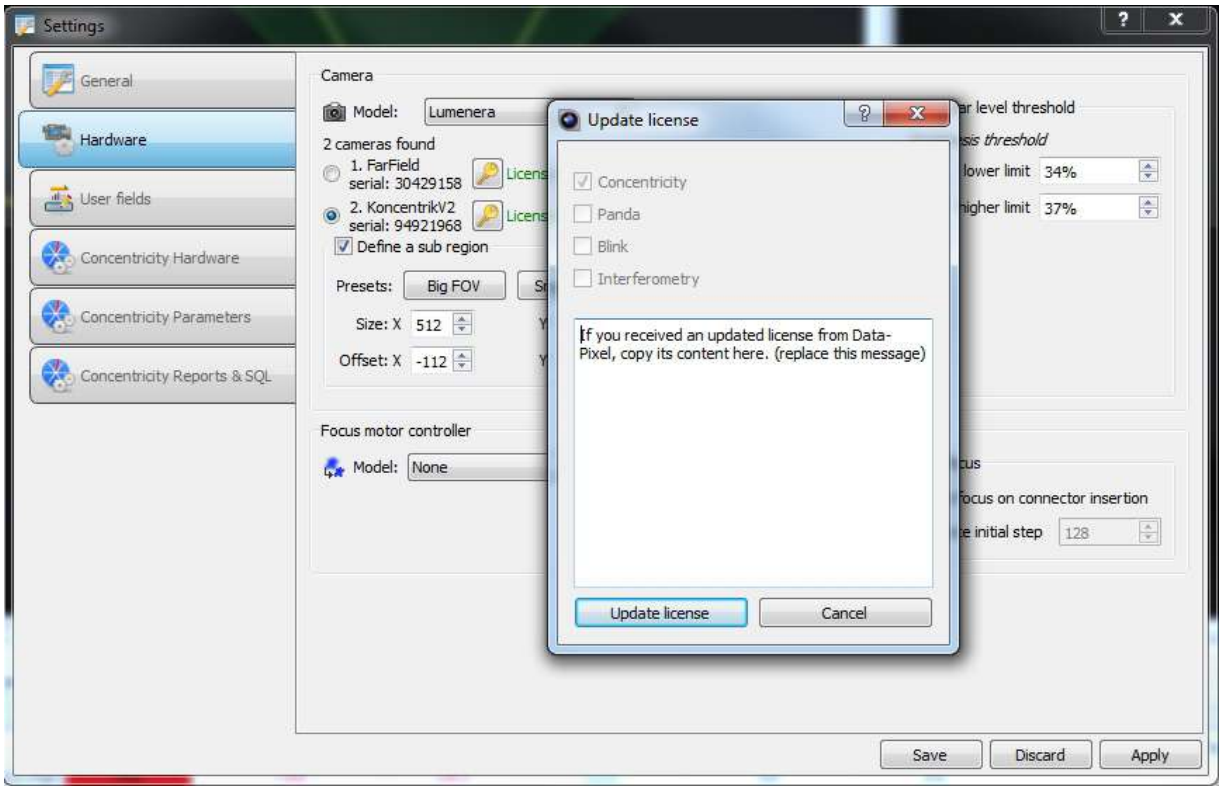
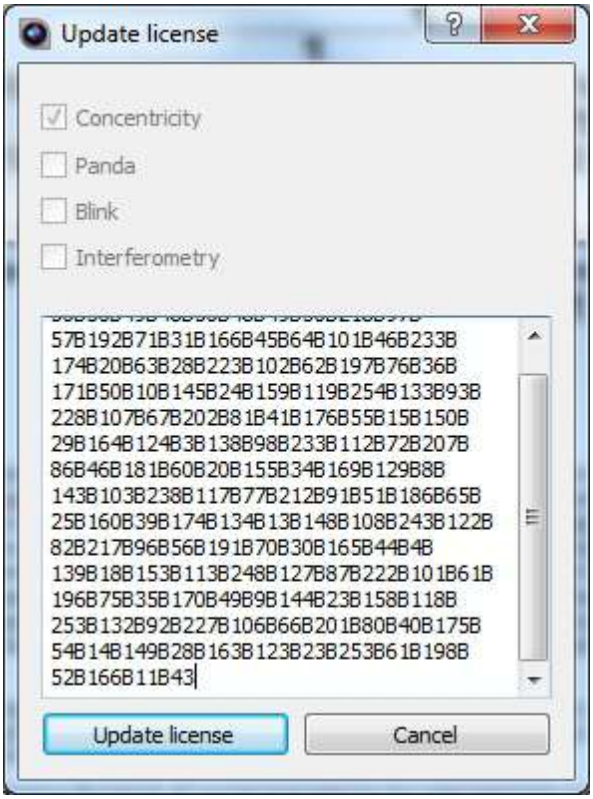

Entering the license code

This can easily be done by opening the settings panel and navigating to the hardware section. From there, click on icon representing a yellow key that is next to the device that need to be updated.



Finally paste the license code in the text box and click on “update license”.


Update license
Concentricity
Panda
Blink
Interferometry
57B192B71B31B166B45B64B101B46B233B
174B20B63B28B223B102B62B197B76B36B
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82B217B96B56B191B70B30B165B44B4B
139B18B153B113B248B127B87B222B101B61B
196B75B35B170B49B9B144B23B158B118B
253B132B92B227B106B66B201B80B40B175B
54B14B149B28B163B123B23B253B61B198B
52B166B11B43
Update license
Cancel

The Software User Interface

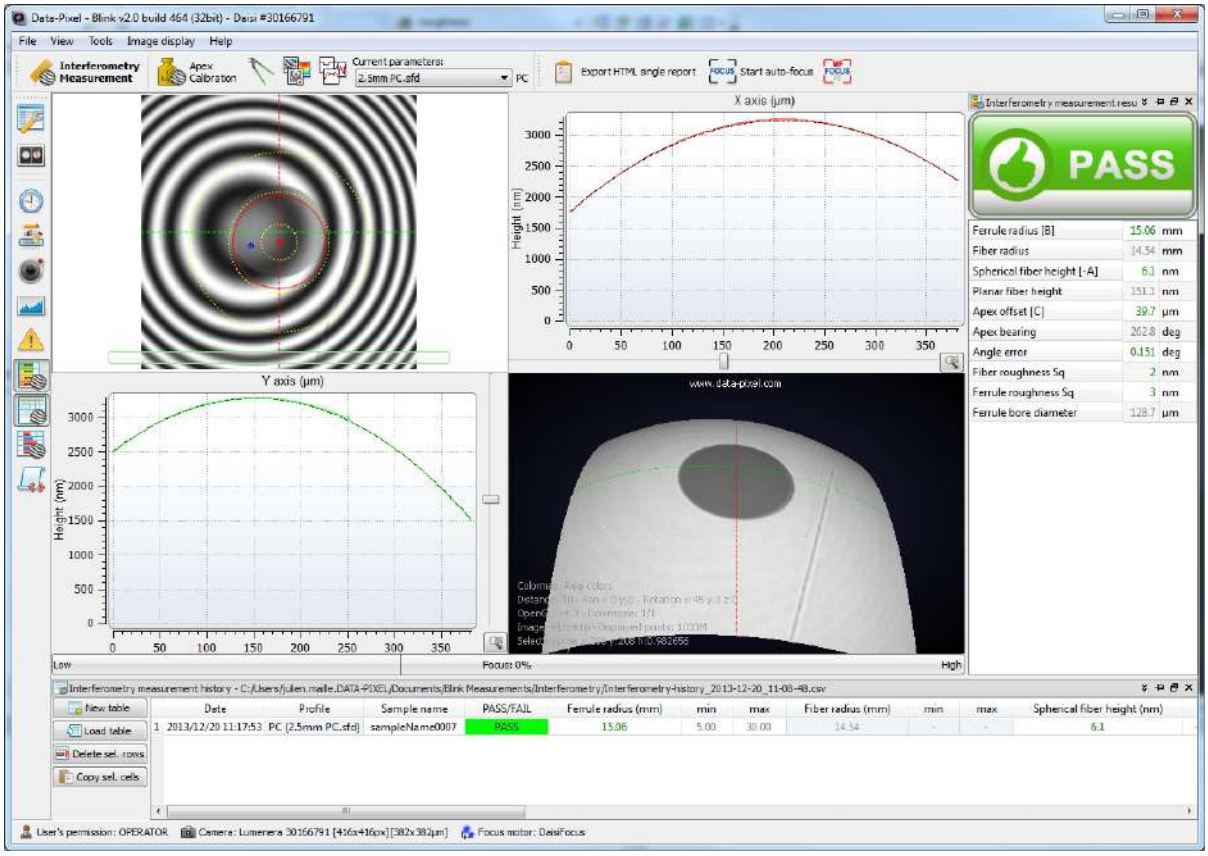


Figure 2 - Graphic user interface of Blink with Interferometry plugin.

Main User interface

Most of the graphical interface can be moved, hidden and resized to suit the user's needs. Hence, the given positions are the default ones.
The main user interface contains the following elements:

- Toolbars: a set of buttons grouped by function
- Widgets: a sort of subwindow displaying information or settings that can be modified
- A central image displaying the live image with additional information overlaid.

Description of tool bars

- Title bar: displays the name and version of the software
- General buttons bar (top) with button to start autofocus and export html reports.

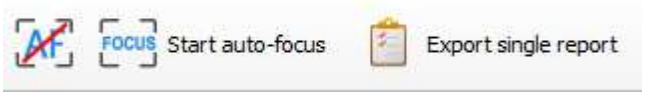


Figure 3 - General buttons toolbar

- Interferometry bar (top) with buttons to start a measurement, start the apex calibration procedures, toggle the clutch and quickly switch between measurement parameters (manual, motorized 1.25 or 2.5mm)

    - CYCLE IMAGE button allows switching between live video image, the phase image or the demodulated image.
    - CYCLE GRAPH button allows switching between the real profile, a profile with the theoretical sphere subtracted and the roughness profile.

Figure 4 - Interferometry buttons toolbar

Following advanced actions are only available from the Tools menu:

- SPEED CALIBRATION button will perform a few measurement and determine the optimal measurement speed
- AUTO-EXPOSURE button: will modify exposure time to obtain a well contrasted, unsaturated image.
- MAGNIFICATION CALIBRATION button: use a reference lens with a calibrated radius with this function to calibrate the optical magnification scale.

- Shortcut bar (left) with access to the settings and shortcuts that can toggle all widgets (camera settings, custom fields, measurement tables, etc.)

Figure 5 - Icon shortcuts toolbar (rotated)

- Status bar (bottom): displays current user level (operator, admin, etc.) the serial number and settings of the hardware in use.

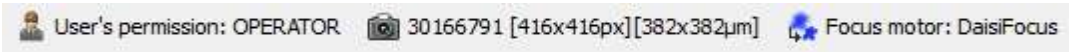


Figure 6 - Status toolbar

All these toolbars can be moved around or closed. Drag and drop allows disposing them in a custom fashion. In order to hide one toolbar, right click on it and the following menu will show up:

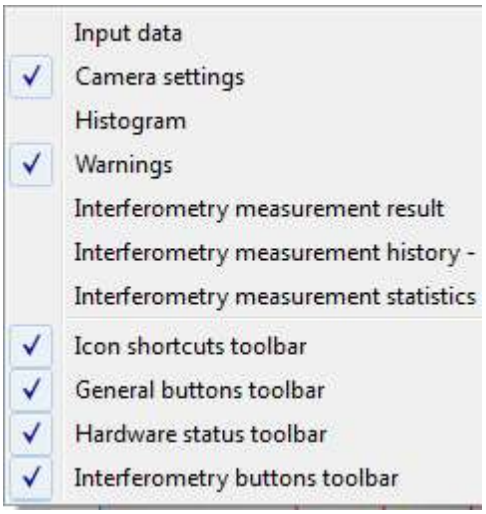
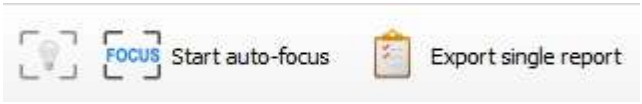


Figure 7 - Right clicking on a toolbar will popup this menu



Description of widgets

- The camera settings widget

Figure 8 - Camera settings widget

- The measurement history widget: display measurement taken, this reflects the content of a csv files where data is stored. Using the button on the left, you can create a new .csv file, reload data from an existing csv, clear the selected rows and copy the content of the selected cells to the clipboard. See the *Exporting Results* section for more details.

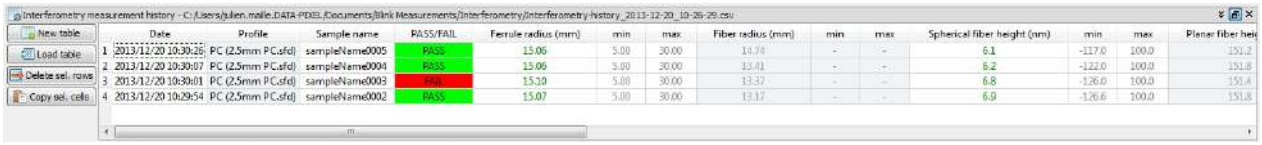


Figure 9 - Interferometry measurement history widget

- The mesurement result widget : display the global pass/fail and the measured values

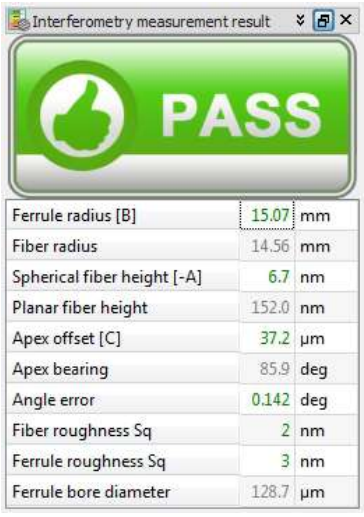


Figure 10 - Measurement result widget

- The Input data widget: display the custom fields that can be filled by the user and that will appear in the measurement tables, reports, etc. The number, name and type of these fields can be customized though a dedicated tab in the settings.
-

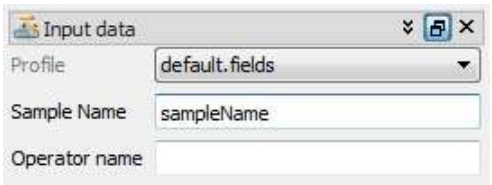


Figure 11 - Input data widget

All these widgets can be moved around freely (drag and drop them from their titlebar), resized, hidden or even undocked from the application. In order to lock a widget to its current position, use the pin icon.

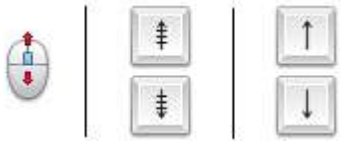
Description of central images

The top left window contains the live original image from the interferometer overlaid with information (fiber, apex position).

You can zoom and pan on images using the mouse or the loop icons. Zooming is achieved with the mouse wheel or the **+**/**–** icons.
Clicking the **1:1** icon will reset the zoom ratio (1 pixel of the camera will be displayed on 1 pixel of the screen). Left double click sets the zoom so that the full image fits on screen.

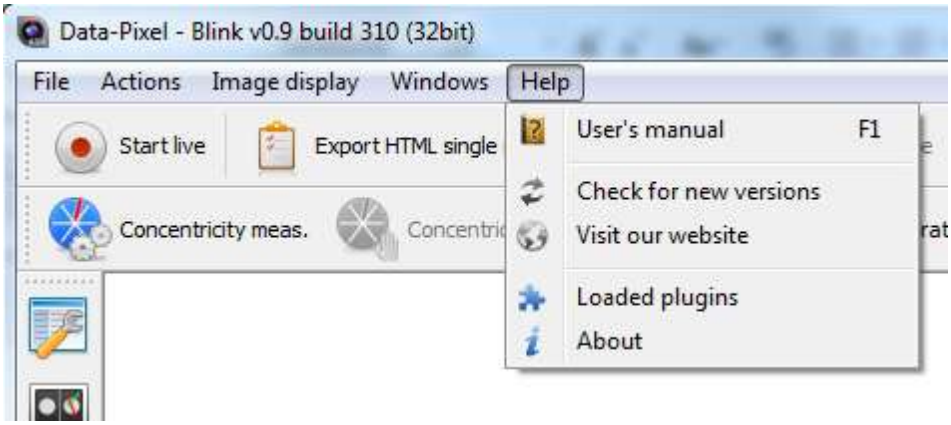
Manually control autofocus

For units equipped with autofocus, it is possible to adjust the focus manually through different shortcuts. With the mouse, use the scroll wheel anywhere except on the live image to move the focus. With the keyboard, you can move the focus by big steps (PageUp or PageDown) or small ones (PageUp or PageDown).



Help and updating the software

Most of the shortcuts shown in the toolbars can be found in the application top menu. This menu also contains a Help item. In this section it is possible to check for new versions of Blink. This requires the computer to have an internet access. If an update has been released, a *"download"* button will be shown.

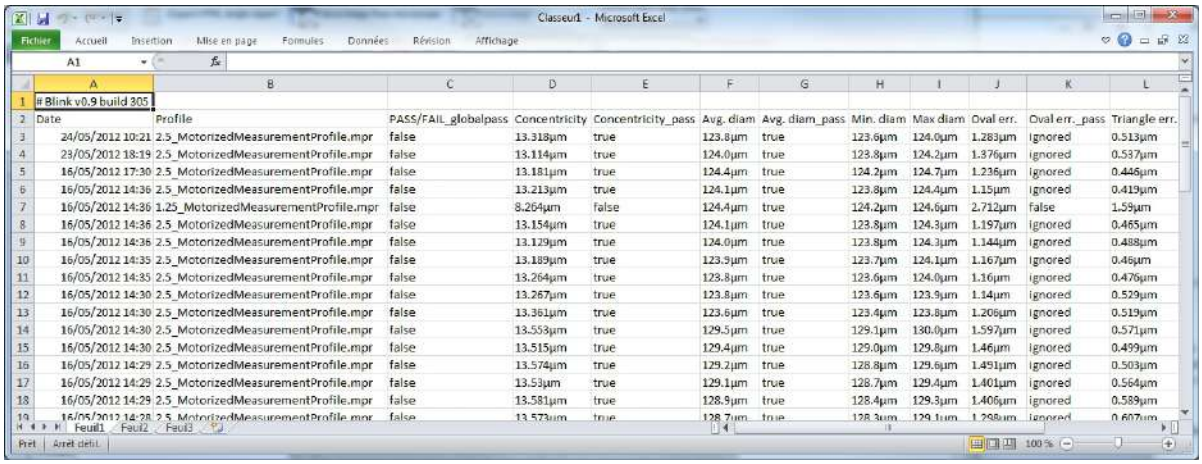


History records and MS EXCEL

History records are saved in the CSV (Coma Separated Values) format. A CSV file is a text file which can be imported in many software such as WORDPAD or MS EXCEL.
In order to open them in EXCEL software, do the following:

- Open EXCEL and a blank sheet
- Select in the menu the following: DATA à GET EXTERNAL DATA à IMPORT TEXT FILE
- When asked, choose DELIMITED option and COMMA as separator

The resulting loaded file would then look like this:



Description of the measured parameters

Radius: Is the radius of the theoretical perfect sphere, which is fitted to the measured topography points, which are located between circles D and E (see sketch 15) for the Ferrule Radius and inside F for the Fiber Radius.

Spherical Height: Is the difference in height between the measured topography points located within circle D and E and points located within circle F

Planar Height: Is the difference in height between the measured topography points located within circle F and a plane fitted to the periphery of the fiber edge. Periphery is defined as a zone between two circles centered on the fiber and with radii defined in the Interferometry Settings.

Apex (Offset): Is the distance from the center of the fiber to the center of the theoretical sphere (same as center of fringes when the interferometer is well aligned).

Angle Error: Is the Apex OFfset vector converted into an “off-polishing angle” for PC connectors. In the case of APC connectors, it is the horizontal component of the Apex vector converted into an “off-polishing angle”.

Key Error: Not available for PC connectors. For APC connectors, it is the vertical component of the APEX vector converted into an “off-polishing angle”.

Apex Bearing: Is the clockwise angle value where the Apex center (i.e. approximately the center of the fringes) is located with respect to the mechanical vertical of the system.

Fiber Radius: Is the radius of the theoretical perfect sphere, which is fitted to the measured topography points, which are located within circle F.

Bore Diameter: Is the estimated diameter of the bore of the ferrule, which was detected when performing a measurement.

Roughness: Roughness parameter Sq of the fiber and of the ferrule. Sq is the surface equivalent to Rq. Cut-off wavelength is 25 microns.

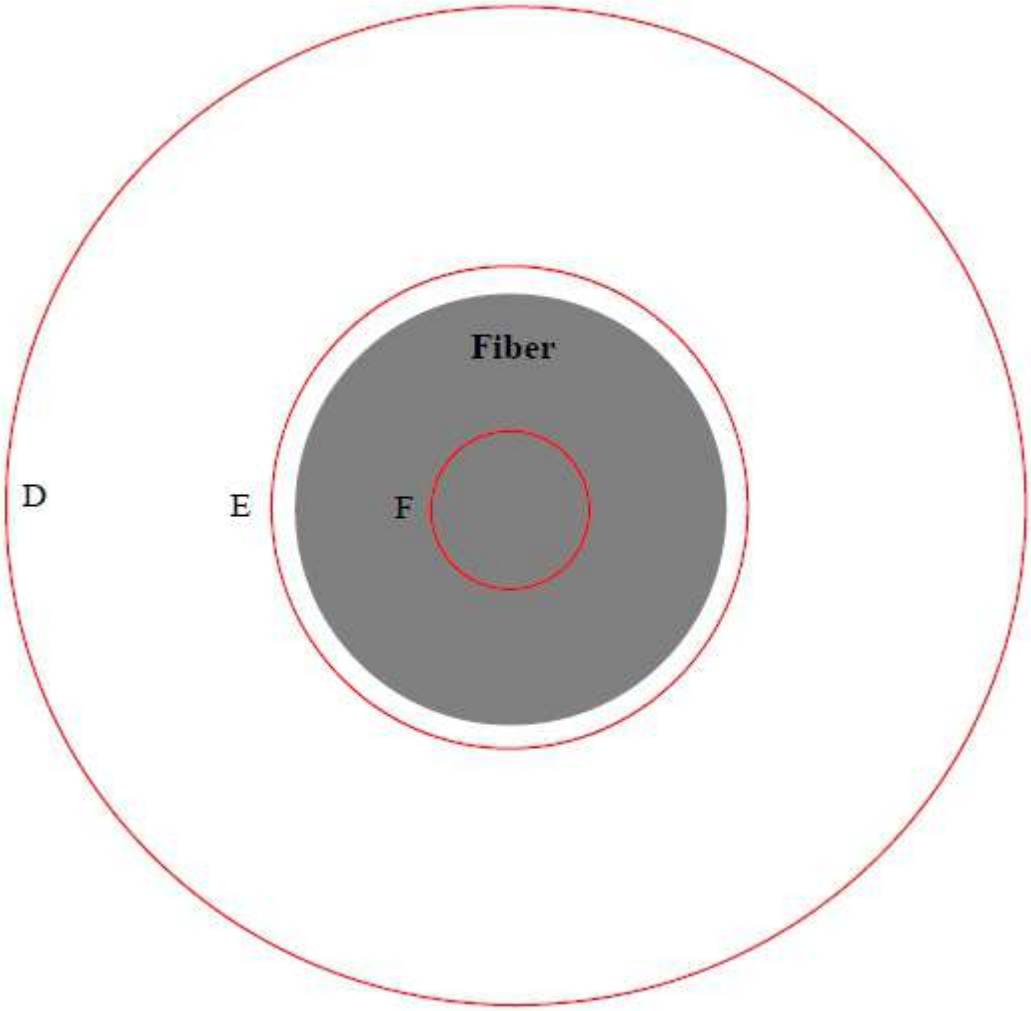


Figure 12 - Zones used for the calculation of the geometrical parameters of the front face of the ferrule

Measurement Profiles

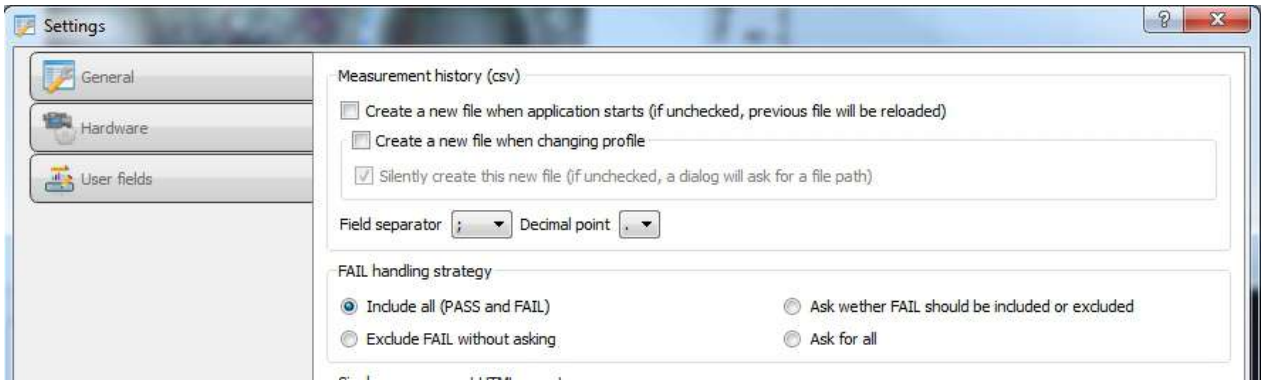
By opening the settings panel and navigating to the Interferometry parameters tab, it is possible to select the source folder of measurement profiles (*.sfd files). Then all the sfd files found in this folder will be displayed in the drop down menu. All the settings linked to measurements and PASS/FAIL criteria are stored in this file.

Default profiles with IEC specifications are provided with the installer. These files have are stored next in a subfolder called “*Interferometry rules*”. For computers running windows 2000/XP, this folder is located in the “C:\Documents and Settings\All Users\Application Data\Data-pixel\Blink” folder. For windows Vista, 7 or 8, it is in the “C:\ProgramData\Data-Pixel” folder.

Exporting Results

Measurement history

The measurements are stored in a csv (comma separated values) file stored in “My Documents\Blink Measurements”. By default, a new csv file is created every time the software is started, this can be changed in the settings. It is also possible to let the software start a new historic when the profile changes.
This section offers 4 different options to include or exclude the FAILED measurements from the history.
Field separator and decimal point can be customized as well.



Saving camera images

The live image can be exported, with or without overlay. User is prompted to select a destination folder and can chose between a few standard image format (png, jpeg, bmp, etc.)

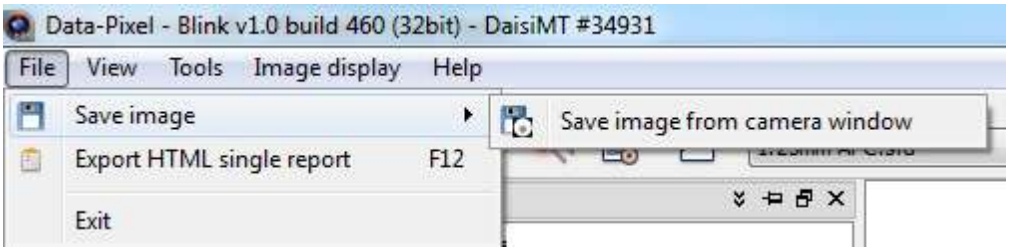


Figure 13 - "Save image" actions in menu

HTML single reports

For each kind of measurement, it is possible to export an html report that will embed snapshots, results, user entered values, etc. It works by loading an html template containing keywords and replace these placeholder by the measured values. The list of the available keywords is given in the appendix.
Blinks ships with a sample template for each plugin, but these files can be customized with any text or html editor.

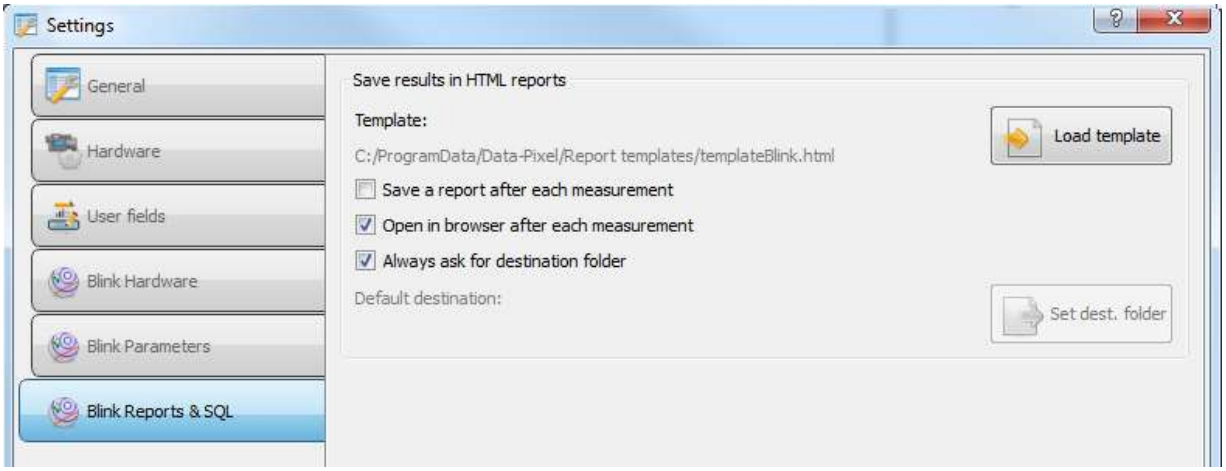


Figure 14 - "Reports" tab in settings panel

The selected template can be changed from the settings, in the “Reports” section. Then it is possible to generate a report from the main interface by clicking this button or using the F12 shortcut.
It is also possible to generate a report for each measurement by checking the appropriate option in the settings.
Here is an example of a generated report for the scratch detection plugin:

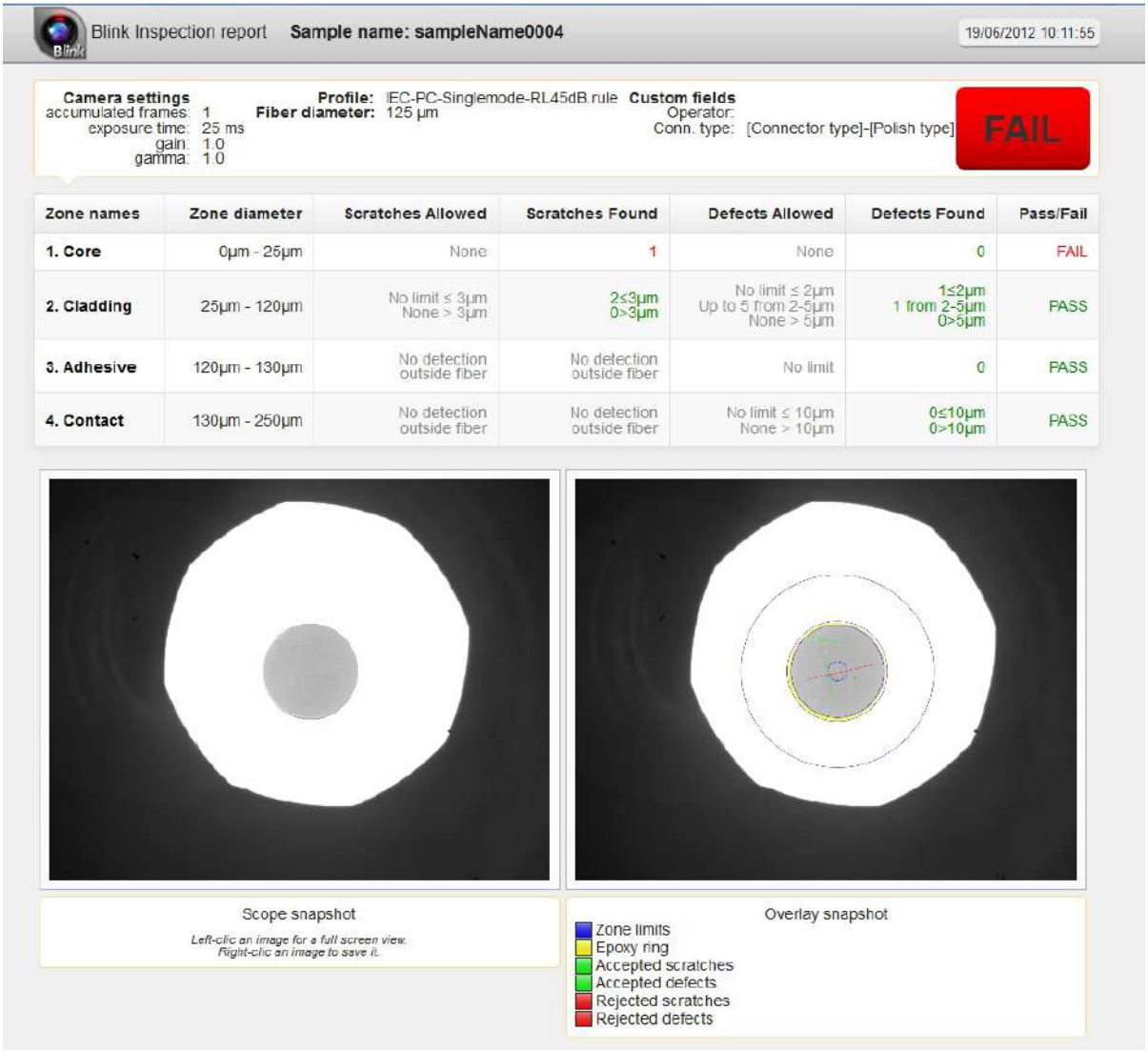
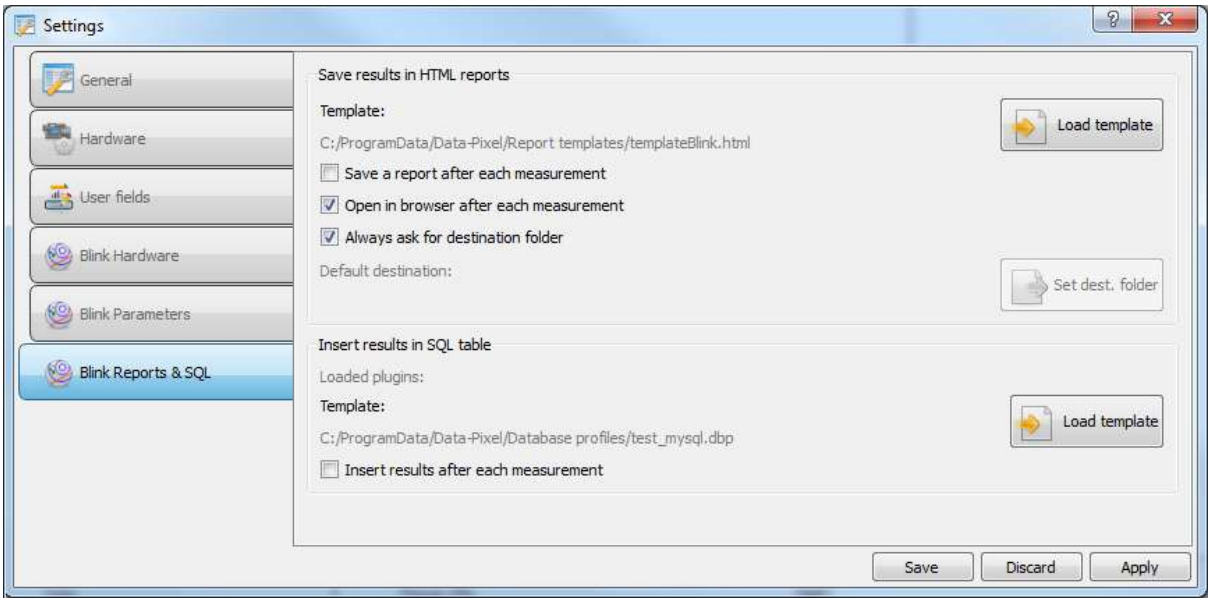


Figure 15 - Default HTML report

Database

Blink provides extensive database interoperability; with support for multiple APIs both open source and proprietary. We are currently supporting MySQL, SQLite, Microsoft SQL Server and all other databases compliant with Open Database Connectivity (ODBC).
This feature makes it possible to insert any measurement results and custom fields in one or more tables in your database. Thanks to a smart yet simple system of predefined keywords, destination fields are entirely customizable and values can be concatenated, pre and suffixed.



Setup is done through a plain text file called a "database connection profile". Using any text editor like notepad, edit or create a new *.dbp file. Profile templates with comments are already shipped with our inspection software. This profile is split in different sections:

- one top level section containing all the required settings for database connection (type, host address, database name, login and password)
- one [Name_of_table] section per table you want to fill. The name of this section must match the name of the table in your database. This section contains a list of each field that has to be inserted, along with the desired value. Fields names must match with the ones in your table. Values are just text with one or more keywords taken from a list that can be found in the appendix.

A few tips:

- lines preceded by a semicolon ";" are comments
- it is better to write values between double quotes "" (it is required if the value contains a semicolon)
- backslashes and hyphens must be escaped, ie. preceded by a backslash
  example: db="DRIVER={SQL SERVER};SERVER=DP\\SQLEXPRESS;DATABASE=TestDB;"

For a Microsoft SQL database, we will have that kind of first section:

```
; DB type (ie. MYSQL ODBC SQLITE etc)
type=ODBC
; host ip adress
host=DP021\\SQLEXPRESS
; port number (can be empty)
port=
; database name
```

```
db="DRIVER={SQL SERVER};SERVER=DP021\\SQLEXPRESS;DATABASE=TestDB;"
; user login
user=sa
; user password (can be empty)
pass=pass
```

If the table name is “blink_measurement” and contains two field “sample_name” and “result_value”, one can write the following profile:

```
[blink_measurement]
sample_name=[SAMPLE_ID]
result_value=[BLINK_RESULT]
```

It is also possible to mix text and keywords like:

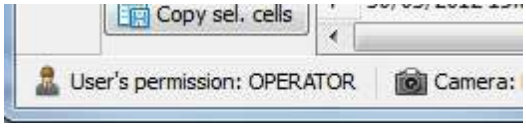
```
sample_name=ID_[SAMPLE_ID]-[BLINK_RESULT]
```

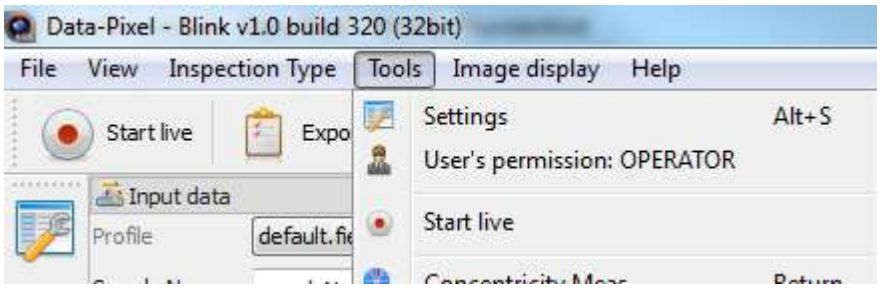
In that case the inserted value will be something like "ID_part2456-FAIL".

ADMIN Mode

Activating admin mode

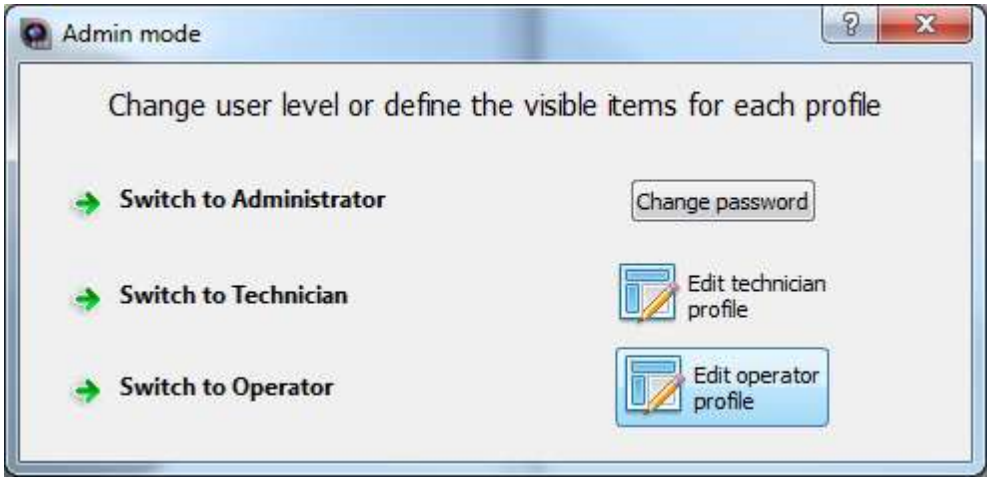
When starting the application, the software will always load in operator mode in which some actions are restricted.
Pressing Alt+A , clicking on the “user’s permission” button in the bottom toolbar or in the “Tools” menu will open a popup window where it is possible to switch to a different level. In admin mode, all the buttons, menu entries and miscellaneous controls are available while they can be greyed in technician or operator mode.



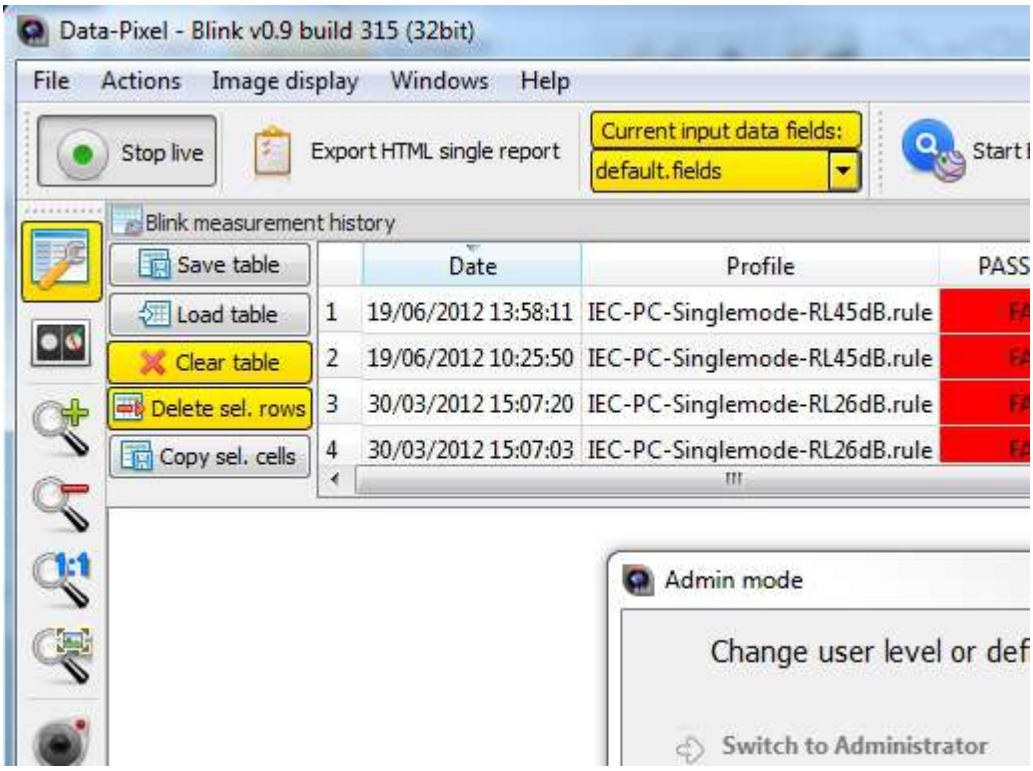


Forbidding controls to non admin users

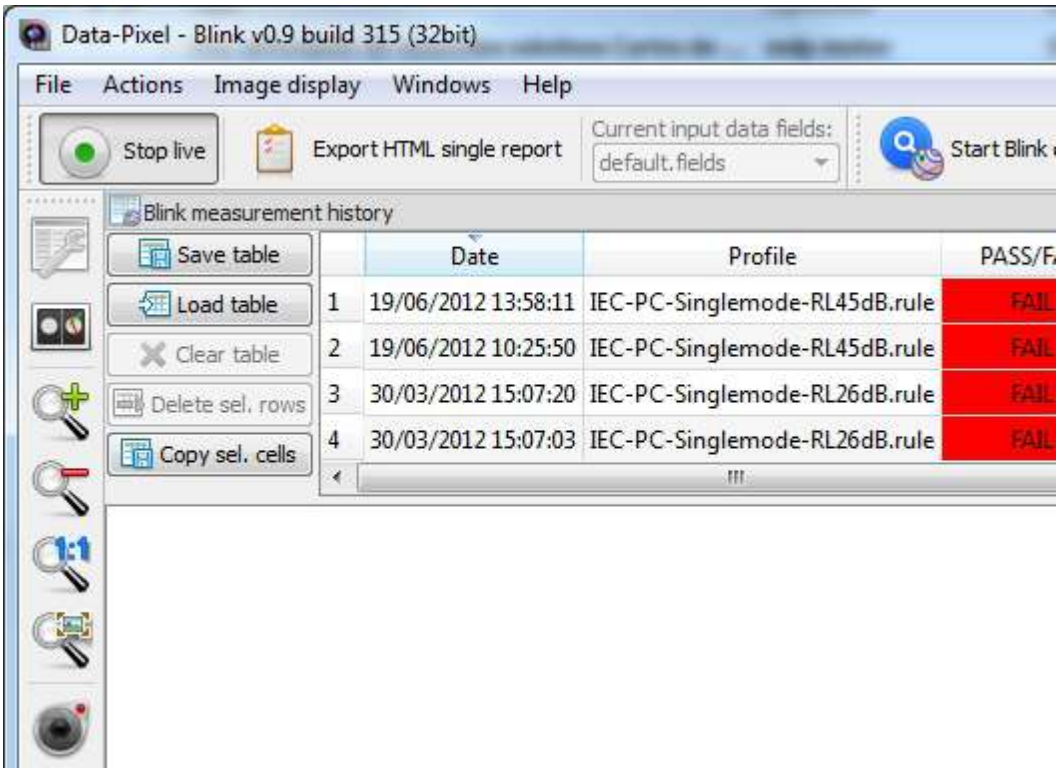
For technician and operator level, it is possible to customize which actions are restricted by switching to the profile edition mode. Clicking on the appropriate “edit” buttons will then allow any element of the GUI to be marked as forbidden when SHIFT+Clicked.



Marked items are colored in red or yellow and can be SHIFT-clicked again to remove them from the exclusion list. Yellow items will be greyed while red items will be invisible.



Once the selection is over, clicking “Done” will save this exclusion list. When reverting back to the operator or technician level, these items will be greyed and inoperative.


Data-Pixel - Blink v0.9 build 315 (32bit)
File
Actions
Image display
Windows
Help
Stop live
Export HTML single report
Current input data fields:
default.fields
Start Blink
Blink measurement history
Save table
Load table
Clear table
Delete sel. rows
Copy sel. cells
Date
Profile
PASS/F
1
19/06/2012 13:58:11
IEC-PC-Singlemode-RL45dB.rule
FAIL
2
19/06/2012 10:25:50
IEC-PC-Singlemode-RL45dB.rule
FAIL
3
30/03/2012 15:07:20
IEC-PC-Singlemode-RL26dB.rule
FAIL
4
30/03/2012 15:07:03
IEC-PC-Singlemode-RL26dB.rule
FAIL

Default Software Passwords

The Default Password in Blink are the following:

Admintrator Password = admin

Technician Password = tech

Note. Both of these passwords can be adjusted by the administrator

Single Fiber Measurments

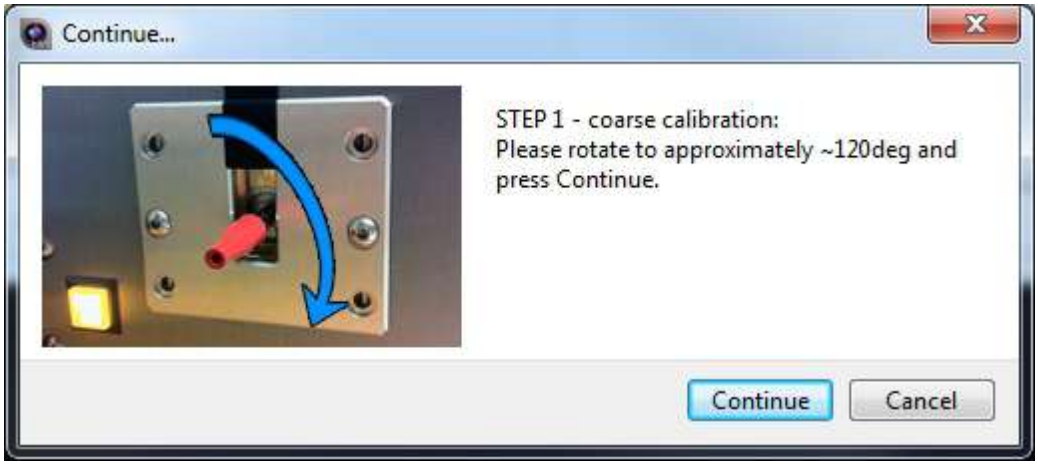
Getting Started

Calibration of the apex for a PC type adapter

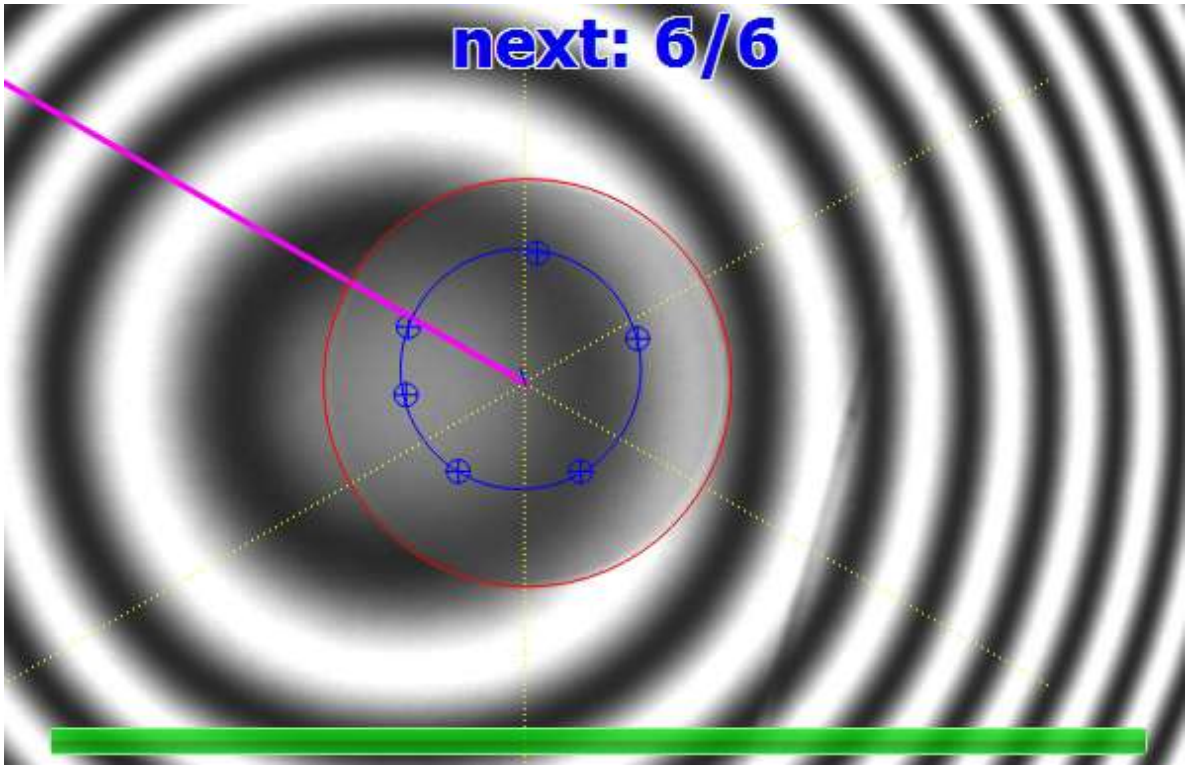
The principle of calibration of the Apex position in PC mode is based on the following rule : whatever the angular position of the connector's index is, the measured value of the Apex Offset must be identical.

- Insert a PC type connector in the module, make sure the connector is fully pushed inside the connector adaptor (in order to ensure a good repositioning of the end face after the connector rotation), search and display the interference fringes on the front face of the ferrule. Centre the fibre and make sure that the front face of the connector to be measured is perfectly clean.

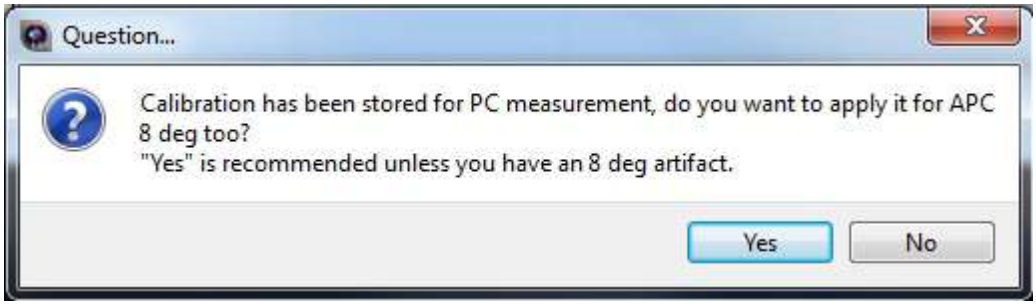
- Click on the "Apex Calibration" button and run six successive measurements of the same connector, by turning the index of the connector of about 60° between each measurement.



- Once the measurements are performed, the software displays the six Apex positions (centre of the fringes) that it has detected and proceeds to the mirror calibration (Daisi units) or digital calibration (3DScope).

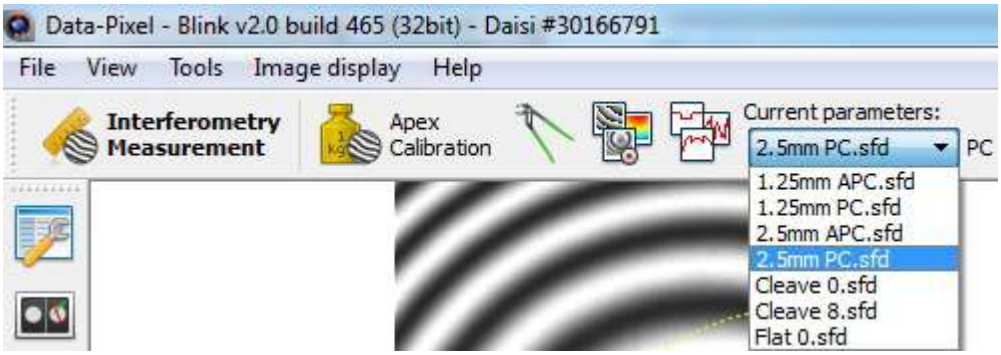


· Calibration is done, and the software is ready to measure PC type patch cords.



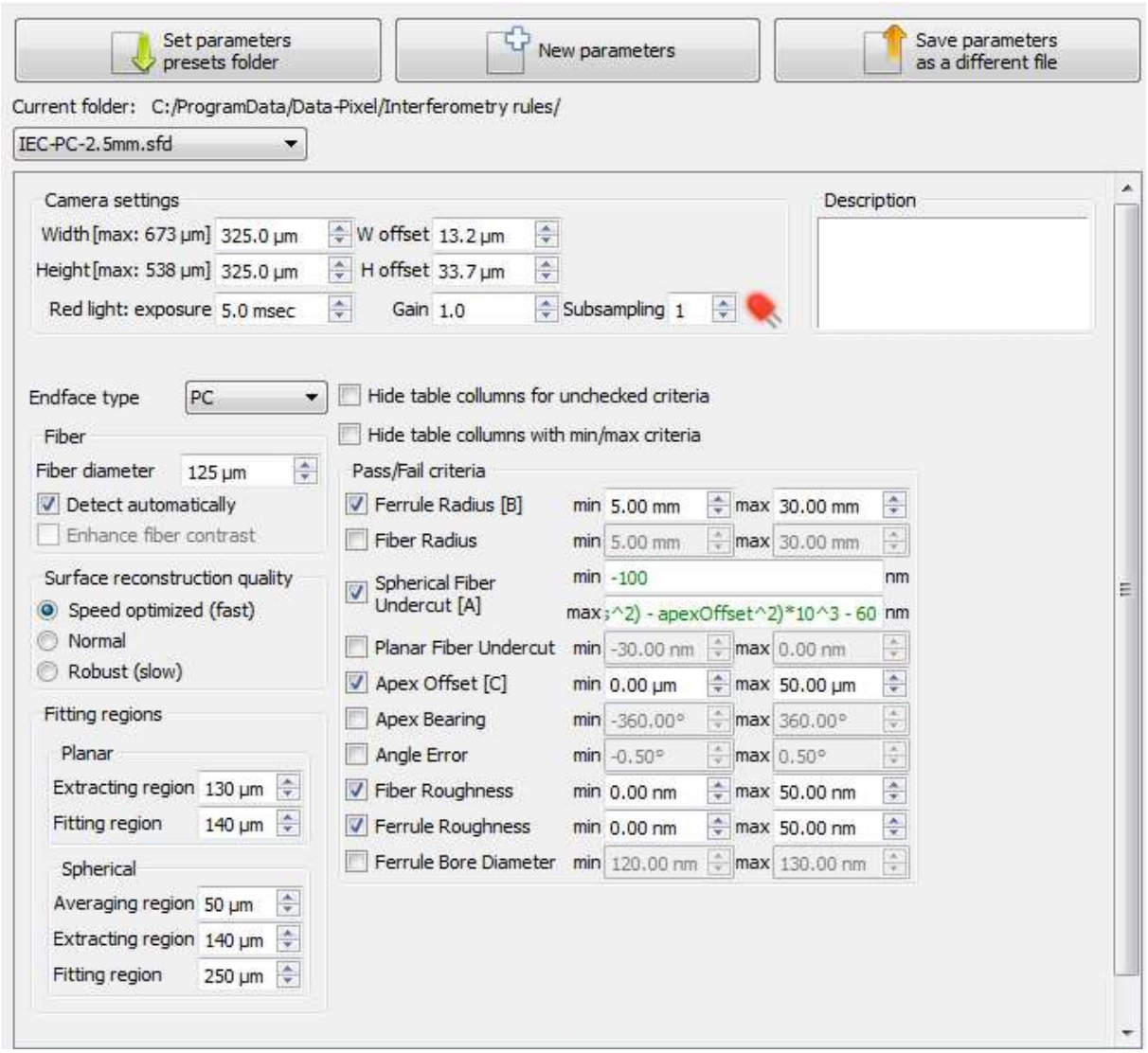
Measurement

The parameter profile must be chosen from the drop-down box in the interferometry toolbar



After making sure the angle handle located on the rear panel is on the desired position (0 or 8 degree) and that the lock/release handle is locked, insert a connector inside the clutch. The connector should be visible on screen, re-center the live image if not.
Finally make sure the connector is in focus and start a measurement.

Measurement profile



Endface type

- PC/APC-8/APC-9: for standard connectors.
- Cleave-0/Cleave-8: for cleaved fibres
- Flat-0: for bare ferrules.

Fiber diameter

Input the nominal approximate fiber diameter so that the software can detect the correct position of the fiber and hence make a correct Apex measurement.

Detect automatically

Check this box to let the software automatically determine the centre position of the fibre. If unchecked, you MUST manually centre the fibre optical axis inside the yellow circle for an accurate apex measurement.

Fitting regions

Diameters of the zones that are described in the paragraph explaining the measured parameters

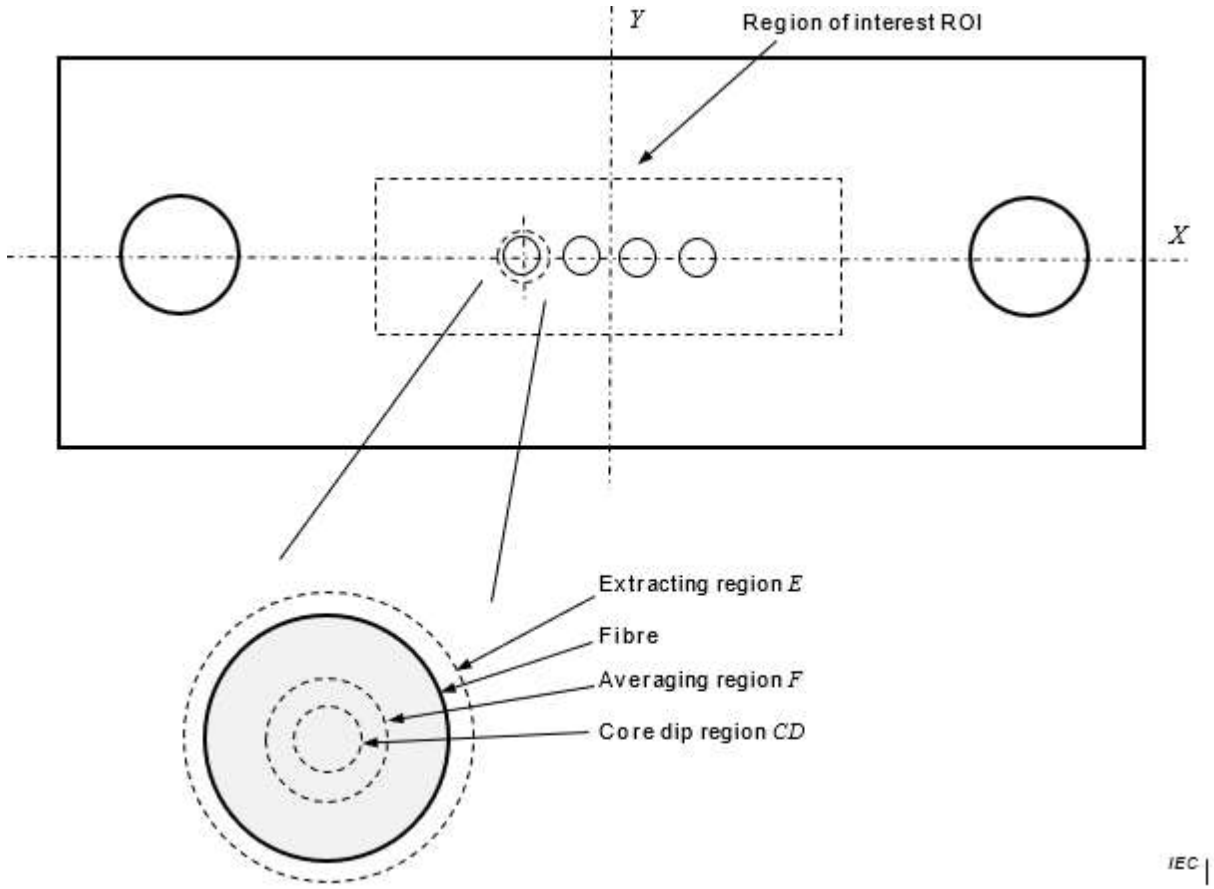
Pass/Fail criteria MT

If checked the measured value will be compared to min & max, otherwise the parameter is measured but not taken into account when computing the pass/fail verdict.

//PASS/FAIL criteria

MAX_ANGLE_X (deg): 0.2
Maximum horizontal endface angle allowed
MIN_ANGLE_X (deg): -0.2
Minimum horizontal endface angle allowed
MAX_ANGLE_Y (deg): 0.2
Maximum vertical endface angle allowed (eg. 8.2 if APC ferrule is being defined).
MIN_ANGLE_Y (deg): -0.2
Minimum vertical endface angle allowed (eg. 7.8 if APC ferrule is being defined).
MAX_PROTRUSION (mu): 15.0
Maximum fiber protrusion allowed
MIN_PROTRUSION (mu): 0.5
Minimum fiber protrusion allowed
MAX_HEIGHT_DIFF_ADJ (mu): 0.2
Maximum fiber height difference between adjacent fibers allowed
MAX_HEIGHT_DIFF_ALL (mu): 0.5
Maximum fiber height difference between all fibers allowed
MAX_CORE_DIP (mu): 0.3
Maximum fiber core-dip allowed. Positive core dip means the core is lower than the cladding (undercut)
MIN_CORE_DIP (mu): -1.0
Minimum fiber core-dip allowed. Negative core dip means the core is higher than the cladding (protrusion)
MIN_X_ROC (mm): 2000
Minimum ferrule radius along the long axis (X) allowed. The application's .ini file also contains a parameter called NEGATIVE_RADIUS_PASS with a default value of 20000mm. This means that large X negative radii will be alllowed if their absolute value is larger than 20000mm.
MIN_Y_ROC (mm): 5
Minimum ferrule radius along the short axis (Y) allowed.
MAX_FLATNESS_DEVIATION (nm):2000
Maximum allowed flatness deviation.
MIN_PERCENTAGE_VALID_PIXELS (%): 23
The minimum percentage of valid pixels of the image allowed for a trustworthy measurement.
MAX_COPLANARITY_ERROR (nm): 500
Maximum allowed Co-Planarity
MAX_FIBER_ANGLE_X (deg):0.2
Maximum allowed fiber angle in X direction (angle between the fitted plane to the fiber tips and the perpendicular average plane fitted to the fiber guide-holes.
MIN_FIBER_ANGLE_X (deg):-0.2
Minimum allowed fiber angle in X direction (angle between the fitted plane to the fiber tips and the perpendicular average plane fitted to the fiber guide-holes.
MAX_FIBER_ANGLE_Y (deg):0.2
Maximum allowed fiber angle in Y direction (angle between the fitted plane to the fiber tips and the perpendicular average plane fitted to the fiber guide-holes.
MIN_FIBER_ANGLE_Y (deg):-0.2
Minimum allowed fiber angle in Y direction (angle between the fitted plane to the fiber tips and the perpendicular average plane fitted to the fiber guide-holes.

MT Fitting Parameters



FIBER_COUNT: 12
Total number of fibers on the ferrule (eg. 24 if MT-24 ferrule is being defined).
FIBER_ROWS: 1
Number of fiber rows (eg. 2 if MT-24 ferrule is being defined).
FIBER_PER_ROW: 12
Number of fibers per row (eg. 12 if MT-24 ferrule is being defined).
FIBER_PITCH_X: 250
Horizontal fiber-pitch in microns.
FIBER_PITCH_Y: n/a
Vertical fiber-pitch in microns. (eg. 250 if MT-24 ferrule is being defined).
FIBER_OFFSET_X_FROM_CENTER (mu): 125
Horizontal offset position of first fiber-centers from the ferrule center.
FIBER_OFFSET_Y_FROM_CENTER (mu): 0
Vertical offset position of first fiber-centers from the ferrule center (eg. 125 if MT-24 ferrule is being defined).
FIBER_TYPE: MM
Fiber type; MM = Multimode; SM = SingleMode.
D_E (mu): 140

Fiber height extraction circular region.
D_F (mu): 50
Fiber cladding height averaging circular region.
D_CORE (mu): 20
Fiber core height averaging circular region.
D_MAX (mu): 90
Fiber core height averaging circular region.
D_MIN (mu): 70
Fiber core height averaging circular region.
D_FIBER (mu): 125
Fiber diameter.
TOP_PIXELS_EXCLUDED (%): 3
Percentage of the highest points of the surface which will be ignored for the endface parameters calculation
NEXT_TOP_PIXELS_INCLUDED (%): 20
Percentage of the next highest points of the surface which will be used for the endface parameters calculation

Hardware setup

Changing Adaptor:

- Remove plastic cap.
- Remove adaptor if any.
- Insert new adaptor.
- Insert cap into original position, fully down (important).

Changing Clutches

Clutches have guide-pins or guide-holes (for measuring female or male ferrules) and have a defined pitch in order to accept standard ferrule types such as MT or MT-RJ ferrules.

Clutch can be removed by unscrewing the two M4 screws located at each side of the clutch.

Beware not to let the clutch fall once the screws are removed.

Once removed, put the new clutch in place.

Clutch swapping should be systematically followed by a fiber recentering and Apex calibration.

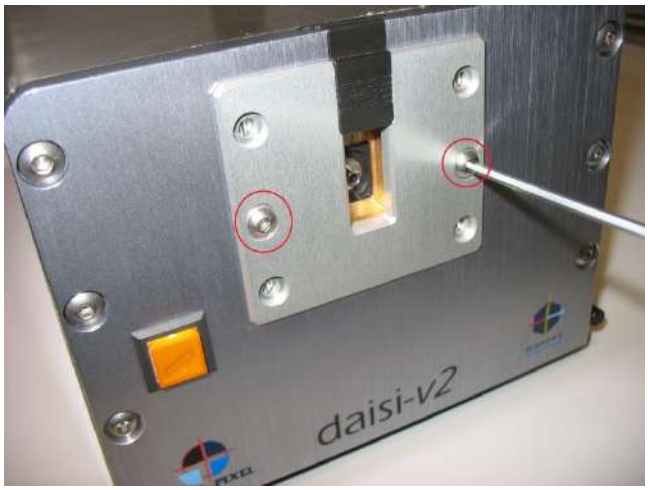
DAISI V2 Flange Changing

Note. The Daisi V2 has only 2 screws (compared to 4 screws on the original Daisi) therefore allowing a larger range of movement on the Y axis with the Daisi V2

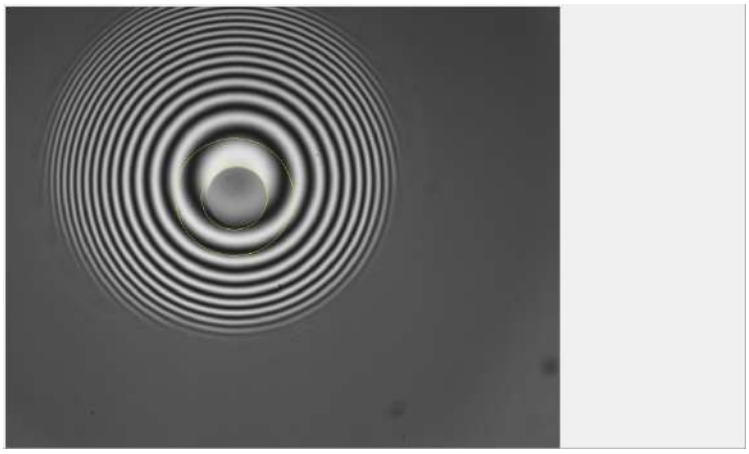
This procedure explains the process required to correctly install a flange on the front of the Daisi V2

1. Press f11 in Blink to obtain a full screen view of the camera

2. Install the flange (clutch) on the front of the Daisi and then install the two screws but do not tighten. Leave the screws loose enough to allow the flange (clutch) to slide up and down.



3. With a connector in the flange (clutch), slowly slide the flange up and down until the connector is central on the screen and then fully tighten the two screws.



4. Right click and select "centre fiber manually" to fine tune the position

5. Perform an Apex calibration to finish the installation

DAISI Adaptor Adjustment

First check that the adapter(s) are adjusted relative to the flange, that is to say, the connector must enter the adapter (not too tightly) and then be guided precisely into the flange sleeve without being forced

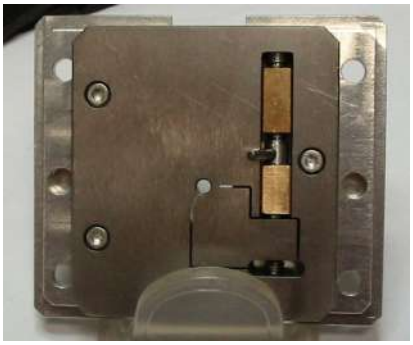
There are several possibilities to adjust this:

For example, the LC adapter can be adjusted by the upper screw or/and the lower screw for a correct insertion of the connector.

If, however, you sense that the connector forces to enter the flange, there is a risk of breaking the sleeve of the flange. At this point, you must unscrew the three screws from the rear flange to slightly change the vertical position of the rear block relative to the front plate
When the vertical height is correctly set we should expect to see the adaptor “lift” slightly upwards upon insertion on the connector

Be Careful! When this operation is performed, it is important to repeat again step 1, after adjusting the rear of the flange, check that the positions of the sleeve of the flange is correctly adjusted for the new position of the sleeve relative to the front plate

If required, repeat this step. Then retest the adapter(s)



Multi Fiber Measurments

Getting Started

Calibration of the apex

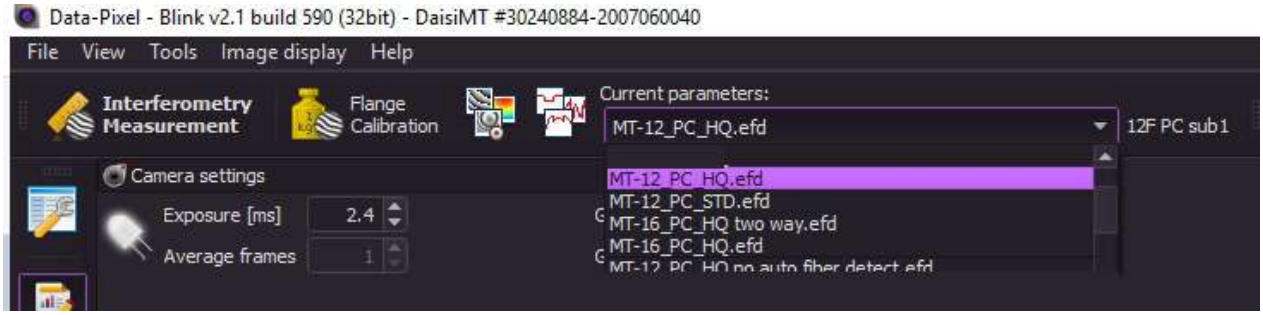
1) Any (high quality) ferrule with a 0 degrees polishing angle is used. The calibration procedure is then geometrical (**Note: this method is not available for the North-American market, patents apply.**).

    - Place the interferometer hardware in 0 degrees mode
    - Insert the a ferrule with a 0 degrees polishing angle (it can be a blank ferrule)
    - Press the FLANGE CALIBRATION button
    - Follow the onscreen pop up window. Measurements are then performed and the user is asked to rotate the ferrule in between measurements
    - At the end of the procedure, the reference mirror is aligned.

-

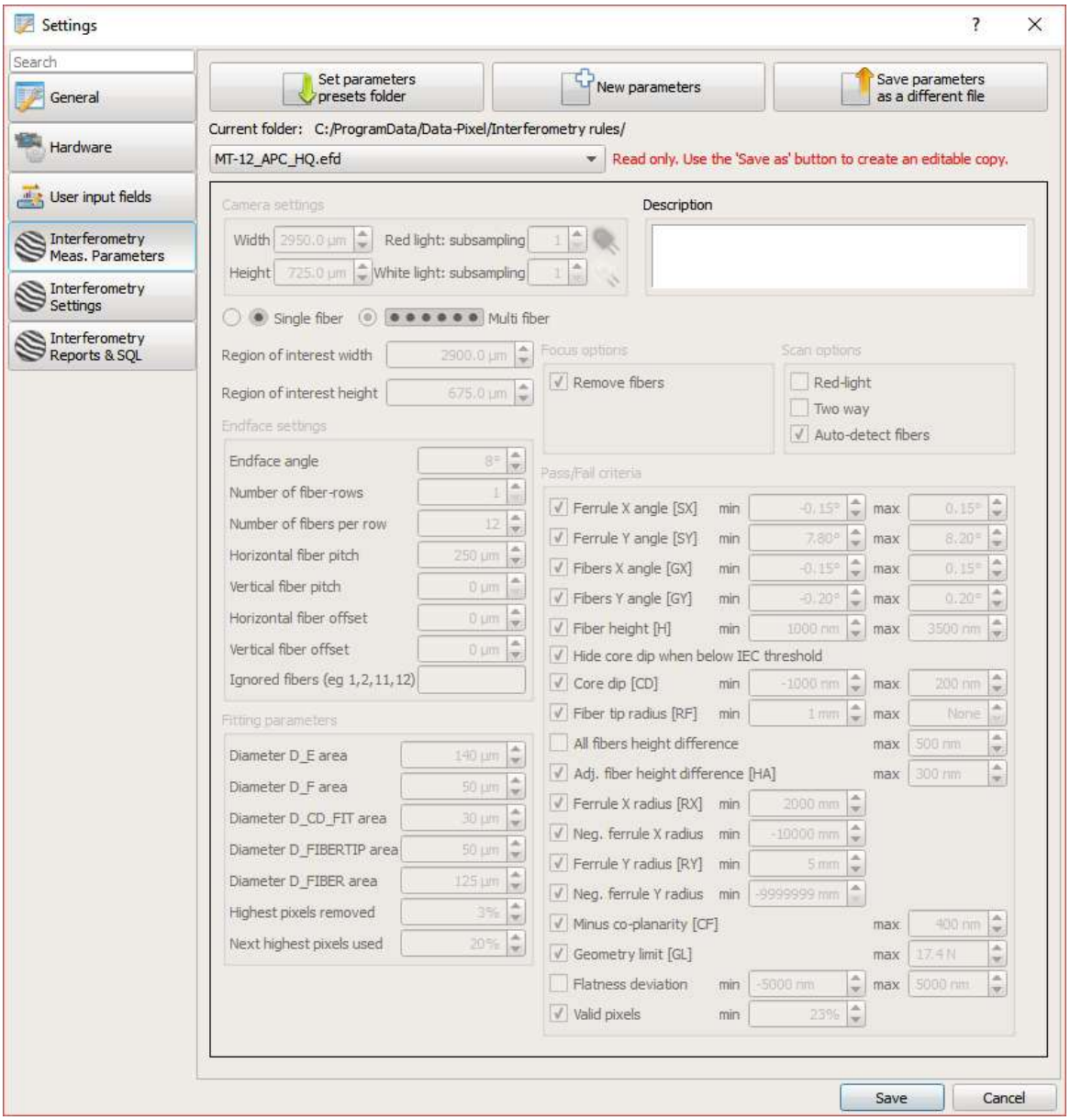
Measurement

The parameter profile must be chosen from the drop-down box in the interferometry toolbar



After making sure the angle handle located on the rear panel is on the desired position (0 or 8 degree) and that the lock/release handle is locked, insert a connector inside the clutch. The connector should be visible on screen, re-center the live image if not.
Finally make sure the connector is in focus and start a measurement.

Measurement profile



Pass/Fail criteria

If checked the measured value will be compared to min & max, otherwise the parameter is measured but not taken into account when computing the pass/fail verdict.

Hardware setup

Changing Adaptors

Ferrule and connector Adaptors

DAISI-MT ferrule and connector adaptors are easy to interchange. They are used to guide the ferrule guide-pins or guide-holes onto the chuck guide-holes or guide-pins. Their use is to aid the operator when inserting the connector but is not essential to perform a measurement.

Please note however that connector adaptors may reduce the reproducibility of the measured ferrule end-face angles because they may apply side or axial load or pressure onto the ferrule.

Changing Adaptor:

1. Remove plastic ring-screw
2. Remove adaptor if any
3. Insert new adaptor
4. Screw ring-screw back on

Changing Clutches

- Clutches have a defined diameter of ferrule they can accept. Standard diameters are 1.25mm and 2.5mm. Other diameters such as 2.0mm or 1.6mm are also available upon request.
- First, remove the black plastic cap that holds the connector adaptors in place. Clutch can then be removed by unscrewing the two or four M4 screws located at each corner of the clutch.
- Beware not to let the clutch fall once the screws are removed.
- Once removed, place the new clutch instead.
- Guide pins precisely guide the clutch in place. Make sure it is properly placed before tightening the clutch in position. (Max force on each screw 0.4Nm)

Clutch swapping should be systematically followed by a fiber recentering and Apex calibration.

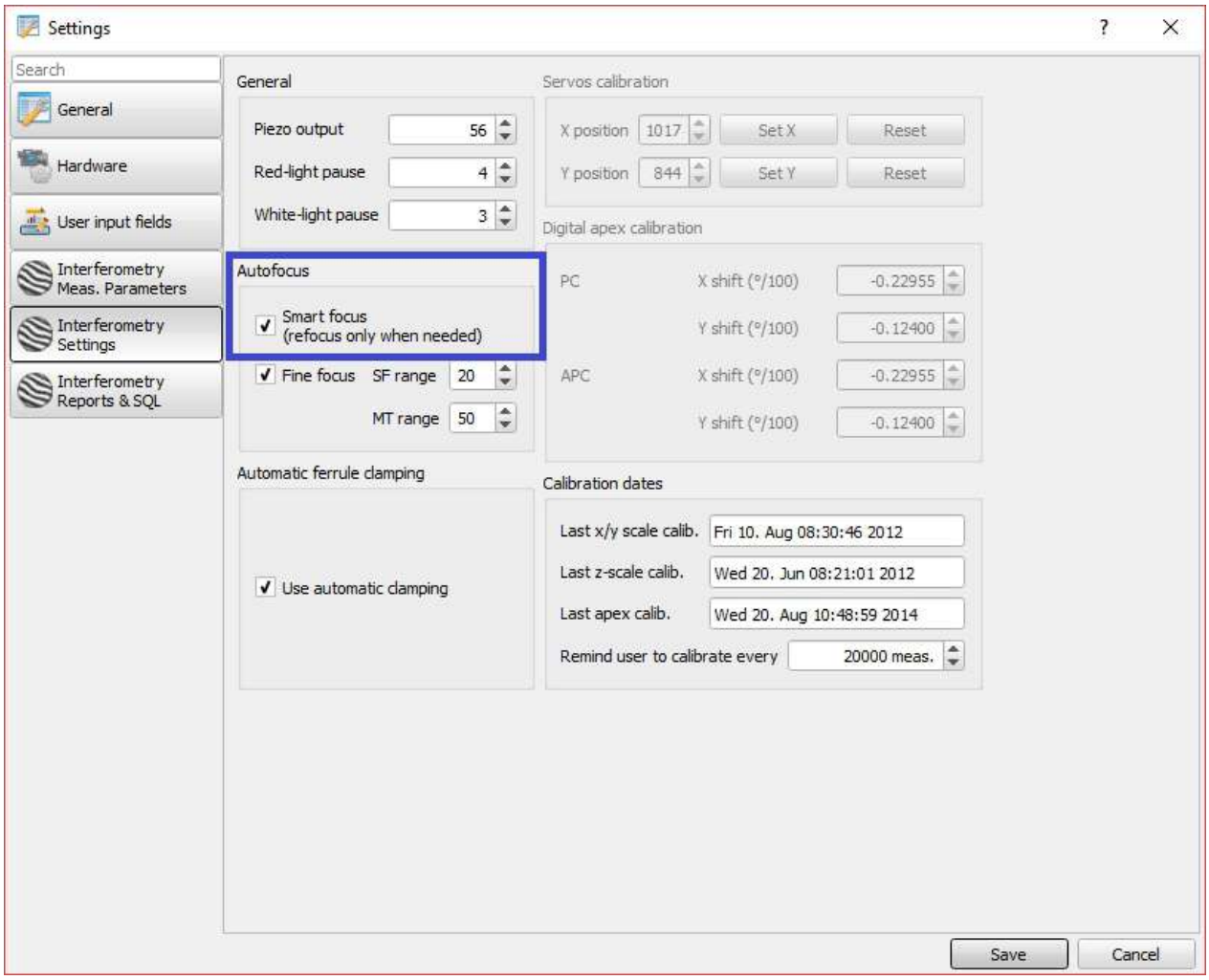
Software Settings

To open the software settings goto (Tools > Settings or icon ). (or the keyboard shortcut alt + s)

Smart Focus

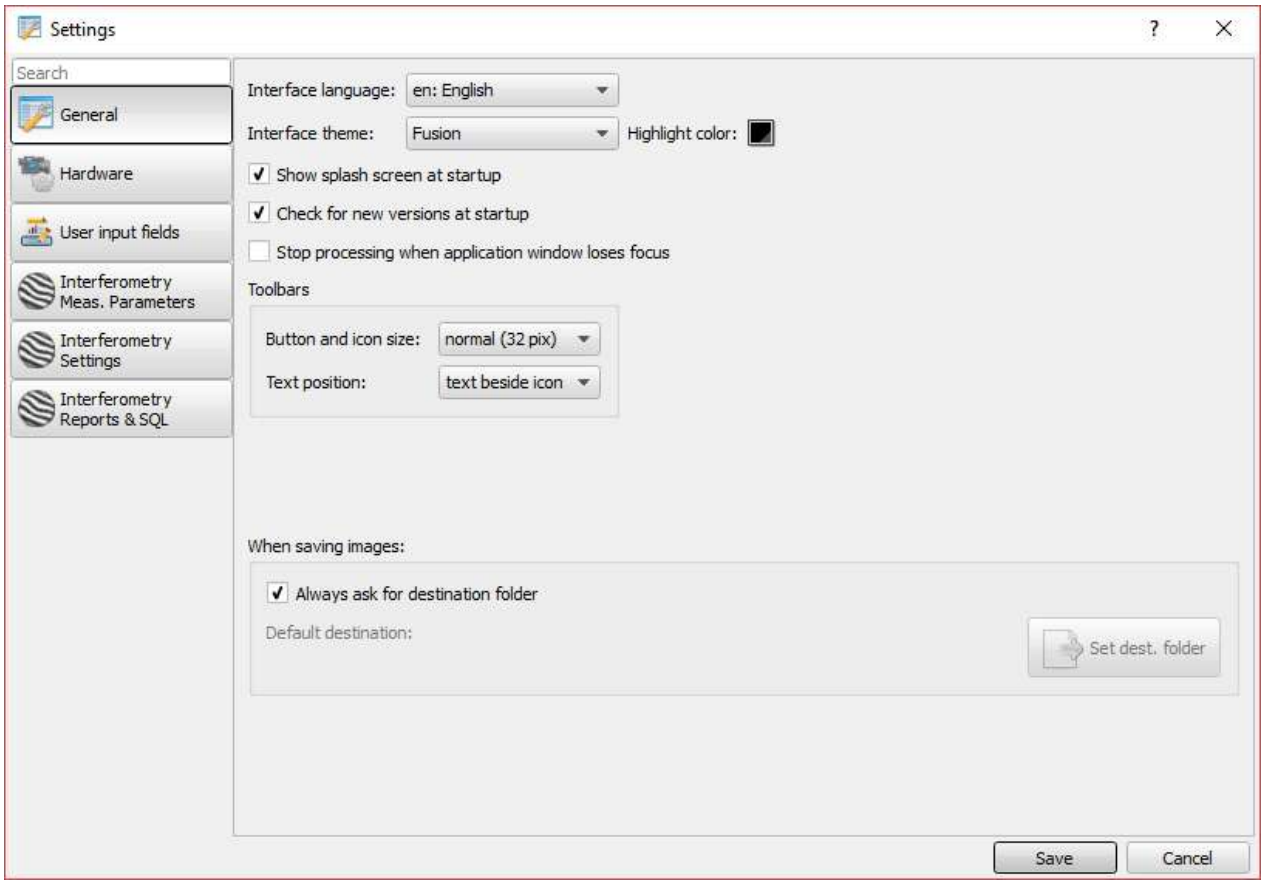
Smart Focus Can be enabled in the Interferometry Setting Tab

Once enabled the software will decide if the sample requires refocusing before measuring and calculating the results



General Tab

The General Tab contains all the settings related to the interface of the software.



Interface

Interface Language

Drop down menu of all available languages for Blink (Note. Restart of the software is required to adjust the language).

Interface Theme

Option to change the overall look of the software (Light/Dark Theme).

Show splash screen at startup

When selected the Blink splash screen will be shown as the software starts.

Check for new versions at startup

When selected the software we check if a update is available (Internet Connection required).

Stop Processing when application window loses focus

If selected all calculation will stop if the software is mimimised/in the background.

Toolbars

Button and icon size

Define the size of text/icons in the main interface (in pixels).

Text Position

Define the position of the text relative to the icons (or text/icons only).

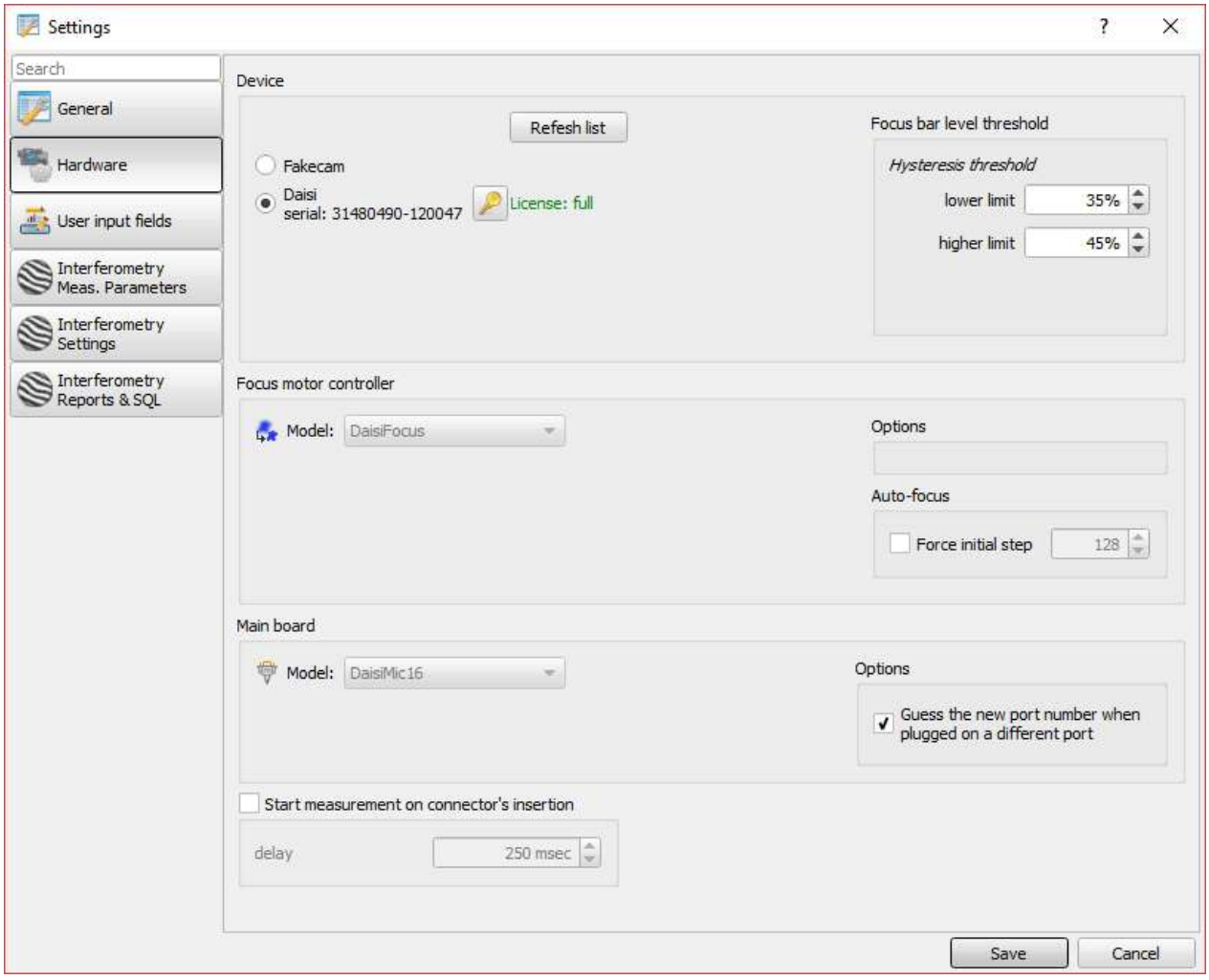
When saving images

Always ask for destination folder

Pop up menu will ask for a file loaction to be selected before saving, if not selected the folder defined with the "set dest. folder button" will be used

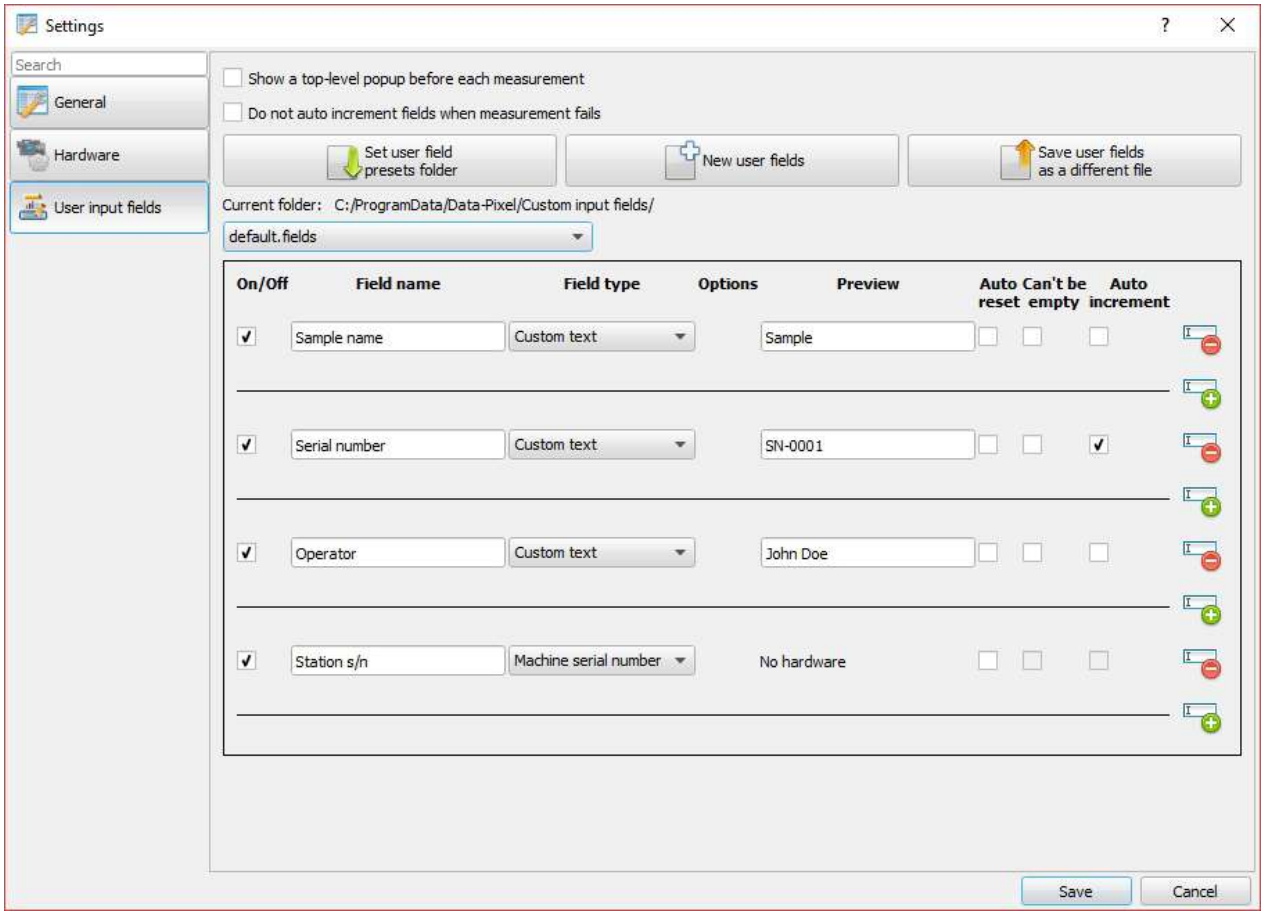
Hardware Tab

In the Hardware tab, select your camera and make sure a device with a valid license is listed.



User Input Fields

The user Input Fields can be used to add additional data into the saved measurement results. For example Serial numbers. Product Types etc.



Interface

Show a top-level popup before each measurement

If enabled when a measurement is started a pop window will be presented for the operator to fill in all the require Information before making the measurement

Do not auto increment fields when measurement fails

If enabled the software will not auto increment any data fields that are selected to be auto incremented

Set user field presets folder

Used to select the default folder location for the different user fields files

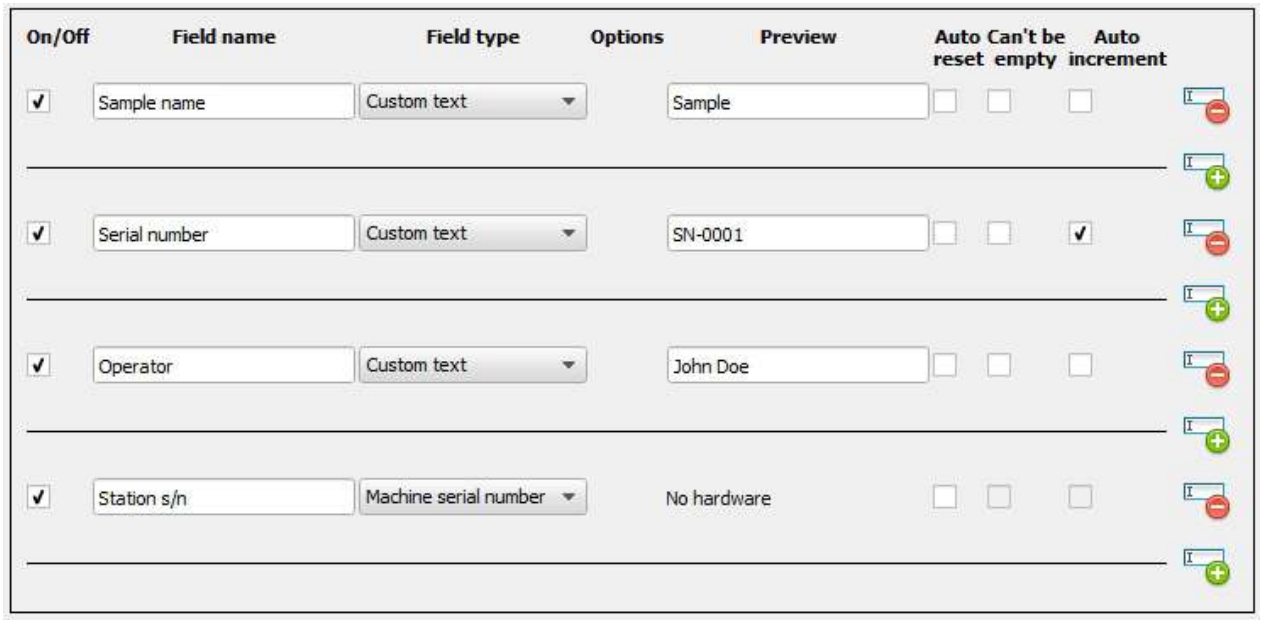
New user fields

Create a new file for a user fields template

Save user fields as a different file

Create a copy of the current user fields file for editing

Customisation



On/Off

Turn On/Off the line in the in the custom fields

Field Name

Name to be saved into the measurement file/measurement html report

Field Type

Type of information to be saved (Number/Text/Check box)

Options

When available preset options can be created (ie min/max value)

Preview

Visual representation of the value to be shown

Auto reset

When selected value in field will be erased after each measurement

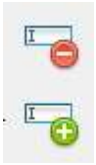
Cant be empty

When selected the field must have a value inserted before a measurement can be made

Auto increment

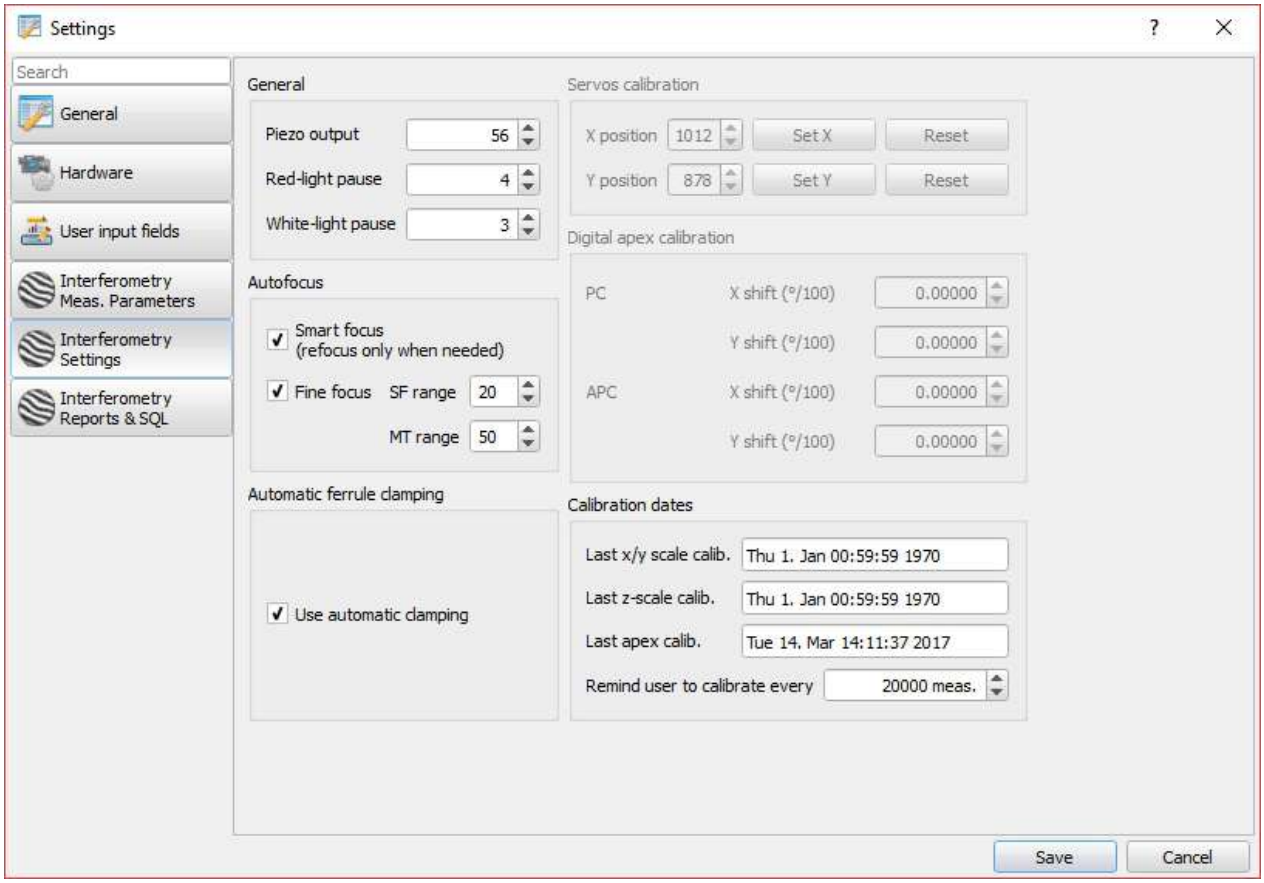
When enabled the numerical value will be increased by one after each measurement

-/+ Button



Buttons used to add/remove a line from the custom fields template

Interferometry Settings



General

Piezo Output Voltage

Voltage needed to generate a move of the piezo electric transducer of half a wavelength. This value may have to be adjusted depending on the ambient temperature of use of the system. Default value is 54.

Red Light Pause

Time in milliseconds between each piezo shift

White Light Pause

Time in milliseconds between each piezo shift

Autofocus

Smart Focus

See Smart Focus

Fine Focus

SF Range:

Focus Range for Single Fiber Connectors

MT Range:

Focus Range for Multi Fiber Connectors

Automatic Ferrule Clamping

For Machine with Auto clamping (Defualt Enabled) the system will lock the sample before measrement begins

Servo Calibration

For Daisi/Daisi MT these values are created as part of the PC/APC Apex Calibration

This values under normal use so never be manually adjusted (Only Available in Admin Mode)

Digital Apex Calibration

A calibration step permits to determine the real angular position of the ferrule. The software memorizes the angular shift along the X and Y axis (X et Y shifts given in 1/100 degrees). After each measurement, the software repositions angularly the topography, in a numerical way. The Apex position is then computed, on the basis of the newly positioned topography.

The effect of this process is to shift the Apex position with reference to the centre of the interference fringes. Therefore we cannot refer to the position of the centre of the fringes as being the Apex position. It is better to rely on the centre of the phase image fringes.

DAISI/DAISI MT keep in their memory the values of the angular shift for the connectors of PC and APC type.

Calibration Dates

Last X/Y Calibration / Last Z Scale Calibration / Last Apex Calibration

Values stored after calibration into the internal memory of the machine

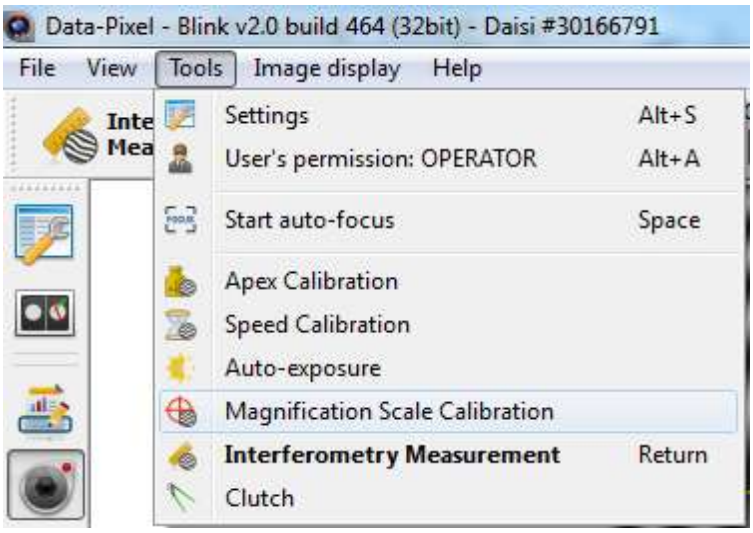
Remind User to calibrate every: (Default Value 20000 measurements)

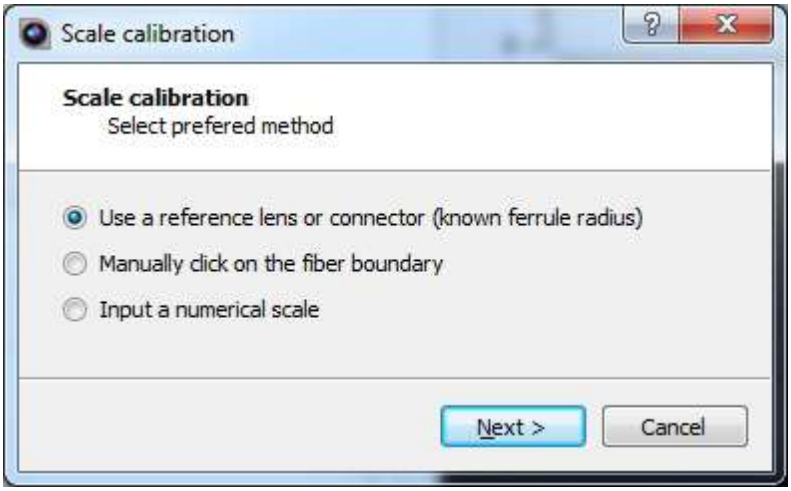
A pop up reminded will force the operator to recalibrate the Flange with a Apex Calibration

Calibration

ADVANCED – Magnification Scale Calibration

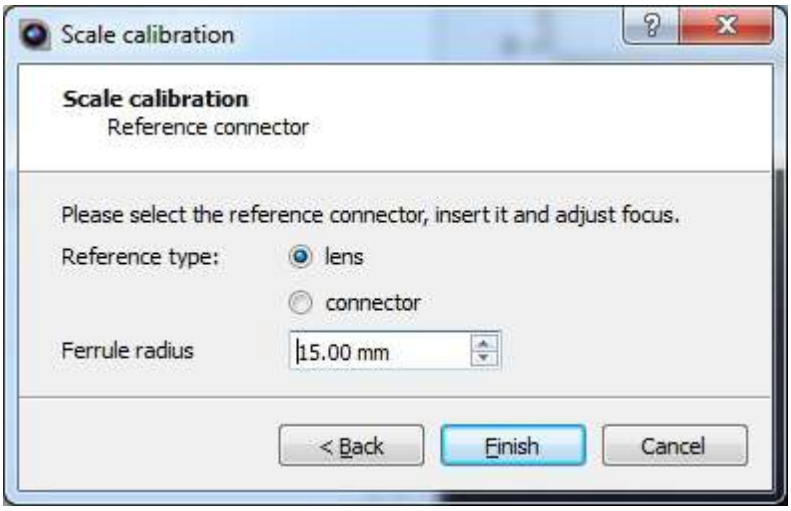
Interferometers are always calibrated in our factory before shipment, but it is possible to recalibrate them if required. The magnification calibration wizard shortcut is located in the Tools menu entry.





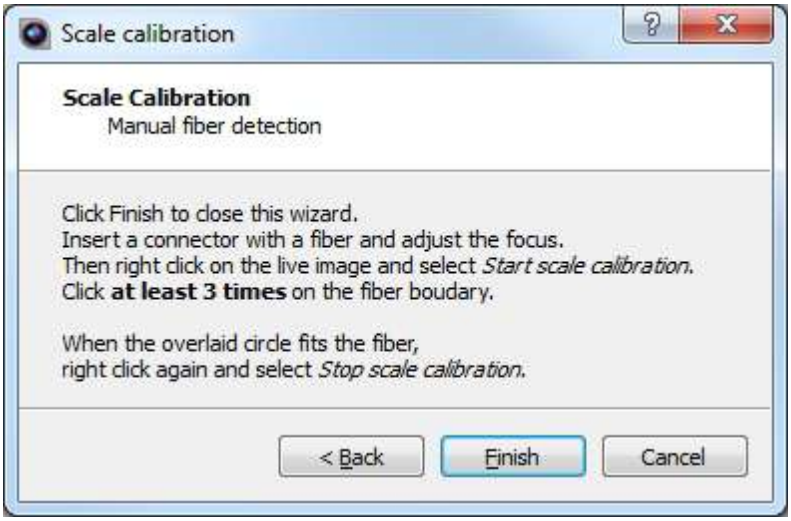
Magnification Scale calibration – reference lens or connector

This method requires a reference lens or connector. The user is asked to adjust the focus and enter the value of the ferrule radius. Using these values the software will automatically calibrate the optical scale.

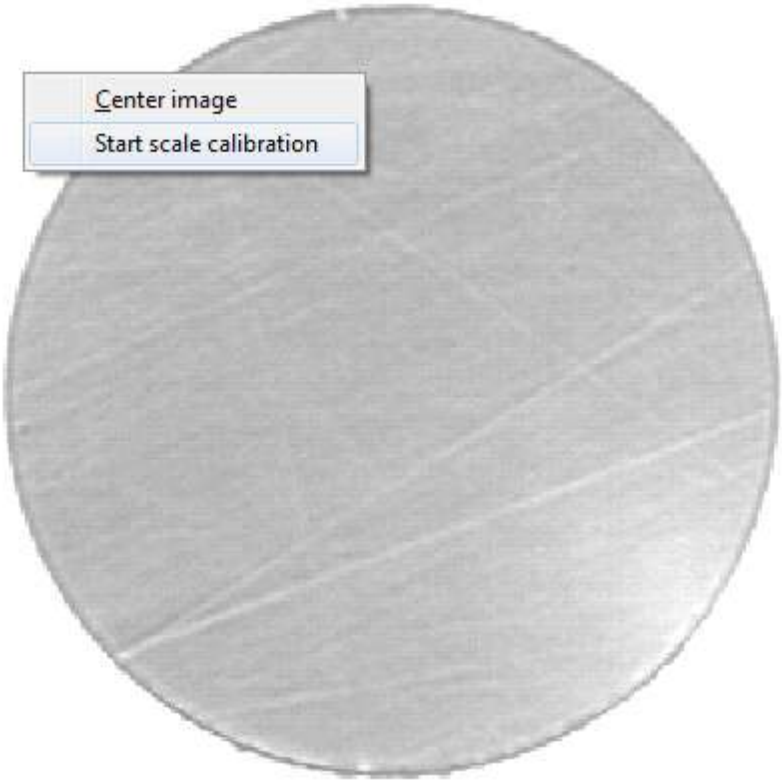


Magnification Scale calibration – manual selection

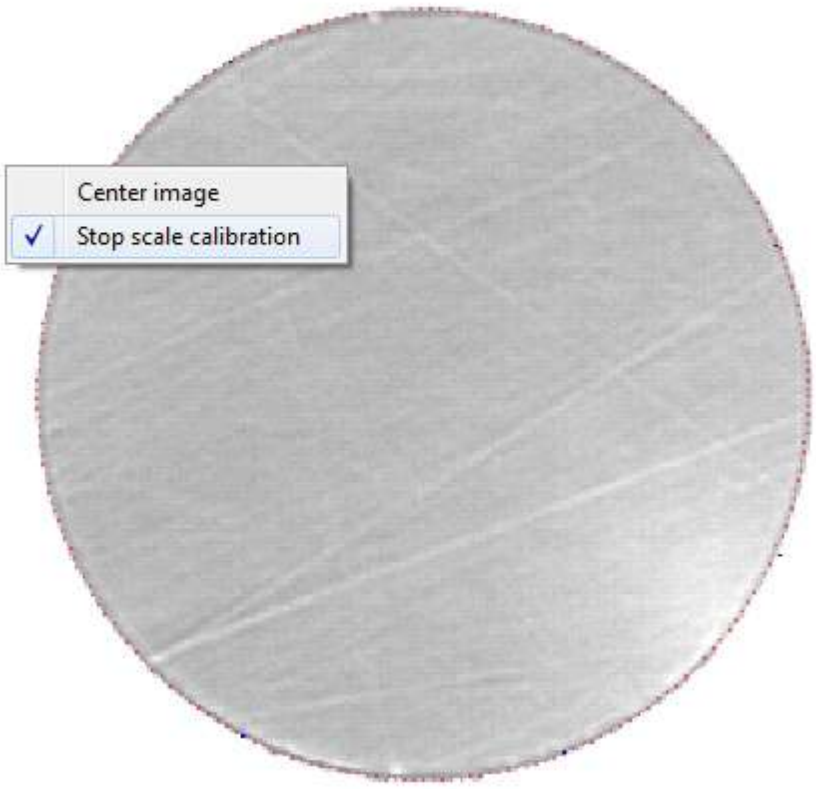
If you don't have a calibrated bare ferrule, the manual selection mode allows scale calibration using a standard connector.



Step 1: Insert a connector and adjust focus, when ready right click on the live image and select "Start scale calibration".



Step2: Click a few points on the fiber boundary. You fill see the fitted circle updating after the 3rd point. When the circle fits the fiber, right-click the on the live image and select “Stop scale calibration”.



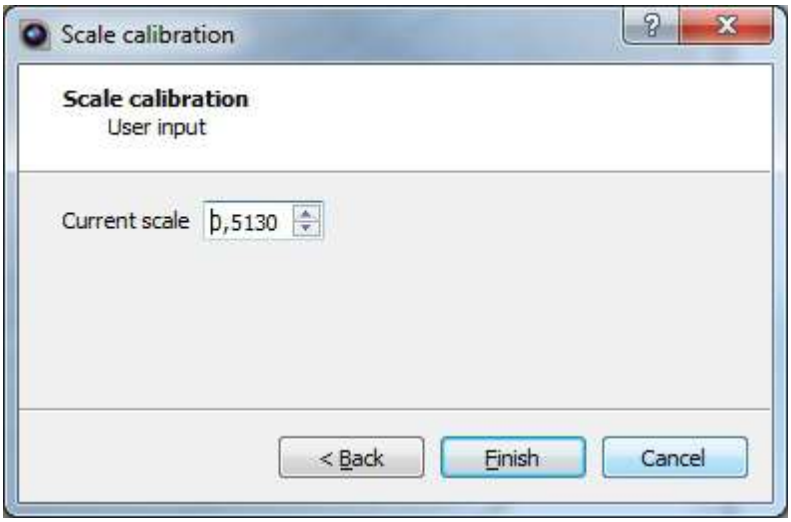
.

Step 3: A popup message will ask for the fiber diameter, confirm the value and press Ok.

Step 4: A popup message will display the calibration result and ask for confirmation.

Magnification Scale calibration – numerical input

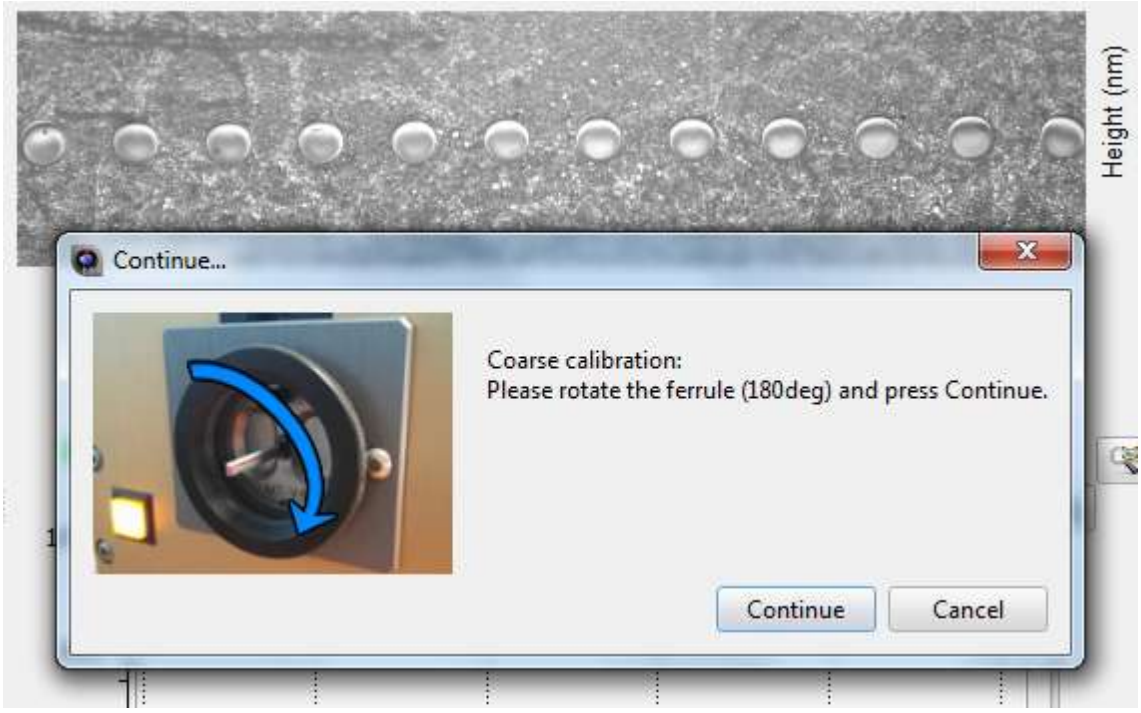
In this mode you can read and modify the current scale.



BLINK - Z Scale Calibration with a Step Height Artefact

Daisi MT units are pre-calibrated by Data-Pixel, but it is possible when required to recalibrate them.

.



Z scale calibration – Reference step-artifact

This procedure requires the reference step-artifact to be clean. Exposure should be adjusted in order to obtain a quality measurements. Due to the reflective nature of the Artefact you will need to reduce the exposure/gain to achieve a good image. When the step artifact is in the MT female flange, the smaller part of the step is required to be on the right of the screen.

Dirty step-height artefact

Clean step-height artefact

Z scale calibration – Start autofocus

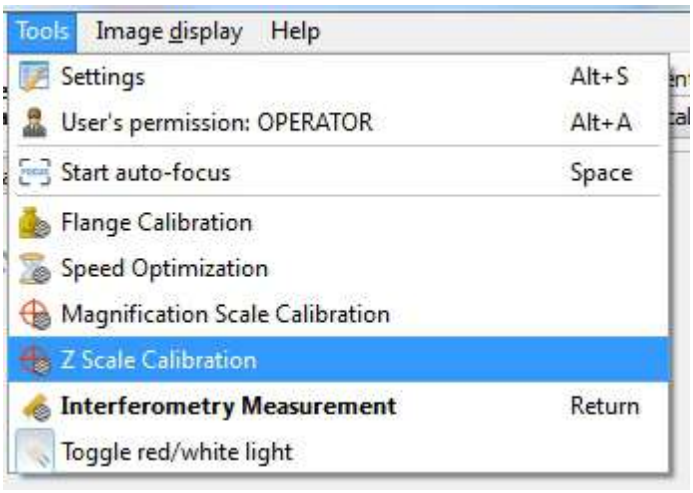
First adjust the focus. Autofocus enables you to obtain interference fringes on the step height. (see below)

Z scale calibration – Wizard Selection

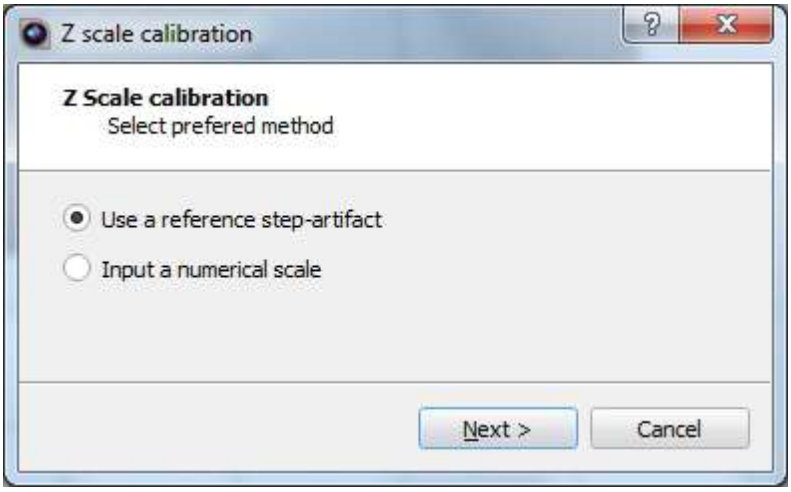
The user is asked to enter the Step-height value. Using this value the software will automatically calibrate the Z scale. (Step-height value is written on the Artefact Certificate)

1. Z scale calibration wizard shortcut is located in the Tools menu entry (“Tools” -> “Z scale calibration” ->

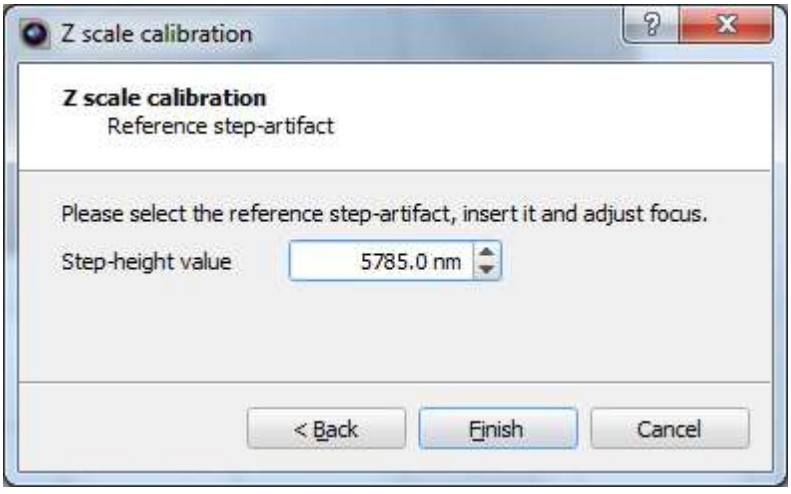
"use a reference step-artifact").



2. Select "Use a reference step-artifact"

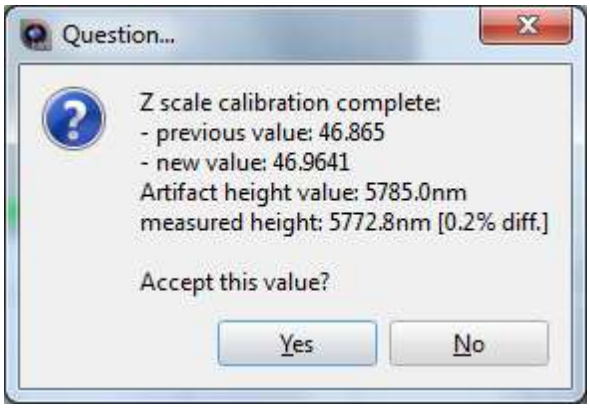


3. Enter the Step-height value and select "Finish"



4. The software offers a new value and it will replace the old value with the new value. The value is saved

by clicking the “Yes” button.



Repeat the above step until you achieve the same value as on the Artefact Certificate.

Procedure for Verification / Recalibration of the Daisi / Daisi MT with Blink

Introduction

Required Materials:- SC APC or LC APC Artefact, Flange 1.25 / Flange 2.5mm, Adaptor LC APC / ADAPTOR SC APC / SC CV2APC

Note. The following procedure is valid for both the Daisi/Daisi MT the only difference is that the procedure for the Daisi MT will use a Flange with a manual locking mechanism

Note. There are two possible way to use the APC Artefact

1. APC Artefact “Verification” to check that the angle is correct
2. APC Artefact “Calibration” to correct a possible wrong angle

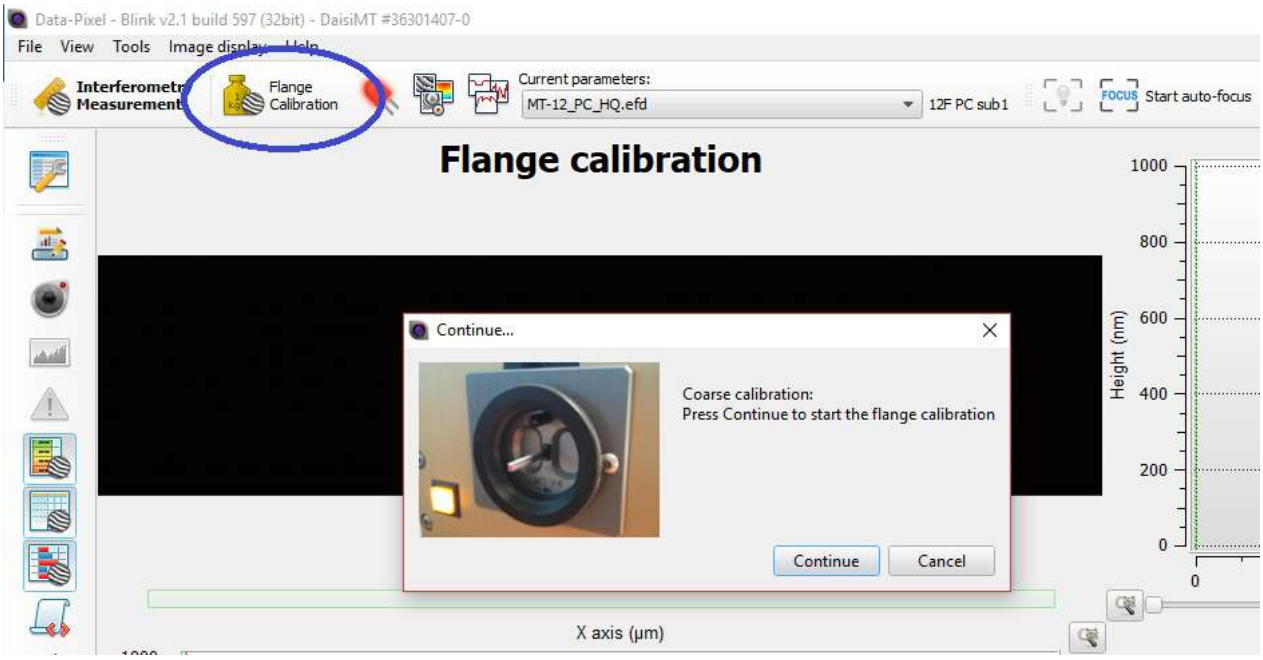
Setup

1. Confirm that the Daisi/Daisi MT is correctly set to the PC position

   Unlock the lock/release handle on the side of the Daisi/Daisi MT and slide the handle on the rear of the machine to the PC position and re-lock the side handle

2. If not already installed, mount on the front of the Daisi/Daisi MT the correct size flange to match the APC Artefact

3. Open the Blink software and perform a standard “PC” Apex calibration.



4. Unlock the lock/release handle on the side of the Daisi/Daisi MT and slide the handle on the rear of the unit to the APC position and re-lock the side handle.

5. Insert into the flange the corresponding APC Adaptor to match the APC Artefact to be used

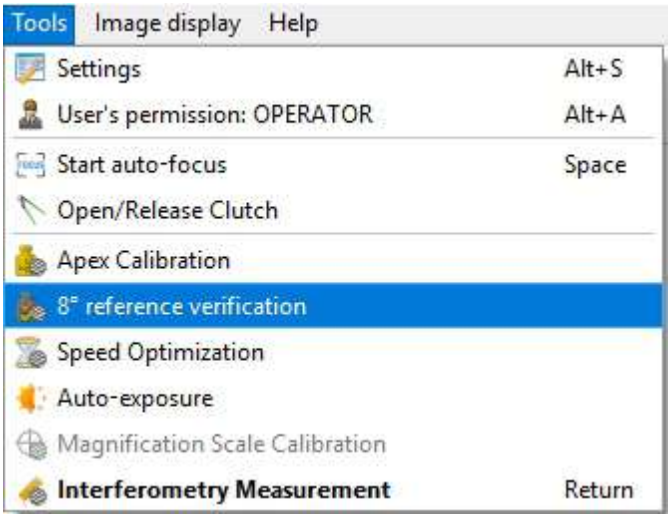
6. Select from the drop down menu an APC 8 Degree sdf file.

7. Insert the APC Artefact into the Flange and focus on the endface sureface.

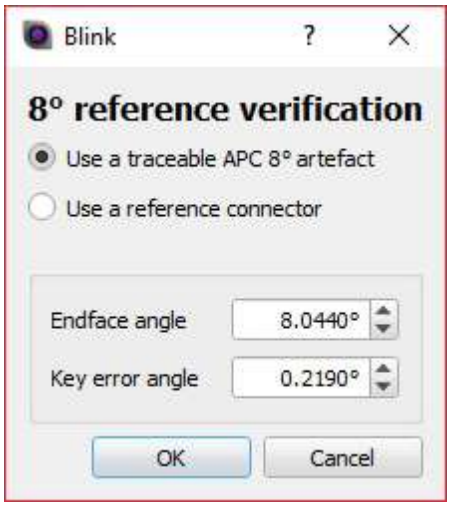
APC Artefact Verification

Note. This Process will verify the internal angle of the Daisi/Daisi MT without adjusting the calibration of the machine

1. In the tools menu and select “8º reference validation”



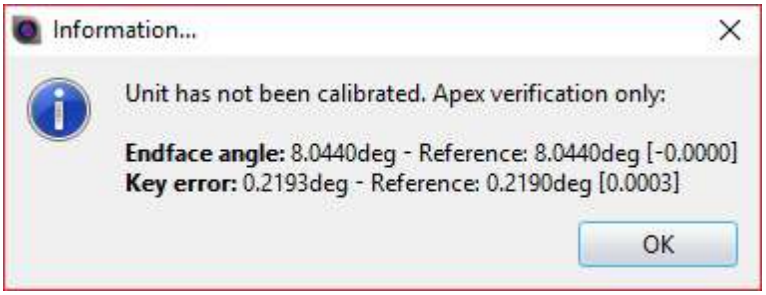
2. Enter into the two boxes the values found on the APC Artefact Certificate.



Note. For the SC-APC Artefacts you may fine two values for the Key error angle (Key Error Angle A / Key Error Angle B) Depending on which SC-APC Adaptor being used it will alter which value to input into the software.

SC-APC Adaptor	=	Key Error Angle A
SC-CV2-APC Adaptor	=	Key Error Angle B

3. Click OK



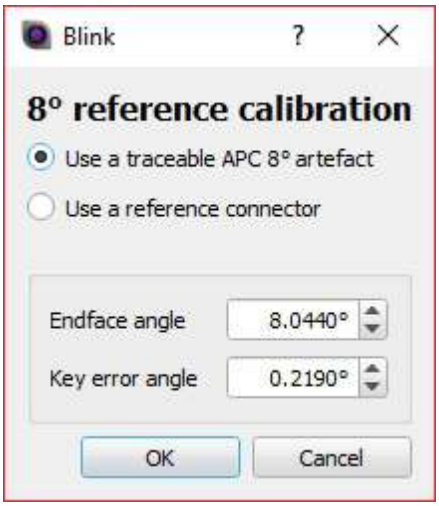
The Blink software will now show the Values for the Enface Angle and Key Error Measured compared to the Values on the Artefact Certificate.

APC Artefact Calibration

Note. This Process with Recalibrate the Internal angle of the Daisi/Daisi MT by adjusting the calibration of the machine

1. Select the Apex Calibration

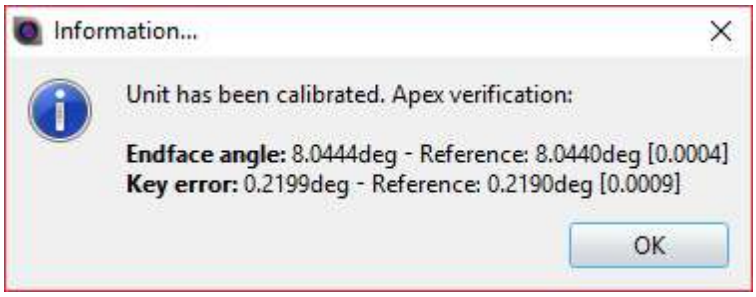
2. Enter into the two boxes the values found on the APC Artefact Certificate.



Note. For the SC-APC Artefacts you may fine two values for the Key error angle (Key Error Angle A / Key Error Angle B) Depending on which SC-APC Adaptor being used it will alter which value to input into the software.

SC-APC Adaptor	=	Key Error Angle A
SC-CV2-APC Adaptor	=	Key Error Angle B

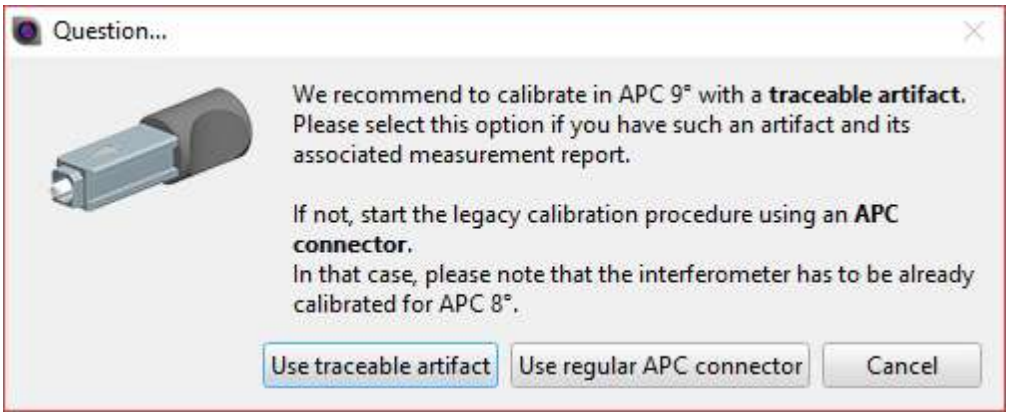
3. The Blink software will now recalibrate the unit and display the results


Information...
Unit has been calibrated. Apex verification:
Endface angle: 8.0444deg - Reference: 8.0440deg [0.0004]
Key error: 0.2199deg - Reference: 0.2190deg [0.0009]
OK

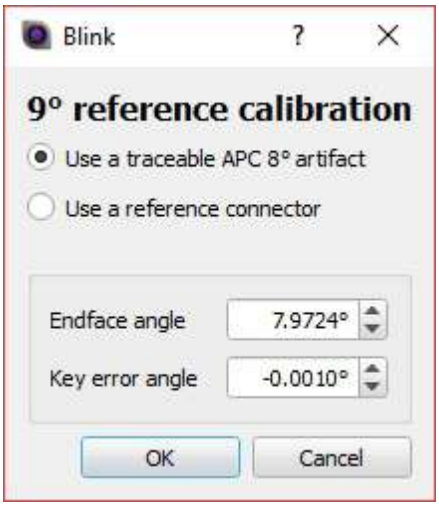
APC 9 Calibration

Before Measuring APC9 connectors you are required to first perform a PC Apex Calibration

Once a APC 9 efd file is selected from the Current Parameters drop down menu you will be presented with the following pop up message:



Use traceable artefact (Option 1 when "use traceable artefact" is select)



Insert the Artefact (with the correct APC Adaptor) and focus on the endface

Enter into the two boxes the values found on the APC Artefact Certificate and select okay.

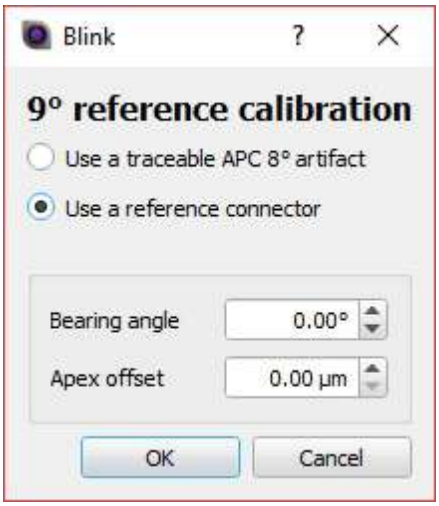
Once the calibration is complete you will receive a message confirming the calibration is complete

Note. For the SC-APC Artefacts you may fine two values for the Key error angle (Key Error Angle A / Key Error Angle B) Depending on which SC-APC Adaptor being used it will alter which value to input into the software.

SC-APC Adaptor = Key Error Angle A

SC-CV2-APC Adaptor = Key Error Angle B

Use traceable connector (Option 2 when "use reference connector" is select)

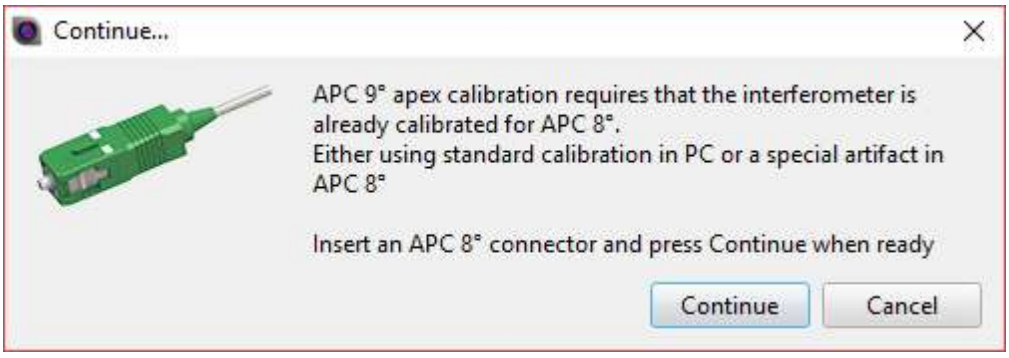


Insert the reference connector (with the correct APC Adaptor) and focus on the endface.

Enter into the two boxes the values found for the bearing and Apex offset on the Reference Connector Certificate and select okay.

Once the calibration is complete you will receive a message confirming the calibration is complete

Use regular APC connector



Insert the connector (with the correct APC Adaptor) and focus on the endface and select continue.

Once the calibration is complete you will receive a message confirming the calibration is complete

Data-Pixel Product Calibration Recommendations

The information below details the recommended calibration intervals for all Data-Pixel Products and Artefacts

Daisi/Daisi v2

Type of Calibration	Interval	Method
Mechanical Maintenance/Calibration*	1 Year	Performed at Data Pixel
XY Scale Calibration*	3 Years	Double Reference Lens
Mechanical APC Angle Calibration*	1 Year	Performed at Data Pixel

Daisi MT/ Daisi MTRJ

Type of Calibration	Interval	Method
Mechanical Maintenance/Calibration*	1 Year	Performed at Data Pixel
XY Scale Calibration*	3 Years	Light Source/MT Elite
Z Scale Calibration*	3-6 Months	Step Height Artefact
Mechanical APC Angle Calibration*	1 Year	Performed at Data Pixel

3D Scope / 3D Scope V2

Type of Calibration	Interval	Method
Mechanical Maintenance/Calibration*	1 Year	Performed at Data Pixel
XY Scale Calibration*	3 Years	Double Reference Lens

Koncentrik V2

Type of Calibration	Interval	Method
Mechanical Maintenance/Calibration*	1 Year	Performed at Data Pixel
Magnification Scale*	3 Years	Reference Ferrule
Module Ferrule Rotation Motor*	1 Year	Performed at Data Pixel

Calibration Artefacts

Type of Artefact	Interval	Method
Double Reference Lens	3 Years	Performed at Data Pixel
Step Height (Z Scale)	3 Years	Performed at Data Pixel
APC Artefact (LC/SC-APC)	3 Years	Performed at Data Pixel

Note: - No calibration is required for the Dscope product line
-* Also performed at Data-Pixel during full maintenance service

Cleaning
Flange Sleeve Cleaning

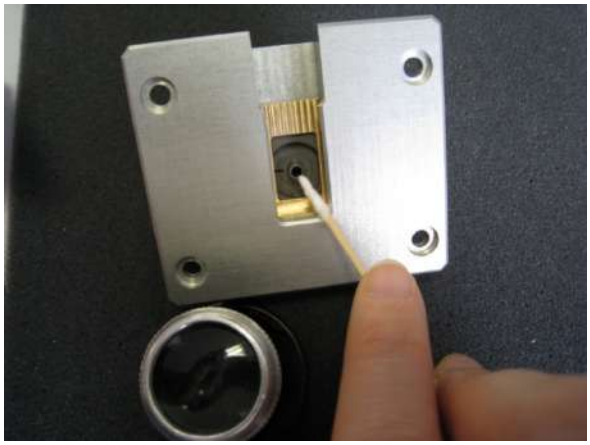
Necessary tools *: A thin paper sheet, an optical magnifier glass x5 or x10, a special clean brush for 2.5 mm sleeve or a toothpick, cotton ball, alcohol (isopropanol), air duster*

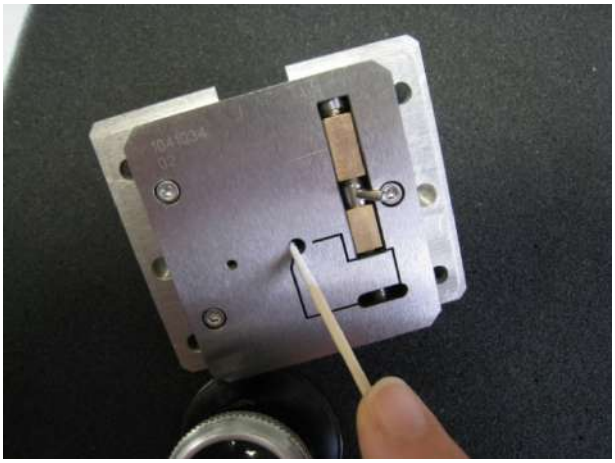
- After many measurements performed, the sleeve can be dirty and should be cleaned. There are three steps as well.Cleaning the sleeve slot : Use some paper sheet or something harder but very thin to insert in the flange slot – See ***picture1*** -. Push the paper until there is no more dust in the slot. To finish the slot cleaning, use the air duster.

- Cleaning the sleeve : Use a special brush or a toothpick with some cotton at the end. Add some isopropanol and insert it in the sleeve like showed in ***picture 2***. Repeat this operation as many times as necessary. Use the magnifier glass to determine when the sleeve is perfectly cleaned.

- Cleaning behind the sleeve : Use the same toothpick with some cotton and alcohol and gently clean behind the sleeve – See ***picture 3*** - . There can be some dust in the small part of the flange where there is no sleeve. Use the magnifier glass too, to verify the cleanliness

- Finally, use the air duster in the sleeve. Verify the sleeve is well cleaned with the magnifier glass.

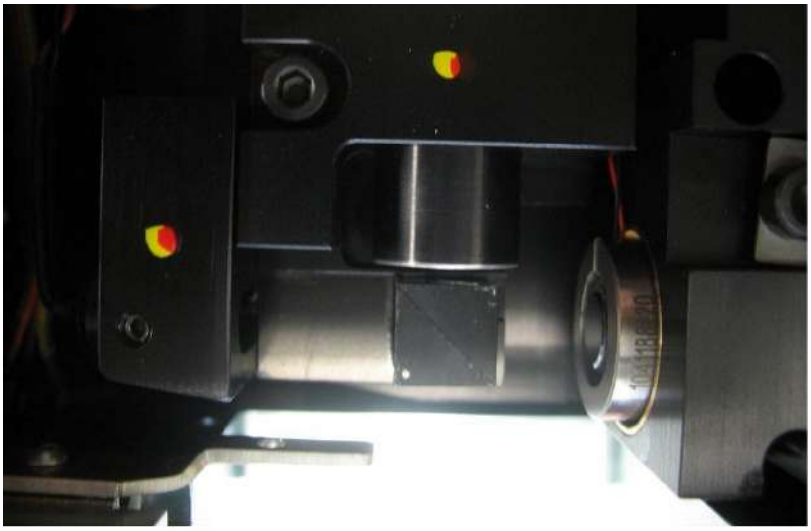


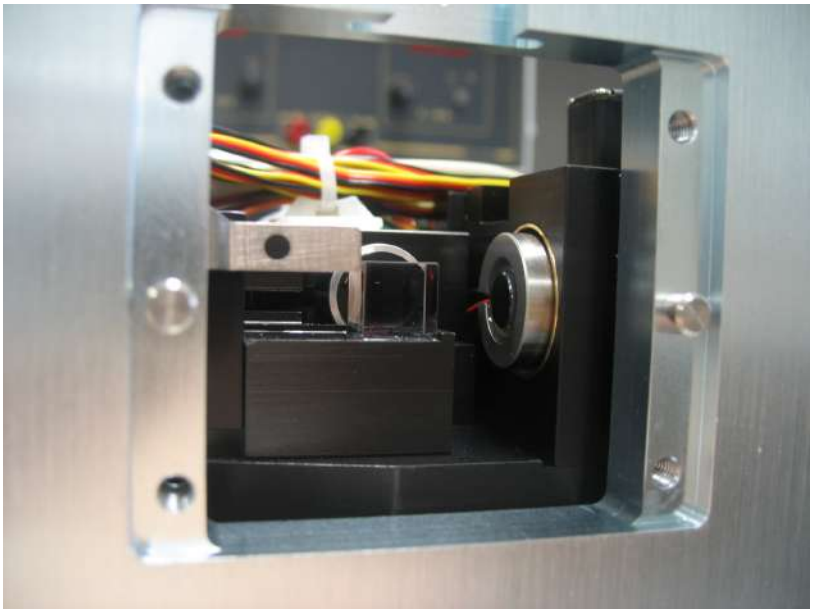


Daisi Cleaning

NEVER USE CANNED AIR TO CLEAN YOUR MACHINE !!

If you see distinct well focused spots on the screen, then first clean the reference mirror, you can also clean at the same time the beam-splitter cube if it is dirty (But this will not cause spots/dirts on the image)





I. CLEANING THE REFERENCE MIRROR

Tools and pieces *: Pure Alcohol, Cotton-buds*

- Remove the clutch off the machine
- Use a clean cotton-bud and pure isopropyl to gently wipe the reference mirror. Beware not to press too hard on it.
- Verify there is no cotton-bud threads in the machine before putting the clutch back.

II. CLEANING THE BEAMSPLITTER

Tools and pieces *: Pure Alcohol, Cotton-buds*

- The machine opened (no clutch), use a cotton-bud and pure isopropyl to gently wipe the surface of the beamsplitter (you can clean the front face and both of the sides.
- If the beam-splitter is very dirty, use several cotton-buds.
- BEWARE NOT TO LET SOME ISOPROPYL TRACES ON THE BEAMSPLITTER
- Put the clutch back on the machine.

Appendix

Standards

Below are some IEC standards describing some of the geometric parameters of ferrules. Check the IEC website (www.iec.ch) or your national standards organization for most up-to-date information.

Single Fiber:

- **IEC EN 61300-3-16 :** Endface Radius of spherically polished ferrules
- **IEC EN 61300-3-25 :** Fiber Position relative to ferrule endface
- **IEC EN 61300-3-15 :** Dome eccentricity of a convex polished ferrule endface
- **IEC EN 61300-3-17 :** Endface angle of angle-polished ferrules
- **IEC EN 61300-3-18 :** Keying accuracy of an angled connector
- **IEC EN 61300-3-37 :** Enface angle of angle-polished fibres
- **IEC EN 61300-3-47 :** Examinations and measurements - Endface geometry of PC/APC spherically polished ferrules using Interferometry
- **IEC EN 61755-3-1 :** Optical interface, 2.5 mm and 1.25mm diameter cylindrical full zirconia PC ferrule, single mode fiber
- **IEC EN 61755-3-2 :** Optical interface, 2,5 mm and 1,25 mm diameter cylindrical full zirconia ferrule for 8degrees angled-PC single mode fibre
- **IEC EN 61755-3-5 :** Optical interface –2,5 mm and 1,25 mm diameter cylindrical PC composite ferrule using Cu-Ni-alloy as fibre surrounding material, single mode fibre
- **IEC EN 61755-3-6 :** Optical interface – 2,5 mm and 1,25 mm diameter cylindrical 8 degrees angled-PC composite ferrule using Cu-Ni-alloy as fibre surrounding material, single mode fibre
- **IEC EN 61755-3-7 :** Optical interface – 2,5 mm and 1,25 mm diameter cylindrical PC composite ferrule using titanium fibre surrounding material, single mode fibre
- **IEC EN 61755-3-8 :** Optical interface, 2,5 mm and 1,25 mm diameter cylindrical 8 degrees angled-APC composite ferrule using titanium as fibre surrounding material, single mode fibreList of keywords for html report and database templates
- **IEC EN 61755-3-9 :** Optical interface, 2,5 mm and 1,25 mm diameter cylindrical PC ferrule for reference connector, single mode fibre

Multi Fiber:

- **IEC EN 61300-3-30 :** Measurement of square optical interfaces
- **IEC EN 61755-3-4 :** Square optical interfaces Flat
- **IEC EN 61755-3-3 :** Square optical interfaces Angled
- **IEC EN 61755-3-31:** Optical Interface - 8 degrees angled PC end-face PPS rectangular ferrule, single mode fibres
- **IEC EN 61755-3-32 :** Optical Interface - 8 degrees angled-PC end-face Thermoset rectangular, single mode fibres

Common keywords

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Custom fields

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Plugin specific keywords

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Operating Conditions

This device is designed to function within the following environmental conditions

- Temperature 10-35 °C
- Humidity 5 to 95 %, Non-condensing

Spare Parts Statement

Data-Pixel takes no responsibility for the measurement results obtained on any of our products when used with non official replacement parts