

IDEA THE SOFTWARE INSTALLING

Plug the USB flash drive with IDEA the Software in a free USB port of the PC.

Launch the program installation by clicking on "IDEA_Setup", then follow the guided installing procedure. Choose language and select Full Installer as installation method.

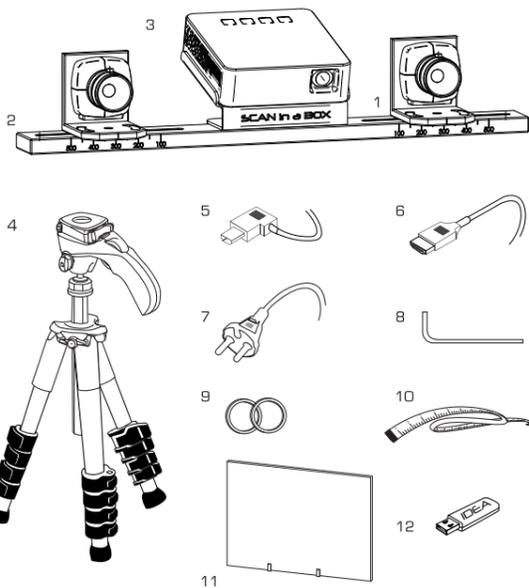


When installing the program, do not copy the installation file from the USB flash drive to the PC, but install IDEA the software directly from the USB flash drive.

Once the installation has been completed, keep the USB Dongle plugged in to work with the unlimited software licence.

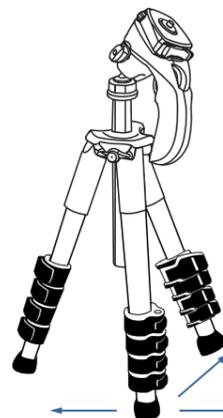
WHAT'S IN THE BOX

- 1 A camera and optic on a stand - CAM.O1
- 2 A camera and optic on a stand - CAM.O2
- 3 An HD Projector on a stand
- 4 A professional tripod with a transport bag
- 5 Cable flexwrap
- 6 2 USB/mini-USB cables
- 7 An HDMI cable
- 8 A power supply cable for the projector
- 9 An hex key
- 10 Spacers for lenses
- 11 A measuring tape
- 12 A Calibration Master and its stand
- 13 IDEA the Software USB Dongle



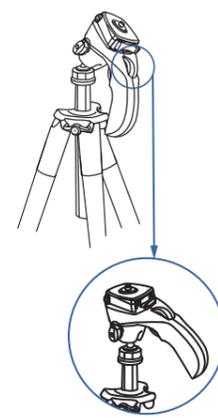
For this first installation, "Optical Set-up", "Camera Focus Adjustment" and "Diaphragms' Adjustment" steps described in Page 5 and Page 6 are meant to be verification phases only, based on the medium field of work in which the scanner has been already tested. There is no need to change this setup, unless the initial assembly results altered or unless there is the intention to reconfigure the scanner with a different field of work (Ref. "New Field of Work Setup" Page 9).

TRIPOD ASSEMBLY



Pic.1

Remove the tripod from transport bag and spread the three legs (Ref. Pic. 1).



Pic.2

Release the tripod's joystick head with the dedicated small wheel. Place the tripod's head horizontally, then block it (Ref. Pic. 2).



SCANNER ASSEMBLY

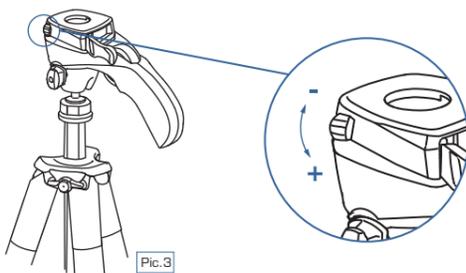
- Fix the aluminium bar on the tripod; in order to do that, open the lever of the tripod joystick head (Ref. Pic. 3/A) pulling out the round plate placed in the centre. Screw the round plate under the aluminium bar. Then place the bar on the tripod, so that the round plate fits in its original place (Ref. Pic. 3/B). Close the tripod lever to secure both, the bar and the projector.
- Remember to remove the lens cover.



Pic.3

Once the joystick head lever is closed, check if the aluminium bar and the projector are fixed and stable.

- If the lever can be easily closed, but the scanner is not stable and not tight enough: open the lever; turn the regulating dial (Ref. Pic. 5) to tight it, then close the lever again. Repeat these steps until the lever is perfectly closed and the aluminum bar is firmly held on the head.
- If the lever is too tight to close, and this doesn't allow to continue, turn the regulating dial (Ref. Pic. 5) in order to loosen it, then close the lever again.



Pic.3

CABLES CONNECTION

- 1 Connect the USB/mini-USB to the Camera **CAM.O1** (Ref. Pic. 5) and to a free USB port of the PC.
- 2 Verify if the Camera "uEye UI - 154xLE", just connected, has been identified by the PC in the device manager.
- 3 Repeat this operation for **CAM.O2**.

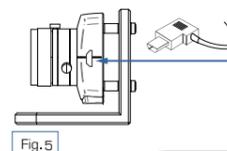


Fig.5

- 4 Connect the HDMI cable to the projector and then to the HDMI port of the PC (Ref. Pic. 6/A).
- 5 Connect the power supply cable to the projector and then to a power supply socket (Ref. Pic. 6/B).

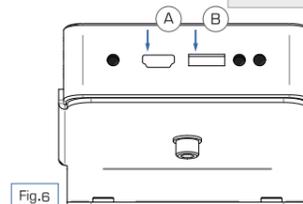


Fig.6

It's strongly recommended to gather the cables in the supplied socket, in order to avoid confusion with the cables.

MONITOR CONFIGURATION

- Turn on the projector (Ref pic.7) and make sure that it is identified by the Operating system as a secondary monitor named **ASUS S1**.
- Open the menu "Screen resolution" and select "Extend these displays" in the setting "Multiple Displays". In this way, you will extend the screen to both monitors without duplicating them.
- Set the **ASUS S1** monitor with a resolution of **1280x800**. Open the menu under it "Make text and other items larger or smaller", then check the option "Let me choose one scaling level for all my displays" and select "Smaller - 100%" as default setting.
- A pop-up that communicate that you must disconnect the PC in order to make the change effective will appear; Confirm it.

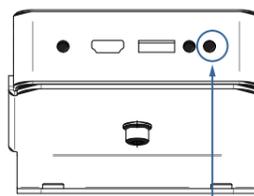
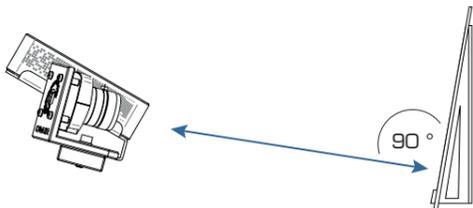


Fig.7



The projector monitor must be connected as secondary monitor. If the projector ASUS S1 is identified as the main display, open the menu "Screen Resolution", select the other monitor (usually identified with the n.2) and check the option "Make this my main display".

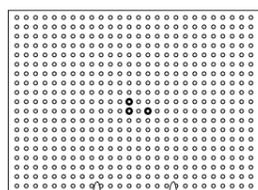
MASTER AND SCANNER POSITIONING



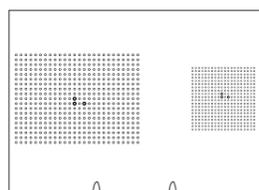
90°

- Put together the Calibration Master and make sure that you are using the proper calibration's pattern; this depends on the field of view previously chosen (Ref. "Configuration Table" page 10). In this case, the Calibration Master "400x300 15mm step" will be used to calibrate a 250x200mm field of view.
- The Calibration Master must be placed so that the three central markers, in bold, are always orientated as for Ref. Pic. 8 and 9. This valid for every chosen field of work.
- Use the provided measuring tape to put the scanner at the right working distance from the Calibration Master (Ref. "Configuration Table" page 10). In this case, the correct distance for a 250x200mm field of view is 560mm.

The correct distance has to be approximately estimated from the projector's lens to the Calibration Master's surface, placed perpendicular to the scanner. The quality of the Scanner's Calibration is not influenced by a little alteration of the recommended working distance



Pic.8



Pic.9

SCANNER CONNECTION OPENING

Start **IDEA the Software**. Click on the coloured Optical head icon "Open head" to start the connection with the scanner, and then follow the guided procedure.

From this point on, it's possible to follow simultaneously the instructions, using the start guide and the wizard procedure in the software.

OPTICAL SETUP

Select which field of view you want and the respective Calibration Master. In this case, the field of view is 250x200mm and the Calibration Master is 400x300 15mm step.

Click on the button "Turn on/off live", to activate the live cameras

Projector Setup

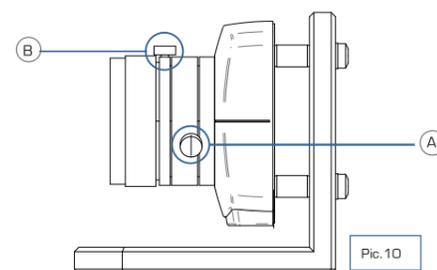
- Verify the projector's focus by looking at the vertical projected line on the Calibration Master, which must pass in the middle of the central Markers.
- Use the projector small wheel to adjust it. Make sure of keeping the right working distance between scanner and Master, previously established.

Cameras orientation

- If the black vertical line does not match with the yellow finder in the Live view, then loose the **CAM.O1** screws, verify that the camera's position on the bar matches the chosen operating range (in this case on the 250 score) and turn the camera to centre the camera's frame by looking at the monitor; the yellow viewfinder must coincide and be on top of the projected straight line on the Calibration Master. Once it's placed, tight the screws and lock the camera.
- Repeat this operation for **CAM.O2**.

CAMERA FOCUS ADJUSTMENT

- 1 If the live view does not result well-defined or in case of reconfiguration of a new field of work (Ref. Page 9), then open Camera **CAM.O1**'s Diaphragm by loosening its screw and turning the ferrule on the left until it reaches its maximum diaphragms exposure (Ref. Pic. 10/A).
- 2 Repeat this operation for **CAM.O2**.
- 3 Set up the **CAM.O1** Focus, losing the focus screw and turning the lens until you get an optimal focus. Compare what you see on the monitor to achieve the best result; then close the focus screw.
- 4 Repeat this operation for **CAM.O2**.



Pic.10



Take care of not unscrew the cameras' small screws completely, they might get out, fall and they can be lost.

DIAPHRAGMS' ADJUSTMENT

- Close the camera **CAM.01** diaphragm by slowly turning the ferrule on the right. In this way, you will reduce the exposure. In this phase, the option **"Show saturated area"** (automatically activated), highlights in red the over exposed areas.
- Turn the ferrule until the red areas disappear and until you obtain on the monitor a neat and optimal image view. Then, close the diaphragm screw.

- Repeat this operation for **CAM.02**.

CALIBRATION PROCEDURE

Click on **"Start Calibration procedure"**, confirming that the Optical Set-up is completed.

Click on **"Initialize Calibration"**. The projector will show a sequence of light patterns. Click **"ok"** in the colour Auto Adjustment's window to confirm the colour acquisition.

If the procedure is correctly carried out, click on **"Continue"**. In this way, the values will be accepted. Closer is the white value (minimum pixel value) to 0 and the black value (maximum pixel value) to 255, better is the result you obtain. The estimated of the **"Field of View"** will be as close as possible to the chosen field of work. In this case, close to 250x200mm.

MASTER IMAGES ACQUISITION

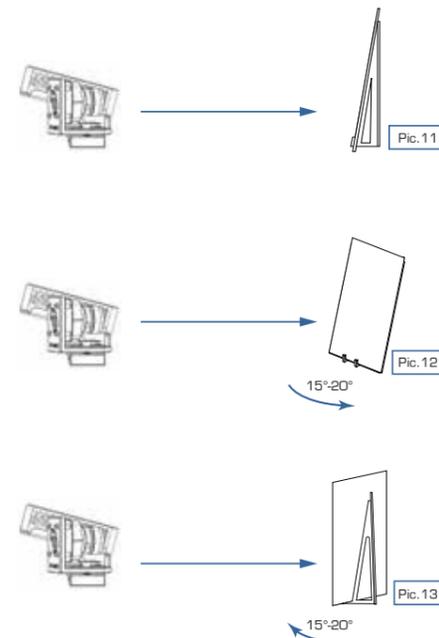
In order to complete the calibration procedure, you must take 9 different images of the Calibration Master in 9 different positions.

Make sure that every image has these requirements: the yellow viewfinder must be approximately aligned with the projector's line on the calibration master and the three main markers must be approximately framed in the master's middle square.

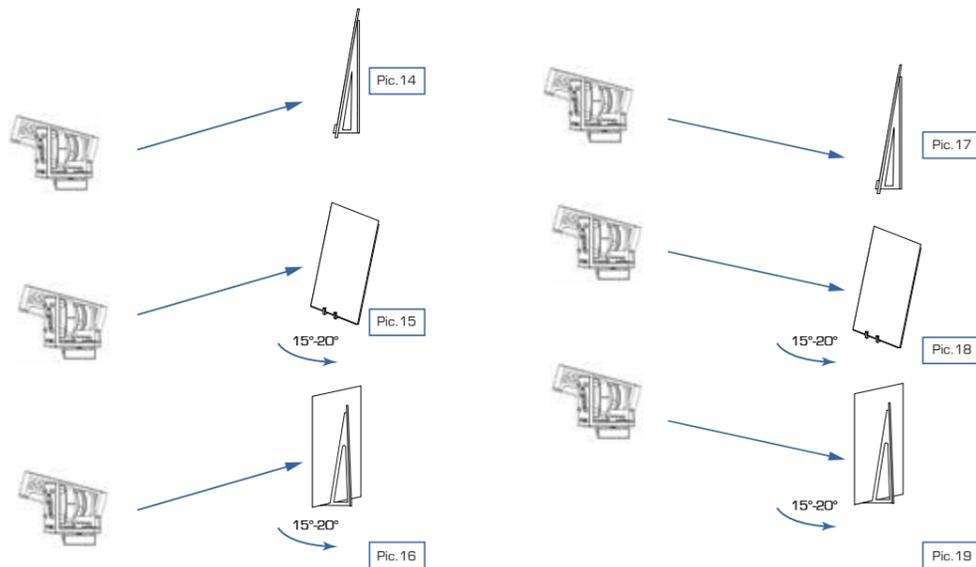
- With the scanner in front of the Calibration master (Ref. pic. 11), carry out the first acquisition by clicking on **"Acquire images pair"**.
- If the acquisition has been correctly carried out, every marker will be circled in red and each one will be identified by a couple of coordinates.

- It's possible now to move to the following acquisition by clicking on the arrow pointing on the right.
- Turn the master to the left (about 15° - 20°) (Ref. Pic 12) and click again **"Acquire couple images"** in order to scan the second image.

- It's possible now to move to the following acquisition by clicking on the arrow pointing on the right.
- Turn the master (about 15° - 20°) to the right (Ref. Pic 13) and click again **"Acquire couple images"** in order to scan the third image.



Repeat this procedure of three images acquisition, before from the bottom (Ref. Pic. 14 - 16), and then from the top (Ref. Pic. 17 - 19), as shown in the example images.



After the acquisition of the 9 images, click on the **"Calibrate"** icon and wait until the software displays the calibration's results. If the message **"The quality of the calibration is good!"** is shown, proceed by clicking on the confirmation icon **"Confirm calibration and exit"**.

The calibration will be saved in the configuration file in this way. Otherwise check if the Optical Setup is correct (Ref. Page 5) or repeat the Calibration step (Ref. Page 6).

3D SCAN

The scanner is ready to scan. Now you can frame the object and click on the icon **"3D Scan"** to acquire the first range image.

NEW FIELD OF WORK SETUP

In this handbook, there are explanations about how to set up an average field of view, that is 250x200mm (Ref. "Configuration Table" Page 10).

To configure a new field of work allows to optimize the scanner performance in order to scan at best the specific object that will be digitized.

The medium field of work of 250x200mm is the most versatile and it can cover a lot of different kind of objects. In case of small and detailed objects, it is recommended to reconfigure the scanner with a 100x80mm field of work, whereas in case of big objects it is recommended to reconfigure the scanner starting from a 350x280mm field of work and higher. The choice of the field of work determines a sequence of changes in the hardware and software setup.

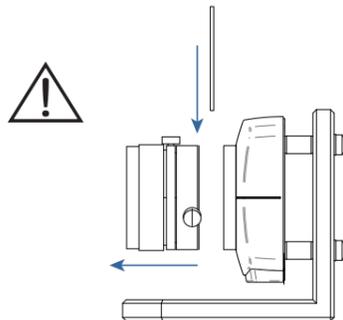
Switch from **"Scanning"** to **"Optical Setup"** mode, by selecting it in the combobox above the **"3D Scan"** button, to start the procedure to reconfigure the scanner with a new field of work. Reposition the Calibration Master and the Scanner to the correct operating distance (Ref. "Master and Scanner Positioning" Page 4).

Then follow the wizard procedure in the software or follow this Start Guide from **"Optical Setup"** step (Ref. Page 5) to **"3D Scan"** ending step (Ref. Page 8).

CONFIGURATION TABLE

FIELD OF VIEW	DISTANCE	MASTER
100x80 mm	200 mm	100x100 step 5,0 mm
150x120 mm	320 mm	200x150 step 7,5 mm
200x160 mm	448 mm	400x300 step 15,0 mm
250x200 mm	560 mm	400x300 step 15,0 mm
300x240 mm	672 mm	400x300 step 15,0 mm
350x280 mm	784 mm	400x300 step 15,0 mm
* 400x320 mm	896 mm	400x400 step 30,0 mm
* 450x360 mm	1008 mm	400x400 step 30,0 mm
* 500x400 mm	1120 mm	400x400 step 30,0 mm

* The fields of work 400x320mm, 450x360mm and 500x400mm require the accessory "Calibration Master 400x400mm", not included in the base kit.



- Lenses' spacers are required for 100x80mm and 150x120mm fields of work. To add the spacers, unscrew the cameras' lenses, one by one, and then insert the spacers between them to add thickness. Finally, screw the lenses.

- This operation must be done before to start the whole scanner configuration procedure for the new field of work.

MINIMUM TECHNICAL REQUIREMENTS

- Operating System Windows 7 / 8 / 10 - 64 bit
- Screen Resolution 1280x720
- CPU Quad Core 2 GHz, 2 GB RAM, VGA (NVIDIA GeForce)
- x2 free USB2 ports that can supply 500mA energy each (scanner connectivity)
- x1 free HDMI port (scanner connectivity)
- x1 free USB port (software licence)
- 700 Mb available space on the hardisk (software installation)

For further information, read the **Software manual** you can find in the USB flash drive or that you can download at www.scaninabox.com

For any question, please visit the **FAQ** section on the website www.scaninabox.com or contact the staff through forum or contact form.