FIBER AUTO INSPECTON SYSTEM (FAIS)

OPERATIONAL MANUAL V1.1.1

Notice

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Warranty

HM Solution Co.,Ltd warrants this equipment to be free of defects in material and workmanship for one (1) calendar years from the date of purchase. Any mishandling or unauthorized repairs will void this warranty. For additional warranty terms and conditions, please contact HM Solution Co.,Ltd

Contents

REVISION RECORD

REV NO	REV DATE	DESCRIPTIONS
1.1	MAY,2022	Initial Release
1.1.1	JAN,2023	Adding Home Position Correction Method Modifying Color appearance of pass/fail events
1.1.1	JAN,2023	Modifying several images & descriptions

ABOUT THIS MANUAL

In this manual is provide operational information about FAIS with FAIS Application Software

- FAIS Physical Identifying

- FAIS Detail Descriptions of Functions

- FAIS Operating

- FAIS Application Software & other software's

For more information, Please contact HM Solution Co.,Ltd.

INSTALLATION ENVIRONMENT

Please read carefully following guidance of installation

Vibration Issues

Background:

Because of their precise nature, inspection measurements are sensitive to vibration. Vibration can occur from rotating machinery, nearby traffic, acoustic noise and a variety of other sources. Touching the system or the surfaces on which it sits during measurements can also affect the measurements.

System placement considerations:

The system should be placed on a solid support away from obvious sources of vibration (e.g., rotating machinery). Ideally, the system should rest on a separate surface so that vibrations from using the computer keyboard and vibrations from other activities are not transferred through the surface to the system.

Vibration Isolators:

If the vibration is present even after the system is located on its own surface away from vibration sources, then additional vibration isolation needs to be employed. A low-cost solution for vibration isolation is to place the system on a piece of vibration isolation material such as Sorbothane. More sophisticated vibration isolation tables are available from external source.

SAFETY NOTIFICATION

For the continuing safety of the operators of this equipment, and the protection of the equipment itself, the operator should take note of the Warnings, Cautions and Notes throughout this handbook and, where visible, on the product itself. The following safety symbols may be used throughout the handbook and on the equipment itself.

⚠	**Warning: Risk of Electrical Shock** Given when there is a risk of injury from electrical shock.

⚠	**Warning** Given when there is a risk of injury to users

⚠	**Caution** Given when there is a risk of injury to users

General Warning

⚠	**Warning** These Motorized Actuators can generate high forces. If handled improperly, they may cause injury. Be aware that failure of the motor controller may drive the unit into a hard stop and cause damage to the unit. To avoid injury never put anything in the gap between the Actuator and any rigid structure. Because it can be software controlled it should be noted that this device could begin to move unexpectedly for a person within its envelope of operation who had not programmed the move.

⚠	**Warning** If this equipment is used in a manner not specified in the handbook, the protection provided by the equipment may be impaired. In particular, excessive moisture may impair operation. Spillage of fluid, such as sample solutions, should be avoided. If spillage does occur, clean up immediately using absorbent tissue. Do not allow spilled fluid to enter the internal mechanism. The equipment is for indoor use only.

⚠	**Caution** If the actuator encounters a hard stop while still in the middle of its range (i.e., a translation stage at the end of its travel range), the motor should be stopped as soon as possible to prevent damage and to keep the unit from overheating.

⚠	**Caution** When storing these units, be sure to fully retract the lead screw to protect the threads from damage. Improper connection of the motor will result in permanent damage. All power supplied to the motor should be turned off before altering any connections to the motor. Check all connections before supplying power to the motor.

FIBER AUTO INSPECTION SYSTEM OVERVIEW

FIBER AUTO INSPECTION SYSTEM is an automated inspection system that can perform end face quality inspection according to IEC61300 standardization and it's applied with

- Polishing holder itself after polished a passive element such as a ferrule, connector and others
- Optical Transceiver or receptacle module
- Passive or Active Optical Box like as Splitter and Mux/Demux

And FAIS is providing innovative efficiency performance in the manufacturer of passive / active devices components. Most advanced features are providing "Auto Positioning", "Auto Centering", "Auto Focusing" and "Auto Inspection".

"**Auto Positioning**" - it's providing capability to apply different shape of polishing holder

"**Auto Centering**" - it's providing capability to make best position by center

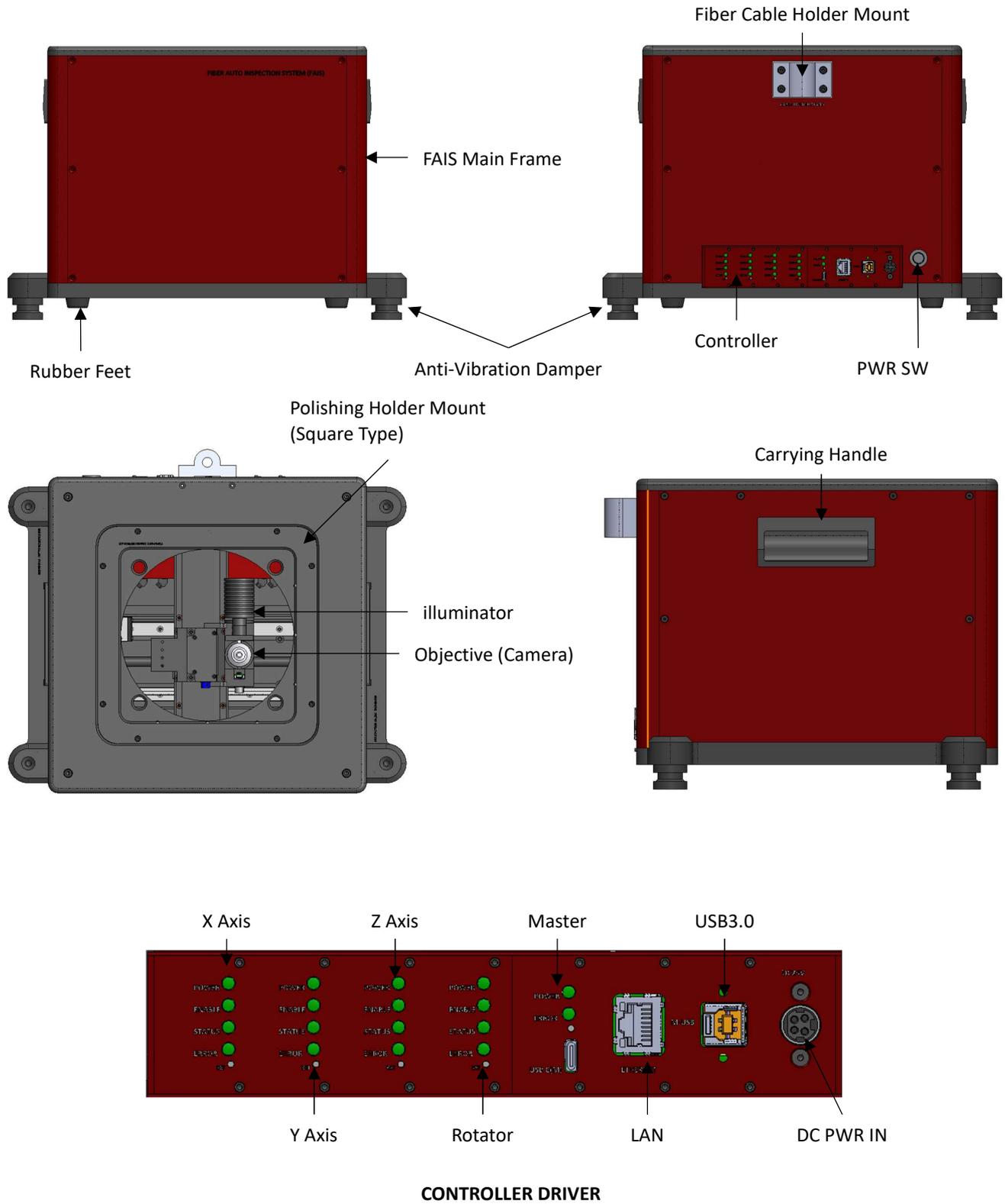"**Auto Focusing**" - It's providing capability to make a fast focusing before inspection

"**Auto Inspection**" - It's providing constant inspection result without any effort

The central data management solution also helps to automate the measurement results of each inspection device to revolutionize production quality control

FAIS APPEARANCE IDENTIFYING

Below is shown the appearance description of FAIS including Controller

Fiber Cable Holder Mount

FAIS Main Frame

Controller

PWR SW

Rubber Feet

Anti-Vibration Damper

Polishing Holder Mount
(Square Type)

Carrying Handle

illuminator

Objective (Camera)

X Axis

Z Axis

Master

USB3.0

Y Axis

Rotator

LAN

DC PWR IN

CONTROLLER DRIVER

PREPARING BEFORE OPERATION

Operator must follow guidance before operating FAIS

Place a FAIS to less or non-vibration table or workbench – FAIS is equipped anti-vibration system

Visual inspection for FAIS surface – checks any damaged or broken

Visual inspection for FAIS inside – Checks any unexpected substance or others

Prepare and check rated AC/DC Power Adaptor for input power to FAIS – 24VDC / 5A

Prepare USB3.0 cable which is given as originally.

After power on the FAIS, check Controller Driver LED indicator on back side of FAIS which is no "Error" on the LED

Prepare operational PC/Laptop with installation USB memory stick (Only require first operation or installation)

Note 1) If FAIS has cleaning option, please check input air pressure level whether it is within range or not

Note 2) If FAIS has an interferometer option, please check optic-mechanical head condition

MINIMUM SPECIFICATIONS FOR OPERATION

This is minimum operational specifications of desktop or laptop for FAIS operation. FAIS is using high-speed & high-resolution image camera module. If lower specification will be occurred unexpecting issue during operation.

| PARAMETERS	SPECIFICATIONS	NOTES
Operation System	Windows 10 or above	
CPU	Intel 7th i5 or above	
RAM	8G or above	
USB	USB3.0 or above	

MAKE A CONNECTION

FAIS is required make a connection with PC/Laptop device via USB3.0 AM to BM cable. If you use USB2.0 cable, performance maybe less than original

⚠️	**Warning** USB3.0 cable should use shielded cable against with EMI

USB3.0 AM to BM
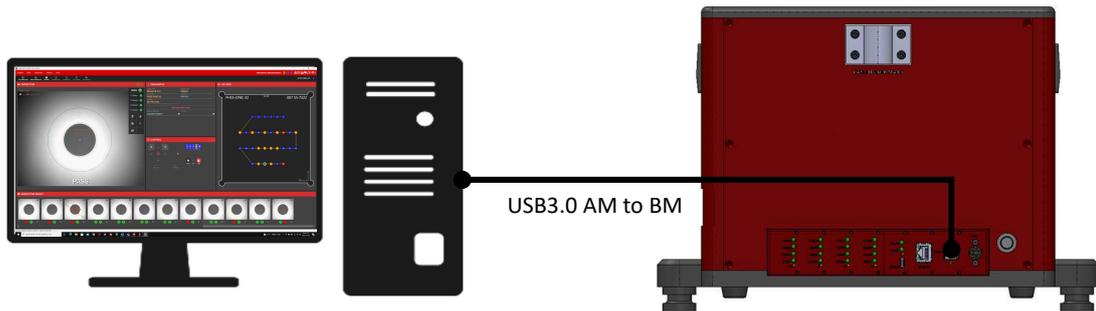
Note 1) High resolution display is provided better environment during operating
Note 2) Recommend to use Desktop PC at manufacturer environment.

FAIS SOFTWARE INSTALLATION

For operating FAIS, there are need to install several application software and driver as below,

1. FAIS Application software
2. Third-Party Camera Application Software
   - MindVision
   - Spinview (Optional)
3. Database
4. Controller Driver
5. Holder profile

All required software or driver are providing with FAIS and It is into USB memory stick.

In case of Holder profile, User need to copy and paste from USB memory stick to any folder of operational PC.

There are two methods for installation. One is via software package installation and the other is manual installation.

Software package installation is easier and faster than manual installation. User able to download software package via below link or visit HM Solution site
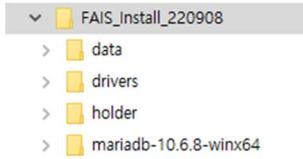
Download software package

[Note]

Please check software package version whether it is latest version or not before start installation.

Installation FAIS application software via software package

After extract file in the USB memory stick, you can find below folders.

Before software installation is begin, FAIS should be connected with controller PC with turn on the power.

Executing "FAIS_Installer.exe" into FAIS_Install folder. Then you can see below installation menu.
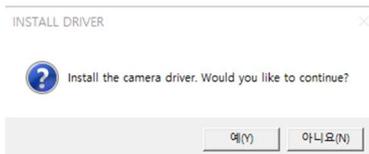

Following below install steps,

Step 1. Install camera driver

Step 2. Database installation

Step 3. FAIS installation

Click "Install camera driver (Windows 10)" then begin installation of camera driver. During installation, system will pop up the windows. Select "Yes"

Click "Database installation" then begin installation of Database installation. During installation, system will pop up the windows. Select "Yes"

Click "FAIS installation" then begin installation of FAIS installation. During installation, system will pop up the windows. Select "Yes"

After installation is completed, you can check whether all software been installed well or not.

# Installation FAIS application software by manually

Installation of software is requiring step by step as following

1. Install Camera Application Software

2. Install database

3. Install FAIS Application Software

4. Install Controller Driver

Installation Camera Application Software

There are two type of camera application software should be installed separated.

1. Install MindVision – following MindVision installation manual
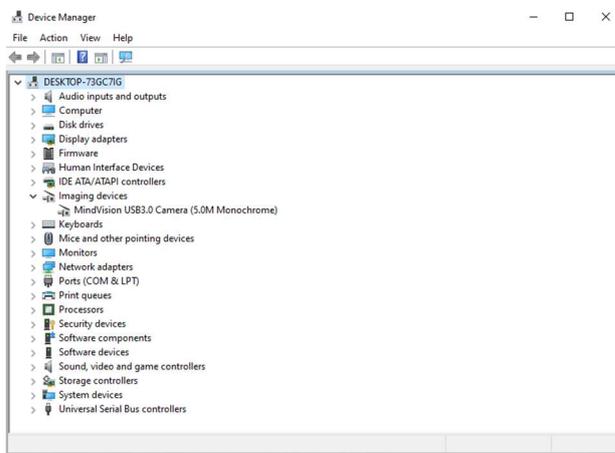
2. Install SpinView – following SpinView installation manual

Installation Database

For database installation, Go to database folder

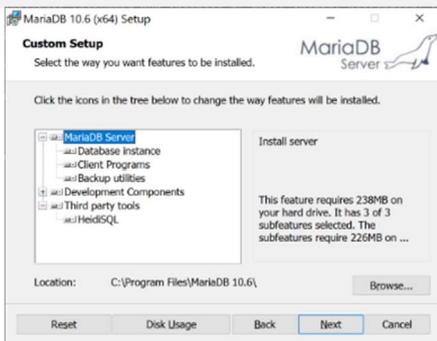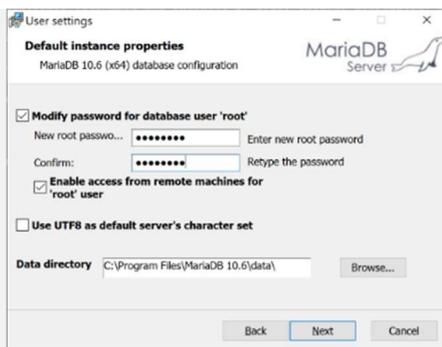Execution "mariadb-10.4.12-winx64.msi"

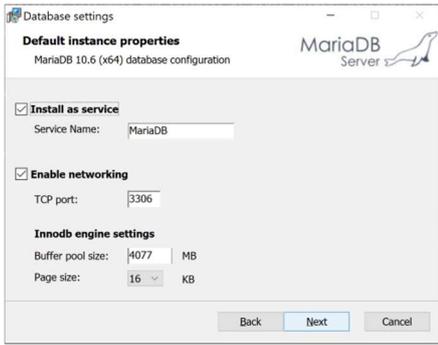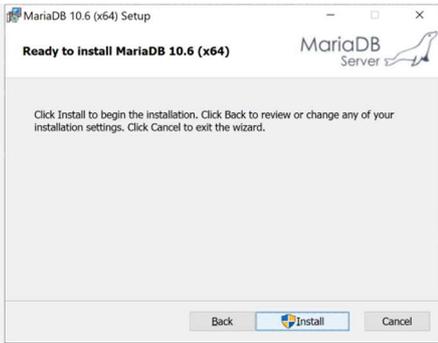|	
	Press "Next"
	Check "Agreement check box" Press "Next"
	No need to change anything Press "Next"
	check "Modify password for database user "root" Enter new root password by "fais0102f!" Confirm is type the same password above Uncheck "Enable access from remote…" Check "Use UTF8…" Press "Next"

No need to change anything

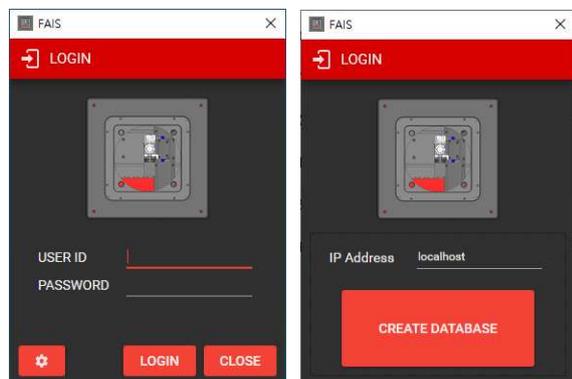Press "Next"

Press "Install"

Then start installation

Press "Finish"

Installation FAIS application software

For install FAIS application software, Go to FAIS APP folder and execute "FAIS_setup.exe" and then start installation

After installation is completed, please follow below steps

Note 1) Database must be installed before install FAIS application software

Executing FAIS by "FAIS.exe" on the desktop

Pop up the LOGIN windows

Click [⚙] icon

Default IP address: localhost

(If use own database via network, It is needed to type the IP address with port number)

Press "**CREATE DATABASE**" then internal database is automatically created and activated.

Return to LOGIN main page and type the ID/PW for start FAIS Application software

Default ID / PW is admin / admin

Installation Controller Driver

In case of Windows 10 or above, controller driver is automatically recognized and installed into Windows. If error message is appeared during driver installation, please refer to following step

GETTING STARTED

First connection with FAIS

Note) This step is for first connection with FAIS only after installation is completed.
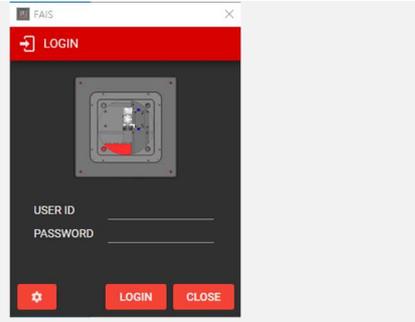
FAIS Application Software execution on Windows

During FAIS application software is loading, it is automatically version check with server.
If version update is not required, a LOGIN windows will appear.
If version update is required, you can select version update

Type the ID and Password
(Default administrator ID/PW is admin/admin)

After executing FAIS application software, Camera module can be excuted.
Then User requires following setting before normal operation

Go to DATA > Device Management for register new FAIS device into Database
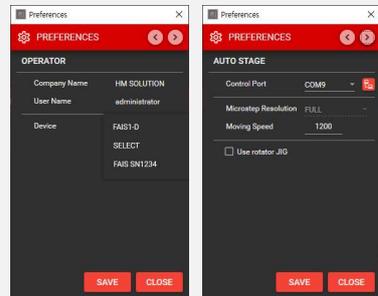On the Device Management,
1. Type the Device Name
   e.g. FAIS SN1234
2. Type the Description
   e.g. Fiber Auto Inspection System
And press "Save", then it is listed into Device List
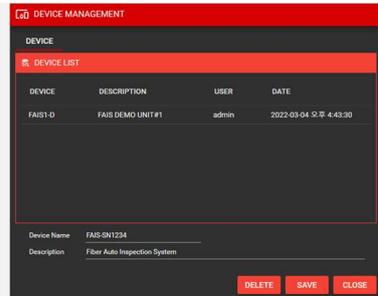
Go to System > Preference > Operator
Select FAIS device you are operating from the list
Then press "Save"

Go to SYSTEM > Preference > Auto Stage
In the Control Port, Select COM port which is corresponding with FAIS,
(e.g., COM9 or others)
Then press "Save" and click [icon] icon.
FAIS application software tri**es** to make a connection with FAIS or Quit software/and re-execute FAIS application software

If the connection between FAIS and FAIS Application Software is successful, you will see some indication without any pop-up error messages.

Camera Activated

Controller Activated

If you want to add (or remove/edit) User, then Go to Data > User Management
Typing the following filed and press "Save"

User ID	HMS	Password	••••	Confirm Password	••••
Name	David	Company	HM Solution		
Description	ID1235				

Then new user is listed in database.
You can log-in new user after quit/restart FAIS Application Software

Home Position Correction & Reset Position

Note) This step should be executed as needed. (Factory Preset)

Home Position Correction is a function that sets the position of the camera accurately.
There are two methods, one is using polishing holder and the other is using reference ferrule of square holder mount of FAIS itself.

In case of using polishing holder for home position correction, it is **required** to take an addition 'Reset Position' action after perform it.

In case of using reference port for position correction, it is **NOT required** to take an additional action.

Using Polishing Holder

Place any polishing holder (recommend to use linear holder like as PH55-FF-40)

Press 'Ctrl + H + C' to perform Home Position Correction

Press "Yes"
Then Camera is moving to 1st port of polishing holder.

Adjust LED brightness to show any end surface of holder. Then adjust X, Y, Z position to make sure center of 1st port ferrule as right photo. (Not required focus)

And then press "Update". If position is already good, press "Cancel"
Note) This step is only making a reference of X and Y axis.

After performed "home position correction", then press "Reset Position" on CONTROL.
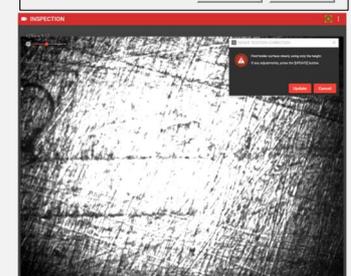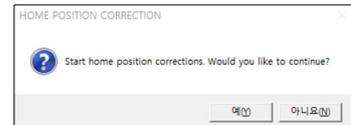
'Reset Position' is function to set reference height of camera from edge of polishing holder bottom surface.

Press "Yes" and then following below steps,
-   Adjust LED brightness
-   Adjust Z axis height by manual keypad

Adjust Z axis until recognize end surface of polishing holder as right photo
Once focus is clear, then press "Update"

Using Reference Ferrule (Recommended)

Press 'Ctrl + H + P' to be perform Home Position Correction

Press "Yes"


Then Camera is moving to reference port of FAIS itself.
(Reference port is placed to bottom side of Square Holder Mount and inserted 1.25mm ferrule without fiber)

Adjust LED brightness to show any end face surface. Then adjust X, Y, Z position to be centered and make a focus for reference ferrule hole as right photo.

Once focus and position is good, then save Home Position Correction.
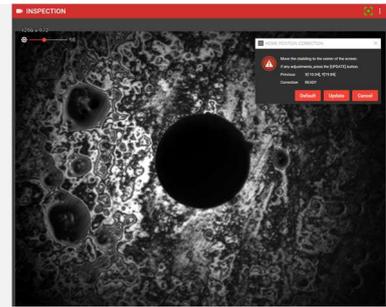
Initializing
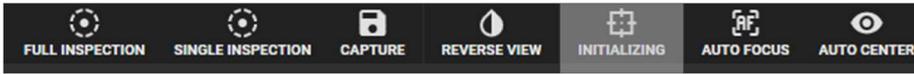
"**INITIALIZING**" is a step to set placed right position of polishing holder port depending on polishing holder's

Note) If you will place new polishing holder for inspection, it is required initializing execution at least one time.

⚠	**Warning** Before initialization, please check inside of FAIS whether any contamination or not During initialization, do not give any external shock

Place new polishing holder on the holder mount of FAIS

On the PARAMETER,
Select mounted polishing holder type in "HOLDER TYPE"
Select FIBER TYPE, PROFILE and HOLDER NO

If there is no HOLDER TYPE, please add it via HOLDER & PRODUCT MANAGEMENT
(Refer to HOLDER & PRODUCT MANAGEMENT section)

After selected all parameters, then press "**INITIALIZING**".
Then FAIS moves to first port automatically.
But it could be out of center or can't see cladding
In this case, you can adjust first port position via navigation of CONTROL.
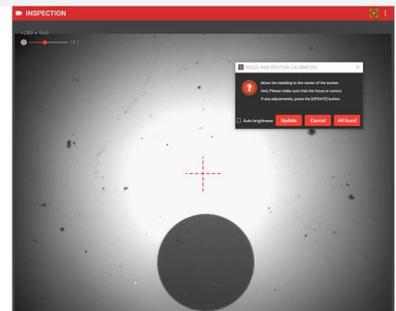

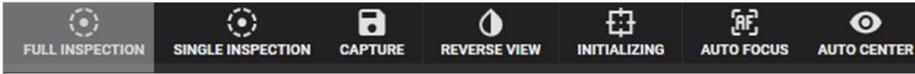Once Cladding is placed center of screen with focus, Adjust illumination.

then press "Update". New position will be updated into Database.

If position and focus is already made well, then press "ALL GOOD"

Full Inspection

⚠️	**Warning** Before full inspection, please check inside of FAIS whether any contamination or not During full inspection, do not give any external shock

Place POLISHING HOLDER on polishing holder mount of FAIS

Select "FIBER TYPE", "HOLDER TYPE", "FERRULE" and "HOLDER No" on Parameter

Click "Initializing" on quick menu – if not necessary, skip this step
(Note, Initializing is only requirin**g** one time per type of holder at the beginning)

Adjust position and focus by Control panel arrows
Adjust illumination brightness if requires

Then press "FULL INSPECTION" on quick menu, then start inspection automatically according to holder profile

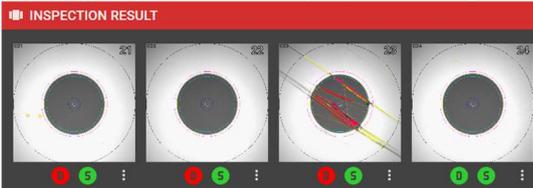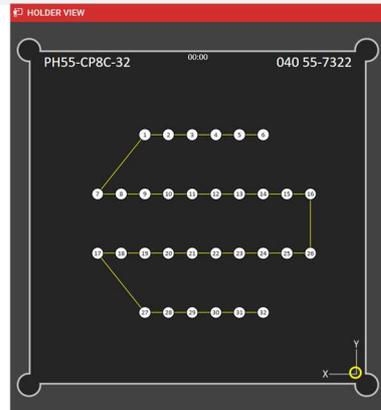After full inspection starts, INSPECTION NO is automatically allocated

During the inspection, user can find inspection result on HOLDER VIEW
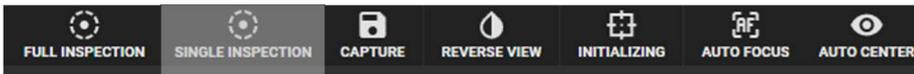- Green : Passed
- Orange : Failed by contamination
- Red : Failed by scratches or pits
- Gray : failed focus
- Black : no ferrule on the port

Also find inspection result by captured image on INSPECTION RESULT

After full inspection is done, camera return to the home position

Single Inspection

After full inspection, you can make inspection to specified port as below reason,

1. Desire re-inspection due to errors
2. Desire re-inspection due to inspection failed

Select and click desired port for re-inspection on HOLDER VIEW.
Inspection camera moves to selected port with auto center.

- If focus is already good, then press "Single Inspection"
- Or If focus is not good, then press "Auto Focus"

After that, Inspection result is quickly appeared with auto updated result in the database as well.
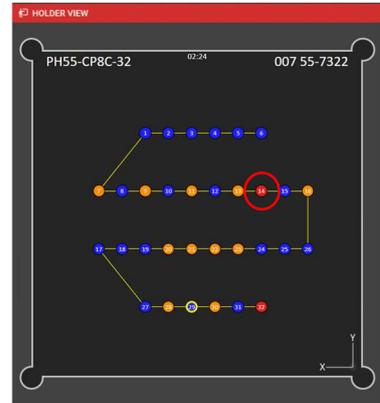
Single inspection result is shown as right sample picture.
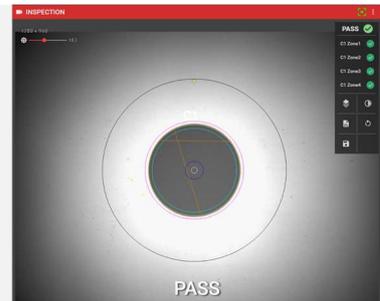
Reinspection

After full inspection, you can double check with failed port again by using **REINSPECTION** function on **INSPECTION RESULT** window

Select small menu on each result image, then select "**REINSPECTION**"
FAIS is automatically placing a position with auto center/auto focus and auto inspection.
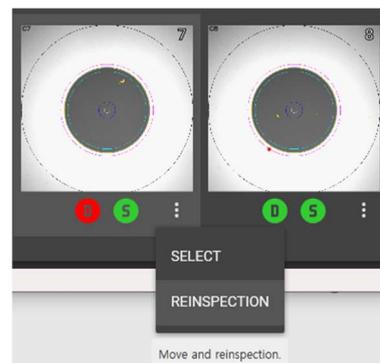
FAIS MENU TREE

FAIS Application software has below detail menu tree. This Chapter is described detail explanation of each menu.

```
Fiber Auto Inspection System
├── SYSTEM
│   ├── Preference
│   ├── Show Grid
│   ├── Controller Setting
│   └── Camera Setting
├── DATA
│   ├── Holder Management
│   ├── Holder Arrangement
│   ├── Vendor Management
│   ├── Device Management
│   ├── User Management
│   └── Product Management
├── INSPECTION
│   └── Analysis Profile
├── HISTORY
│   └── History
└── HELP
    └── About This
```
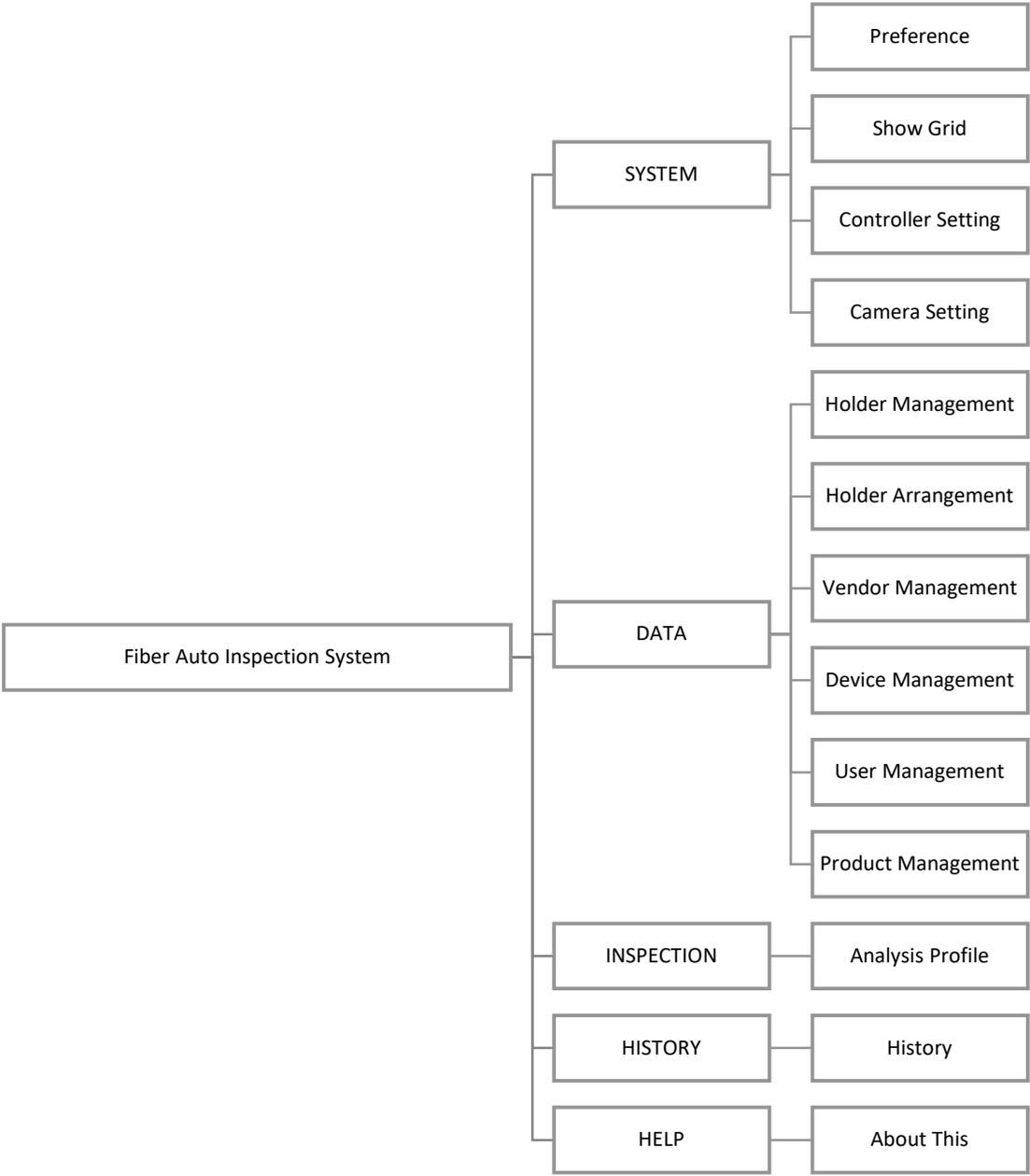
FAIS MENU DETAILED DESCRIPTION

SYSTEM > PREFERENCE

In the PREFERENCE, Set several parameters like as detection sensitivity, communication port and other functions. Below is shown each parameter description in the PREFERENCE.
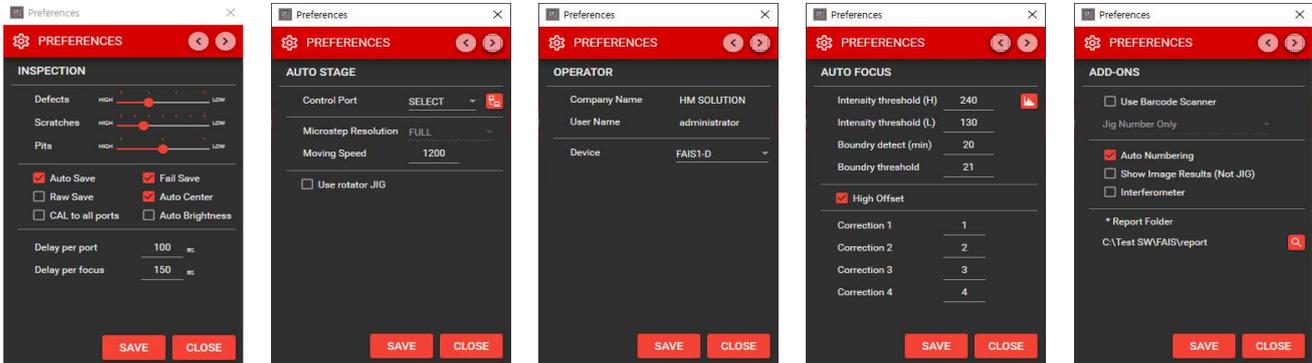
Inspection

Contents	Descriptions	Note
Outer area width	Set maximum inspection area	
Detect defects outside	Enable/Disable for outside inspection	
Defects	Set sensitivity for defects like as contamination	
Scratches	Set sensitivity for scratch	
Pits	Set sensitivity for pits	
Auto Save	Enable/Disable auto saving after inspection	
Fail Save	Enable/Disable auto saving even if inspection is failed	
Raw Save	Enable/Disable raw image saving without pass/fail categories	
Auto Center	Enable/Disable auto center function	
CAL to all ports	Enable/Disable position calibration relative with pre-port	
Auto Brightness	Enable/Disable auto brightness for illumination per port	
Delay per port	Set delay time after located to next position	
Delay per focus	Set delay time for make a focus per frame	

Auto Stage

Contents	Descriptions	Note
Control Port	Set communication port	
Use rotator JIG	Enable/Disable for rotation jig use	e.g., MT / MPO

Operator

Contents	Descriptions	Note
Company name	Typing the company name	
User name	Typing the user's name	
Device	Select FAIS device to operate	

Auto Focus

Contents	Descriptions	Note
Intensity Threshold(H)		These parameters are pre-assigned by factory.
Intensity Threshold(L)		
Boundary detect(min)		
Boundary threshold		
High Offset	Enable/Disable for high height offset compensation	**DO NOT CHANGE ANY PARAMETERS**
Correction 1	Height offset compensation 1	
Correction 2	Height offset compensation 2	

Correction 3	Height offset compensation 3	
Correction 4	Height offset compensation 4	

Add-Ons

Contents	Descriptions	Note
Use Barcode Scanner	Enable/Disable to use barcode scanner	
Auto Numbering	Enable/Disable auto result numbering	
Show image result	Pop up display inspection result after full inspection is done	
Interferometer	Optional feature	
Report Folder	Set auto save folder for inspection image	

SYSTEM > CONTROLLER SETTING

In the Controller setting, set detail controlling parameters including LAN connection.
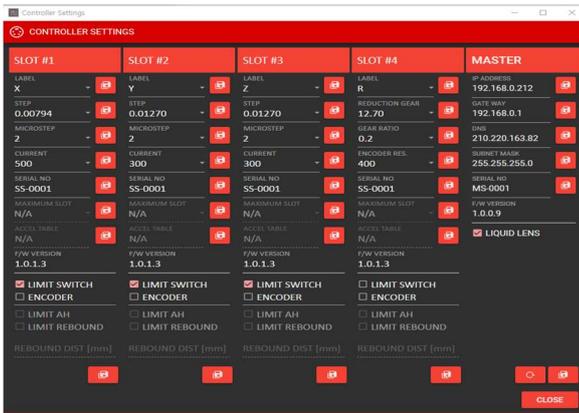
Contents	Descriptions	Note
SLOT#1 - #4	Slot #1 to #4 is for each axis control board	These parameters are pre-assigned by factory. **DO NOT CHANGE ANY PARAMETERS**
LABEL	Enter name of each slot	
STEP	Set um per step if requires	
MICROSTEP	Set Microstep if requires	
CURRENT	Set Current value if requires	
SERIAL NO	Set Serial Number	
F/W VESION	Display F/W version information	
LIMIT SWITCH	Enable/Disable Limit Switch	
ENCODER	Enable/Disable Encoder	
IP ADDRESS	Set IP address for networking	
GATEWAY	Set Gateway	
DNS	Set DNS	
SUBNET MASK	Set Subnet mask	
LIQUID LENS	Enable/Disable Liquid lens	

SYSTEM > CAMERA SETTING

In the PREFERENCE, Set several parameters like as detection sensitivity, communication port and other functions.
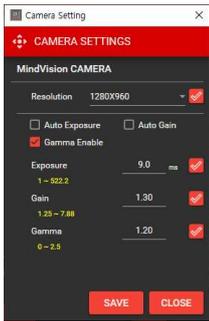
Contents	Descriptions	Note
MindVision or other	Display current type of camera	
Resolution	Set resolution of camera	
Auto Exposure	Enable/Disable Auto exposure (default : off)	
Auto Gain	Enable/Disable Auto Gain (default : off)	Do not change this fields
Gamma Enable	Enable/Disable Gamma (default : on)	
Exposure time	Set the value of Exposure	
Gain range	Set the value of Gain	
Gamma range	Set the value of Gamma	

DATA > HOLDER MANAGEMENT

In the DATA, create polishing holder profile included holder type, connector type and vendor with requires information for inspection including User, Device information

Holder Management

Depending on type of polishing holder(jig), user able to add/delete/modify the holder. More detail information of how new holder creation, refer to **Holder & Product Management section**

Holder Management & Holder Arrangement

User can add/delete/modify holder profile via Holder Management. Also importing pre-defined SG holder profile via "IMPORT" function.
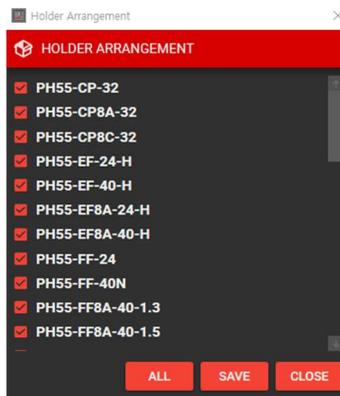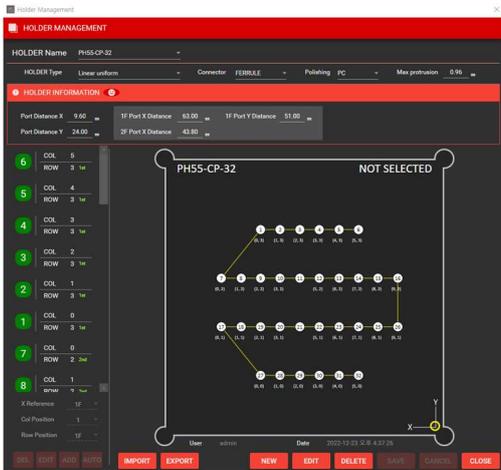
Parameters	Descriptions	Note
IMPORT	Import new holder profile from selected folder	
EXPORT	Export current holder profile to template folder	
NEW	Create new holder profile	
EDIT	Edit existed holder profile	
Delete	Delete existed holder profile	

Holder Arrangement is function that show or hidden in the selection menu of parameter.

Parameters	Descriptions	Note
ALL	All holder selection or deselection	
SAVE	Saved selected holder to show or hidden	
CLOSE	Close holder arrangement window	

Vendor Management

Vendor management is registering the manufacturer of polishing holder (Jig)

Parameters	Descriptions	Note
VENDOR NAME	Enter new vendor name of polishing jig	
Description	Enter explanation of vendor	
Delete	Delete selected vendor	
SAVE	Save new vendor	
CLOSE	Close window	

Device Management

Registering multiple FAIS device for management

Parameters	Descriptions	Note
Device NAME	Enter new FAIS device name	
Description	Enter explanation of FAIS device	
Delete	Delete selected device	
SAVE	Save new device	
CLOSE	Close window	
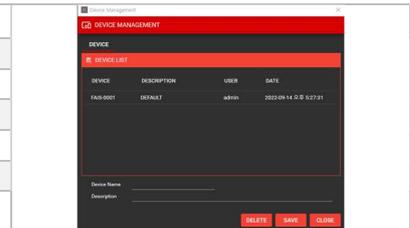
User Management

Parameters	Descriptions	Note
USER ID	Enter new user ID	
Password	Enter password	
Confirm pw	Enter and confirm password	
Name	Save new device	
Company	Close window	
Description	Enter explanation of user	
NEW	Register new user	
EDIT	Edit user information	
DELETE	Delete selected user	
SAVE	Save new user	
CLOSE	Close window	
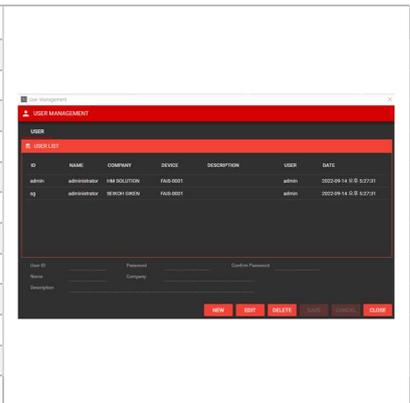
Product Management

Add new polishing holder (Jig) after create new polishing holder profile. In case of "Seikoh Giken" holder, there are different serial numbers.

| **Product Management**		
Parameters	Descriptions	Note
Holder Type	Select type of Holder	Part Number
Holder No.	Type the holder serial number	
Correction	Type offset value for linear or circular holder	
Vendor Name	Type Holder Manufacturer	
New	Add new holder information	
Edit	Edit existed holder information	
Delete	Delete existed holder information	
Save	Save new holder information	
Close	Close window	
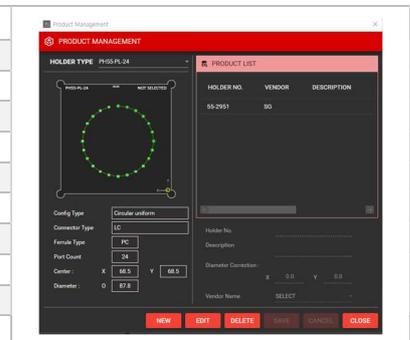
INSPECTION PROFILE

This is inspection profile management and user able to create customized inspection profiles with edit / delete depending on profile requirement.

Parameters	Descriptions	Note
Profile name	Inspection profile name	
Number of Zone	Select number of zone for inspection	
Fiber Type	Select type of fiber	
Core Diameter	Type size of core	
Cladding Diameter	Type size of cladding	
Description	Type any comments	
User	Display user name of operation	
New	Add new inspection profile	
Edit	Edit existed inspection profile	
Delete	Delete existed inspection profile	
Save	Save inspection profile	
Close	Close window	
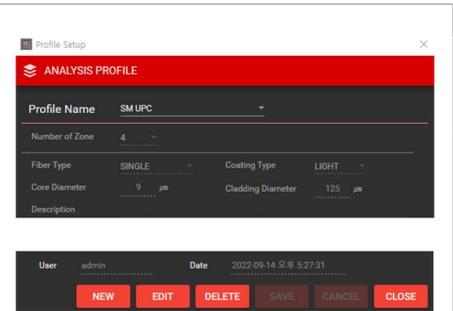
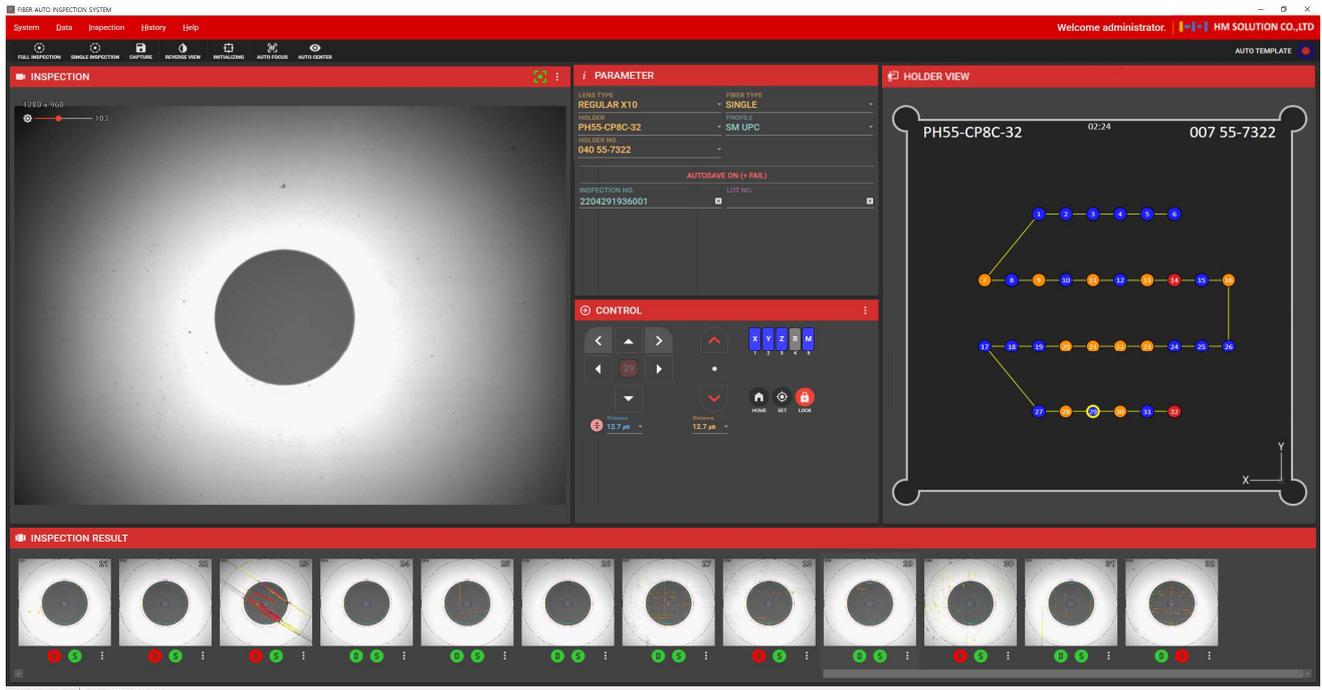| Parameters	Descriptions	Note
Zone	Select each zone for detail setting	
Name	Display name of zone	
Inner Diameter	Type specified zone inner size for inspection	
Outer Diameter	Type specified zone outer size for inspection	
Color	Select color for zone	
Defect	Type size or count for judgement of inspection	
Scratches	Type size or count for judgement of inspection	
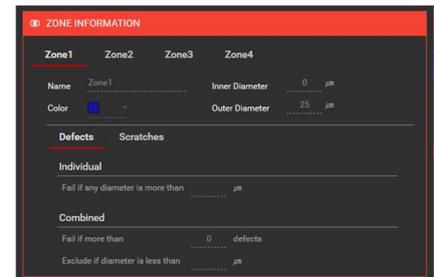
HISTORY

FAIS is able to save all inspection data in real-time depending on user setting. User able to search saved data via HISTORY.

It can search by date, device number, holder number and holder serial number.

| Product List		
Parameters	Descriptions	Note
ST Date	Start date	
ED Date	End date	
Device	Select FAIS Serial Number if Multiple used	
Jig No	Select Polishing Holder number	
Serial No	Select Polishing Holder serial number	
Search	Start searching	
Excel	Export Excel file for report	
Close	Close window	
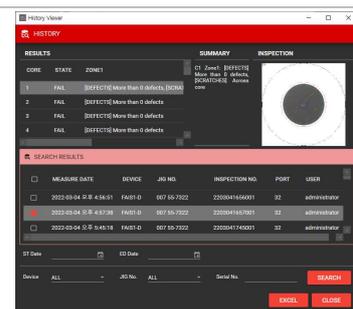
FAIS NAVIGATION DETAILED

Below is shown the FAIS Application Software GUI after loaded it. GUI is providing live viewer for selected port with present position via JIG View. Detail inspection parameter menu is located middle of GUI


Quick Menu
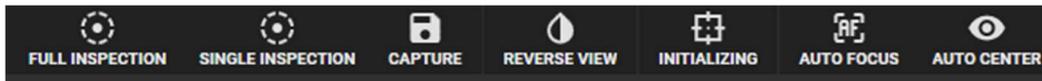
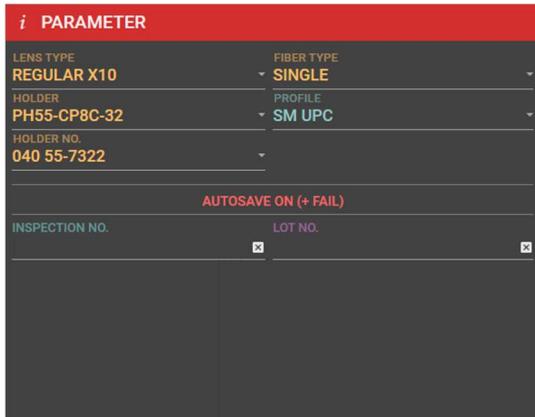| Contents	Descriptions	Notes
FULL INSPECTION	Execute full inspection of selected polishing holder	
SINGLE INSPECTION	Execute inspection for only selected port	
CAPTURE	Capture current selected image	
REVERSE VIEW	Image reverse for white/black	
INITIALIZING	Position and focus initialization include brightness	
AUTO FOCUS	Manual auto focus for selected port	
AUTO CENTER	Manual auto center for selected port	

INSPECTION VIEW
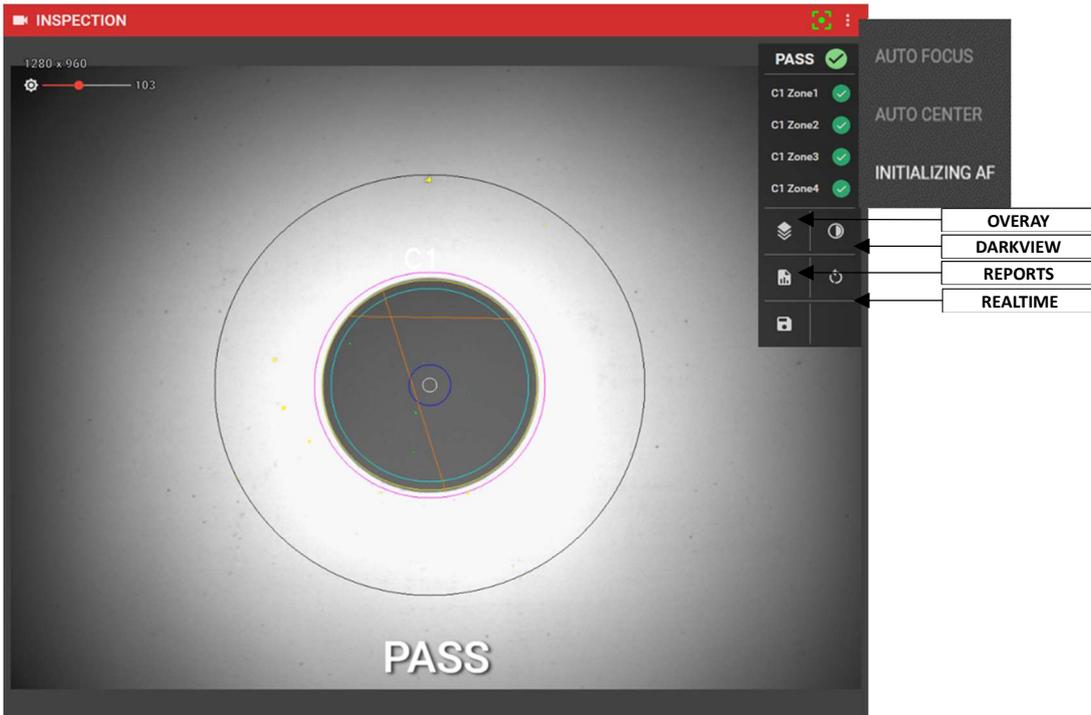
Contents	Descriptions	Notes
Image Resolution	Show current image resolution	
Brightness Level	Adjust brightness level	
Auto Focus	Manual auto focus	
Auto Center	Manual auto center	
Initializing AF	Reset auto focus length by default	
Overlay	Overlay inspection result	
Darkview	Display scratch view	
Reports	Save selected port report by excel	
Realtime	Return to live view mode	

Inspection Result View
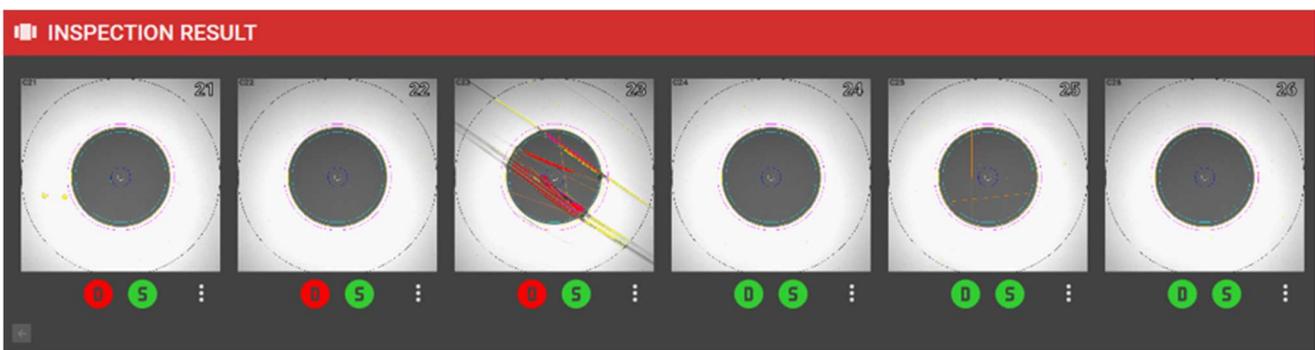
Contents	Descriptions	Notes
Image Resolution	Show current image resolution	
Brightness Level	Adjust brightness level	
Auto Focus	Manual auto focus	
Auto Center	Manual auto center	
Initializing AF	Reset auto focus length by default	
Result Overlay	Display inspection result	

Parameter

Contents	Descriptions	Notes
Lens Type	Select type of objective lens	
Fiber Type	Select type of fiber	Singlemode or Multimode
Holder Type	Select type of polishing holder	
Profile	Select inspection profile	
Holder No	Select stored polishing holder serial number	
Inspection No	Auto-generating number at full inspection	
Lot No	Enter LOT number if require	

Control
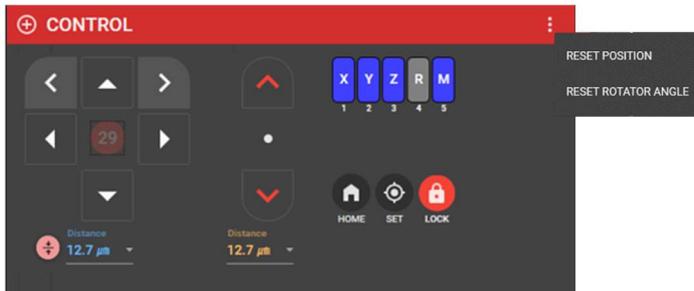
| Contents	Descriptions	Notes
▲	Move to up side	
◀	Move to left side	
▶	Move to right side	X and Y Axis
▼	Move to down side	
<	Move to next port	
>	Move to previous port	
^	Move to Focus +	Z Axis
v	Mover to Focus -	
29	Display current port number	
Distance 12.7 µs	Set distance for movement for up/down/left/right	
Distance 12.7 µs	Set distance for focusing +/-	
X Y Z R M	Display status of control slot module	
HOME	Return to HOME position	
SET	Set initial position of selected polishing holder	
LOCK	Lock/Unlock stepper motor load	
Reset Position	Reset Z axis initial position by zero	Typically, not used this
Reset Rotator Angle	Reset Rotator angle position by zero	

HOLDER VIEW
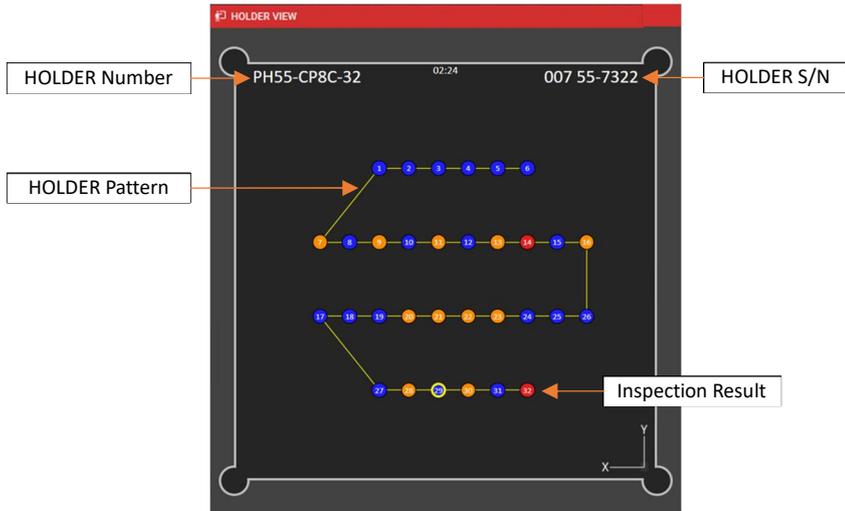
| Contents	Descriptions	Notes
Holder Number	Show current image resolution	
Holder Serial Number	Adjust brightness level	
Holder Pattern	Manual auto focus	
🟢	Passed	Based on inspection profiles
🔴	Failed by Scratch / Pits	
🟠	Failed by Contamination	
⚪	Focus failed	
⚫	Blank Port (No Ferrule or Connector)	

Polishing Holder JIG & PRODUCT Management

This chapter is shown the method of new polishing holder profile and product creation.
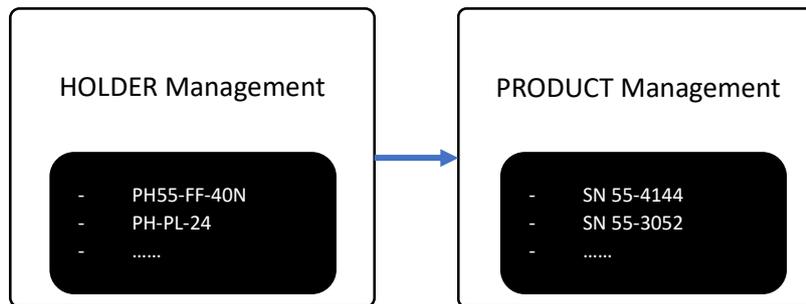
(Below is profile creation for SG polishing holder, PH55-FF-40)

1. Prepare new polishing holder drawing like as below
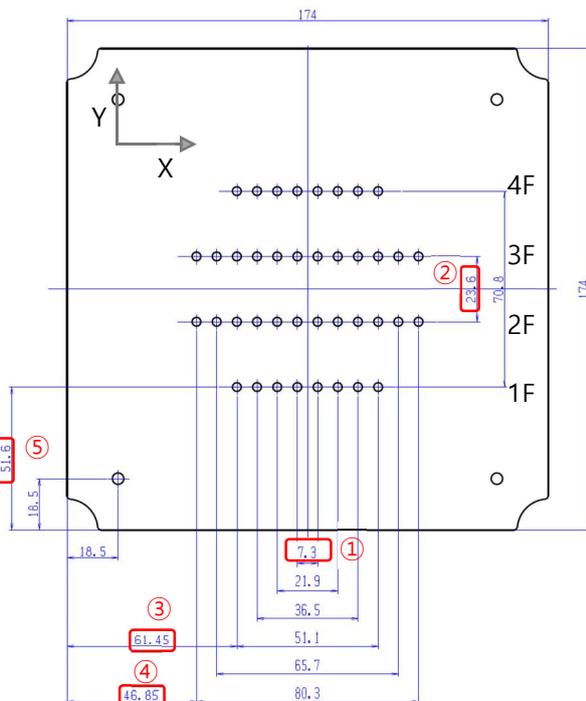
2. Open the "HOLDER MANAGEMENT" windows and select "NEW".

3. And type each field values according to guidance of polishing drawing

HOLDER Name	Type the name of holder	e.g. PH55-FF-40
HOLDER Type	Select type of holder	e.g. Linear Uniform
Connector	Select type of connector	e.g. Ferrule
Ferrule	Select type of ferrule	e.g. PC
Port Distance X ①	Enter value between ports on X axis	mm
Port Distance Y ②	Enter value between ports on Y axis	mm
1F Port X Distance ③	Enter value between edge of holder and 1st port of 1st line (X Axis)	mm
2F Port X Distance ④	Enter value between edge of holder and 1st port of 2nd line (X Axis)	mm
1F Port Y Distance ⑤	Enter value between edge of holder and 1st port of 1st line (Y Axis)	mm
Max Protrusion	Enter value from edge of holder and end of Ferrule	mm

4. Once all fields are filled in, then press "APPLY".

5. Then using setting pad, User can create ROW and COLUMN according to holder shape
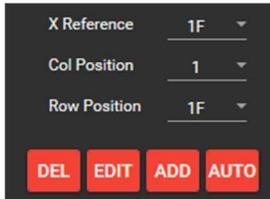
X Reference	Select which X reference value is applied	
Col Position	Select number of ports on same column	
Row Position	Select position of Row	

6. See below steps

	X Reference : 1F Col Positon : 8 Row Position : 4F Press "AUTO" Press "No"		
	X Reference : 2F Col Positon : 12 Row Position : 3F Press "AUTO" Press "Yes"		
	X Reference : 2F Col Positon : 12 Row Position : 2F Press "AUTO" Press "No"		
	X Reference : 1F Col Positon : 8 Row Position : 1F Press "AUTO" Press "Yes"		

7. Once profile is completed, then press "SAVE"

8. Go to DATA > PRODUCT MANAGEMENT
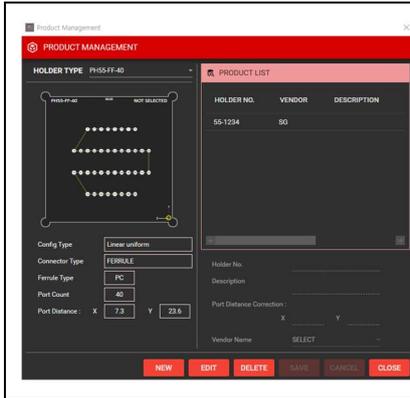
Select "NEW"
Select "HOLDER TYPE"

Enter "HOLDER Serial No"
Enter "Description"
Enter "Port Distance Correction"
Enter "Vendor Name"

Then "SAVE"

After this, you can show and select registered it in "HOLDER NO"

APPENDIX

Troubleshooting of FAIS

This chapter is describing troubleshooting of FAIS during operation.

Following is most common description of error or fault.

Symptoms	Description	Check point
No Power On	No Power LED ON No LED on Control Driver	Check AC/DC Power Adaptor
Communication Error	No COM port on Windows Not recognized COM port exactly on Windows	Check USB3.0 cable Check driver installation status on Device Manager of Windows
Camera Error	No Camera Driver on Windows Not recognized Camera exactly on Windows	Check USB3.0 cable Check Device manager of Windows Check internal USB cable between Camera and Controller Driver
Controller Driver Error	No information on Controller information Error LED is ON Wrong information on Controller information	Check USB3. Cable Check each connection status for each axis and so on Rewrite information of each axis again
Camera Position Error	Can't make 1st port position at full inspection Stuck Camera Objective on top mount	Try to HOME position back and reset position Try to down Z axis until enough space happened and reset position
Liquid Lens Error	No action Focus icon red mark on software	Check liquid lens connection If Red, connection fail Please press "initializing AF"
Motor Error	Stuck sound during movement Can't move actuator Error LED On in the Slot	Check Error status LED on controller board Check Controller information whether it is good or not Restart FAIS and check it again

Method of Auto Focusing

FAIS is basically using Liquid Lens to make a focus to each endface of target. The height from each endface of target to camera is slightly different. Liquid lens of FAIS able to make a focus within effective range and it is moving up and down if variation is out of range. Fine focus adjustment perfomedby Liquid lens.
In case of out of range, Camera is moving up physically and try to make a focus by Liquid Lens.

Below is sample
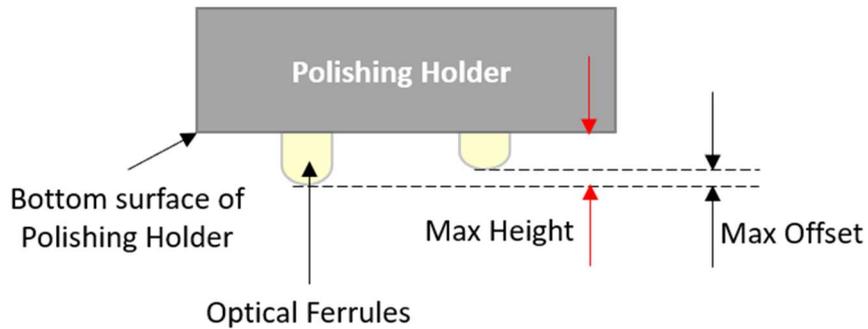
Max height - deviation between bottom surface of polishing holder and full inserted ferrule.

Max offset - End face deviation between full inserted ferrule and pulled inserted ferrule.