SCAIDER – FRONT CAMERA HD FOR PHOTOFINISH

USER'S MANUAL

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Caution and safety precautions

- Never use any other charger than the supplied or a type approved by Swiss Timing. This could destroy the battery, cause damage to unit, and possible cause personal injury due to fire or/and electrical shock.
- Never bypass a power cord ground lead by breaking off the ground pin, or by using inappropriate extension cords or adapters.
- Never plug a power cord into the AC power source until you have made sure that all installation, cabling and power levels, are correct, and that the applicable procedures in this manual have been followed.
- Protect the equipment against splashing, rain and excessive sun rays.
- Never use the device if it is damaged or insecure.
- Verify the selection of the power distribution.
- Verify that the voltage quoted on the rating plate is the same as your voltage. Connect the appliance only to power sockets with protective earth. The use of incorrect connection voids warranty.
- The software and/or user manual may be modified at any time without prior notification.
- Do not open the case; there is nothing that needs servicing inside it. Nevertheless, if the case must be opened, you must call for some qualified personnel. The power supply cable must be disconnected before opening the case.
- During the transport of all Swiss Timing equipment delivered with a reusable carry case, the said case should be used at all times. This is imperative to limit the damage, such as shocks or vibration that can be caused to the units during transport.
- The same cases should also be used when returning equipment to Swiss Timing for repair. Swiss Timing reserves the right to refuse all guarantees if this condition is not fulfilled.
- If the installation includes a horn, be sure to maintain a sufficient security distance from the public.

Documentation Updates

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Environment

This symbol indicates that this product should not be disposed with household waste. It has to be returned to a local authorized collection system. By following this procedure you will contribute to the protection of the environment and human health. The recycling of the materials will help to conserve natural resources.

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Note: This manual is based on Scaider software v3.9 or higher

1 INTRODUCTION

1.1 Operation principle

In long distance races, some athletes may be difficult or even impossible to identify, as their lateral leg bib is often lost during the race.

The Swiss Timing Scaider Camera HD brings valuable help for judging photo finish images. It allows you to write the finish protocol and to get live confirmation of the athlete's identity by showing the front bib of the athlete as soon as you click on his chest in the Scan'O'Vision software.

It is synchronised with the Photofinish clock and shoots front Full HD pictures of the athletes at 25 images/second.

Its powerful integrated 12x zoom lens allows it to be positioned 10m past the finish line to have the best angle and the sharpest pictures to read the bibs.

The power is brought through the Ethernet cable from the control room.

1.2 Basic equipment

1x Scaider Camera (3511.700)
1x Power over Ethernet injector module 30W (9051.5732)
1x Ethernet adaptor 1GB USB3.0 (9051.5744)
1x Ethernet cable cat. 6 - 2m (9051.1317)
1x Ball head Series BH-00 (9051.6338)
1x Carrying case (3511.640)
1x Software USB (3511.600)
1x Protection Dongle (3496.640)
1x User's Manual (DOC3511.500)

1.3 Optional equipment

Multipurpose tripod supporting up to 8kg (9051.6339)
Power over Ethernet extender module (9051.5729)
Extension Ethernet cable kit (50m) on winder (1945.050)
Extension Ethernet cable kit (70m) on winder (1945.070)
Laptop compatible with SCAN'O'VISION STAR & Scaider (3397.907)

1.4 Computer Requirements

Full HD resolution 1920x1080.
Microsoft Windows 10 64 bit.
SSD HDD 512 GB, No 5'400 RPM, no 7'200 RPM, no SSHD (Hybrid).
RAM 8 GB.
i7 4th generation.
Ethernet LAN Gigabit RJ45 onboard with jumbo frames.
4x USB ports, 1 of which USB3 (SS).

2 INSTALLATION

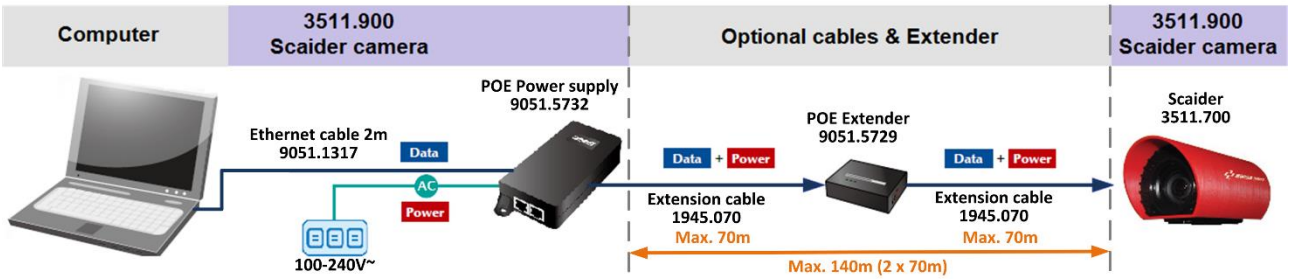
2.1 Scaider cabling

Connect the short Ethernet cable 2m (9051.1317) to the computer's integrated LAN port and the other end to the DATA IN port of the POE Power supply.

Connect the long Ethernet cable (max 70m) to the POE DATA&POWER OUT port of the POE Power supply end the other end to the SCAIDER camera on the field. LEDs behind the camera shall turn on.

If you need more than 70 m, you must purchase optional equipment (Power over Ethernet extender module 9051.5729) to place between the 2 Ethernet cables (as in the drawing below)

Doing so, the POE Power supply remains indoors.

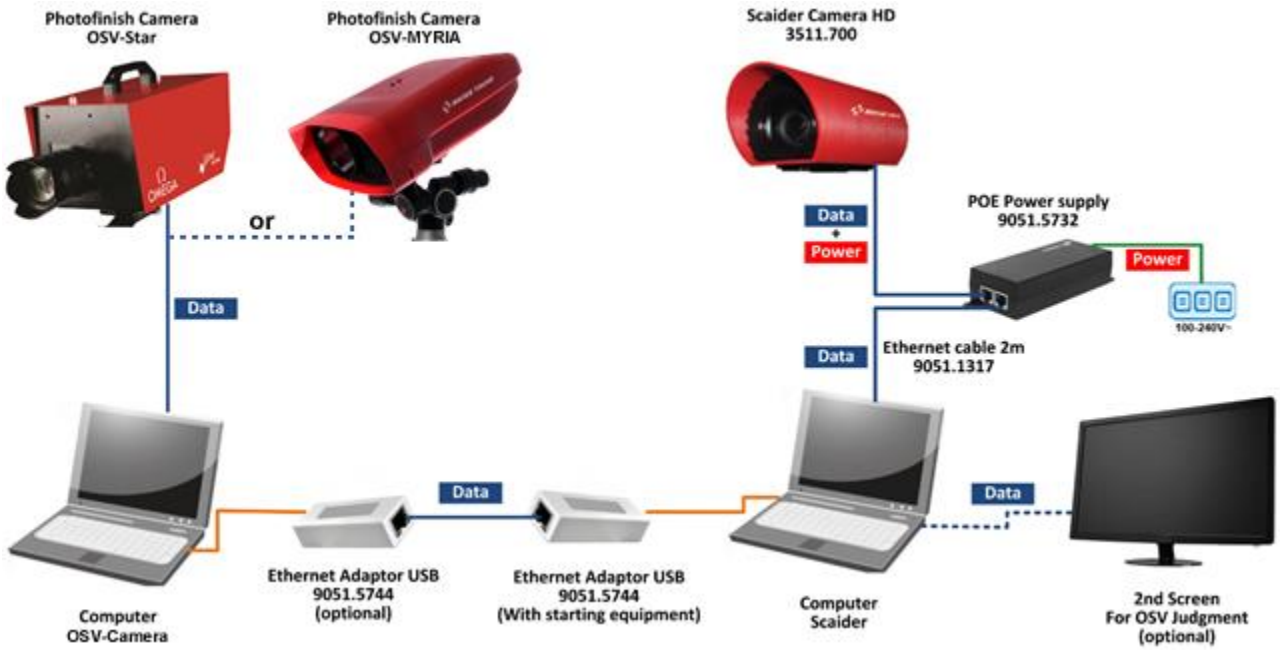


2.2 Network cabling with OSV Star

The SCAIDER camera software communicates with OSV Judgment and OSV Acquisition computers through a 2nd LAN Network over the USB3 Ethernet adapter.

The picture below is an illustration of a complete OSV-Star – SCAIDER system. Each computer has two network connections:

1) The integrated Ethernet card is used to connect to a camera and receive images.
2) The USB3 Ethernet card is used to exchange the following data:
   - Time of the image to be displayed simultaneously on OSV-Judgment software and the SCAIDER software.
   - Information about race progress (Enter race, Start race, Exit race) sent from OSV Acquisition software to control the SCAIDER software (Automatic mode).



2.3 Dongle

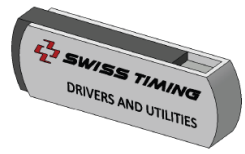
The small USB dongle is the hardware key which enables the SCAIDER software.
Plug it into a USB 2.0 port. Without the dongle the software will display an error message box and close the Software.

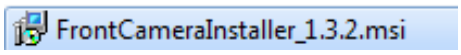
Put the USB dongle in a safe place between competitions

3 SOFTWARE INSTALLATION

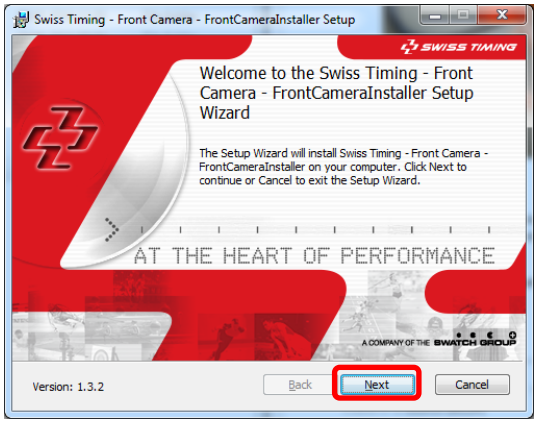
3.1 Main software

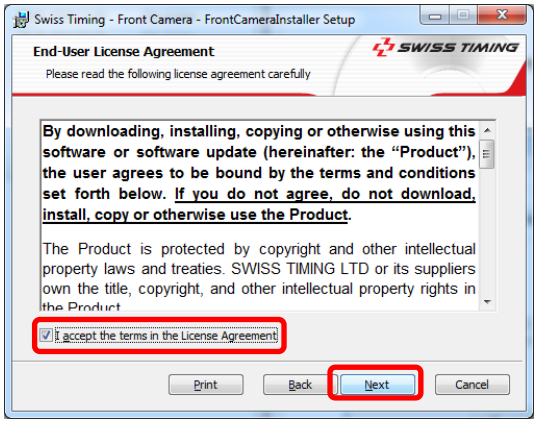
Put the USB key (Drivers and utilities) on the computer and select the file FrontCameraInstaller.

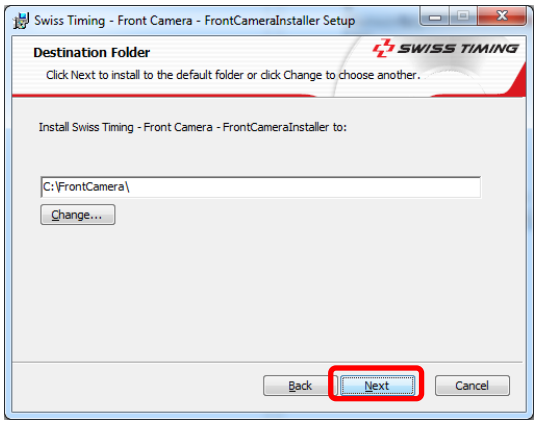


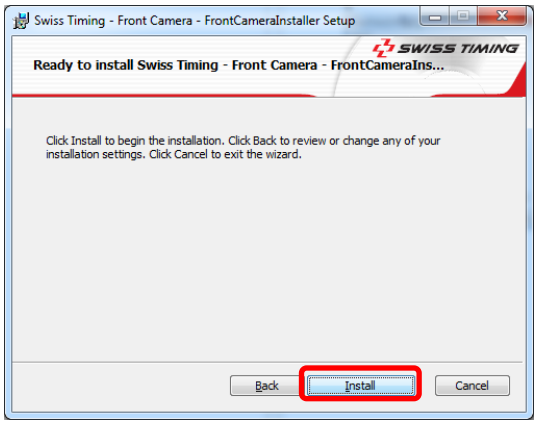


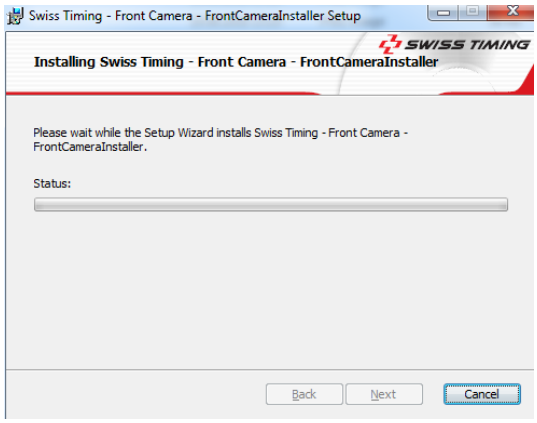
Press next and follow the instructions according to the images below.

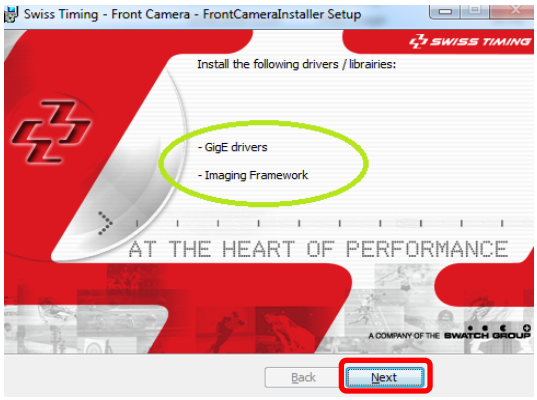




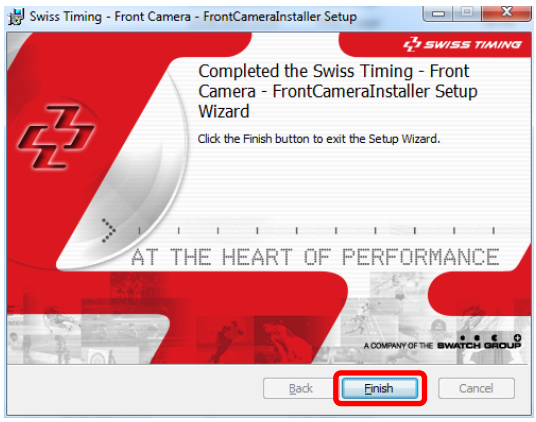








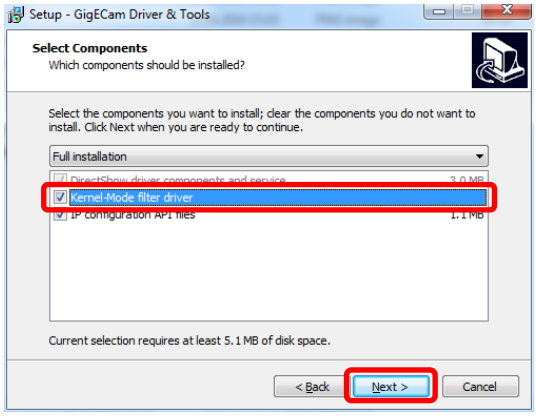
The installer will prompt that drivers and / or framework have to be installed.

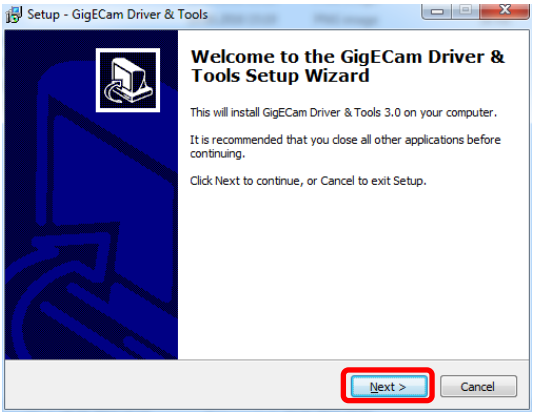


Clicking on the Finish button will redirect you automatically to the next step 3.2.

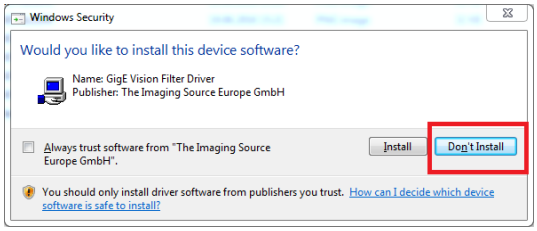
3.2 The GigE driver

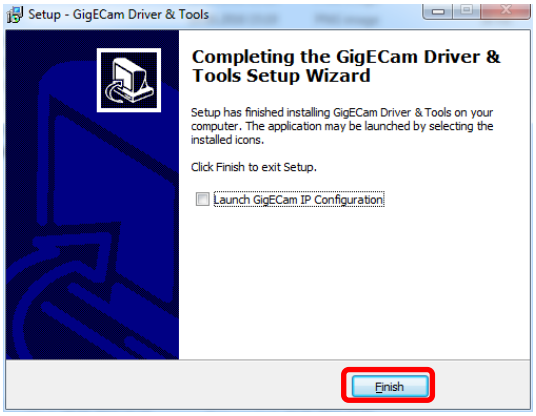
Follow the instructions according to the image below.





If asked to install the Vision Filter driver, answer 'Don't install'

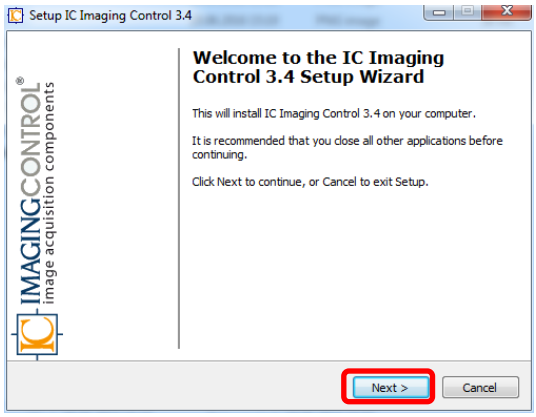


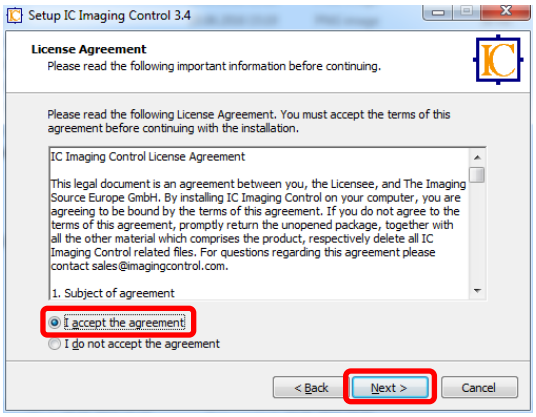


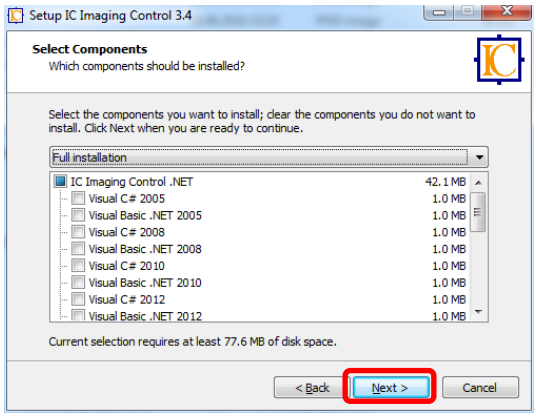
Clicking on the Finish button will redirect you automatically to the next step 3.3.

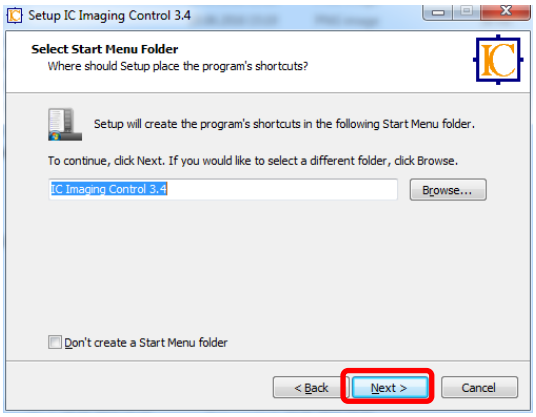
3.3 The Framework

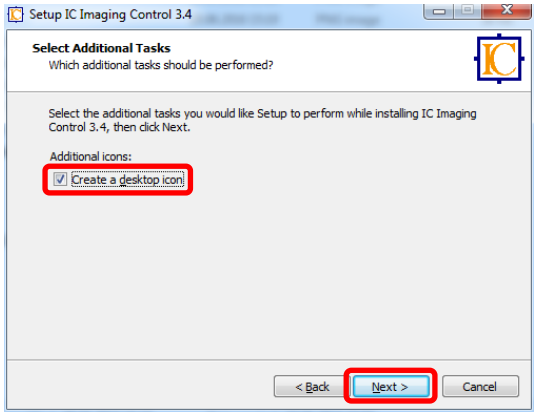
Follow the instructions according to the images below.

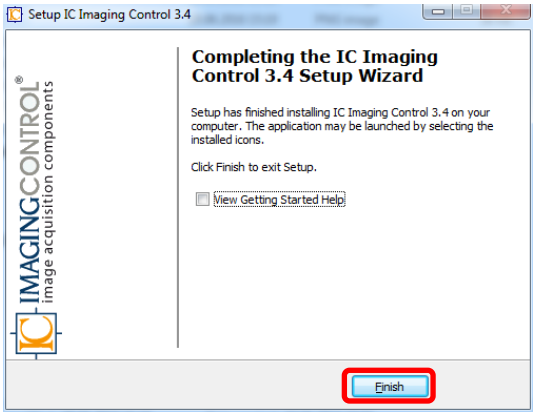


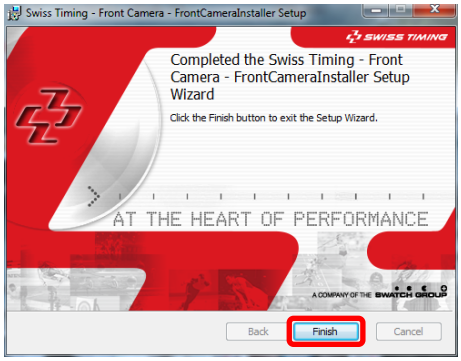








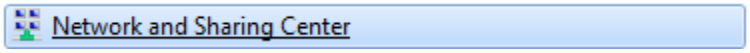




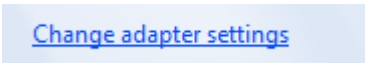
All Software is installed. Click on the Finish button to exit the installer.

3.4 Set the network adapter

In the Network and Sharing Center



Open

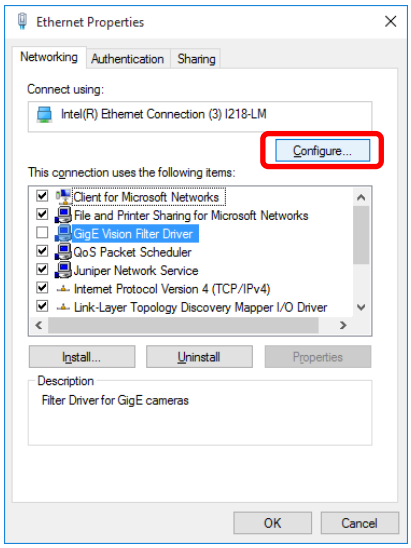


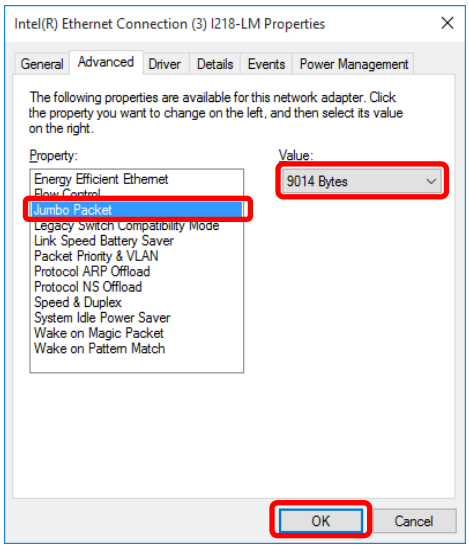
Identify your embedded network card and double click on it.

Follow the instructions according to the images below.

3.4.1 Activate the Jumbo Frames

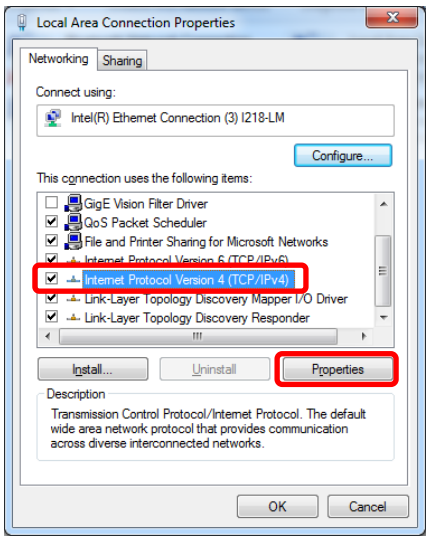
Click on the Configure button and open the Advanced Tab.
Scroll to Jumbo Packet and choose 9014 bytes (9Kbytes) value.
Validate with OK

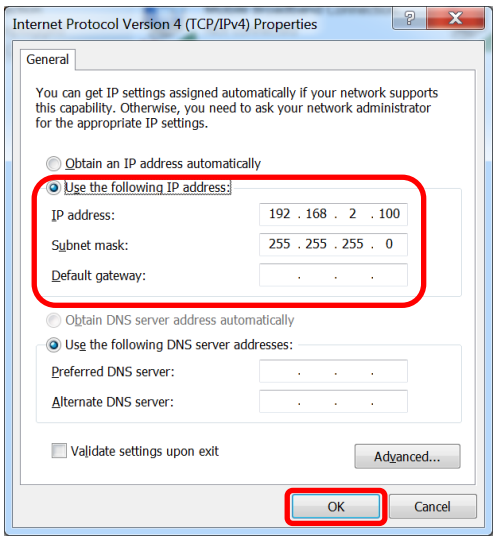




3.4.2 Set the IP address

Assign the IP address 192.168.2.100 to the Ethernet adapter which communicates with the SCAIDER camera.

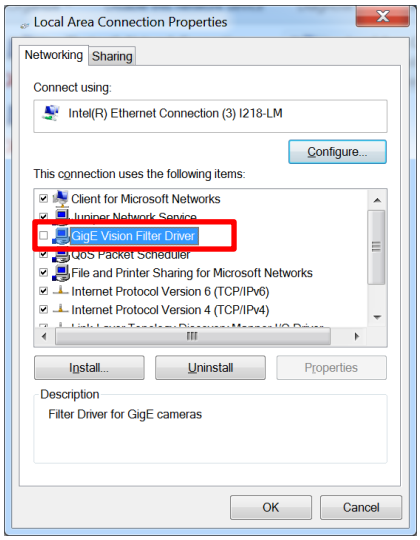




Validate by pressing OK

3.4.3 (Optional) Deactivate the GigE Vision Filter Driver for all network adapters

If you accidentally installed the GigE Filter Driver in chapter 3.2, deactivate it in the properties of each Network Adapter

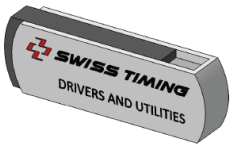


4 CONFIGURE OSV SOFTWARE

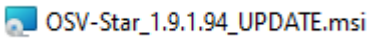
4.1 FOR OSV-STAR and OSV8 SOFTWARE ONLY

Update OSV-Star software (STAR) to v1.9.1.90 or higher, Update OSV8 software (MYRIA) to v.1.9.1.145 or higher.

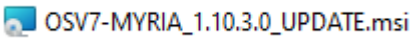
Put the USB key (Drivers and utilities) into the computer and select the file OSV-Star_1.9.1.XX_UPDATE, or OSV8_1.10.XX.XX_UPDATE.



STAR Camera



MYRIA Camera



An update of the software is performed automatically.

4.2 Goal

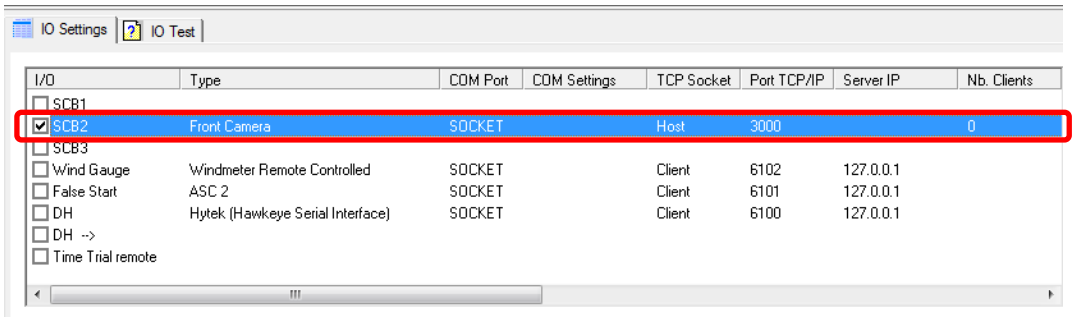
Scan'O'Vision software has to be configured to provide to SCAIDER software the data described in chapter 2.2.
Chapter 4.3 concerns the OSV Acquisition computer.
Chapter 4.4 concerns the OSV Judgment computer.
According to your custom network scheme, OSV Acquisition and OSV Judgment can be the same computer.

4.3 Set up an IO for the Front Camera (On the Acquisition computer)

4.3.1 OSV-Star / OSV8 software

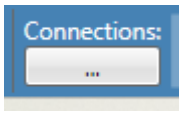
Open the Scan O'Vision software and go to "Scoreboard" -> "Setup".

Select a SCB Line (i.e. SCB2).
Choose the Front Camera as type, Socket as COM Port and type a port number (i.e. 3000).
Check the checkbox on the left to activate this service.

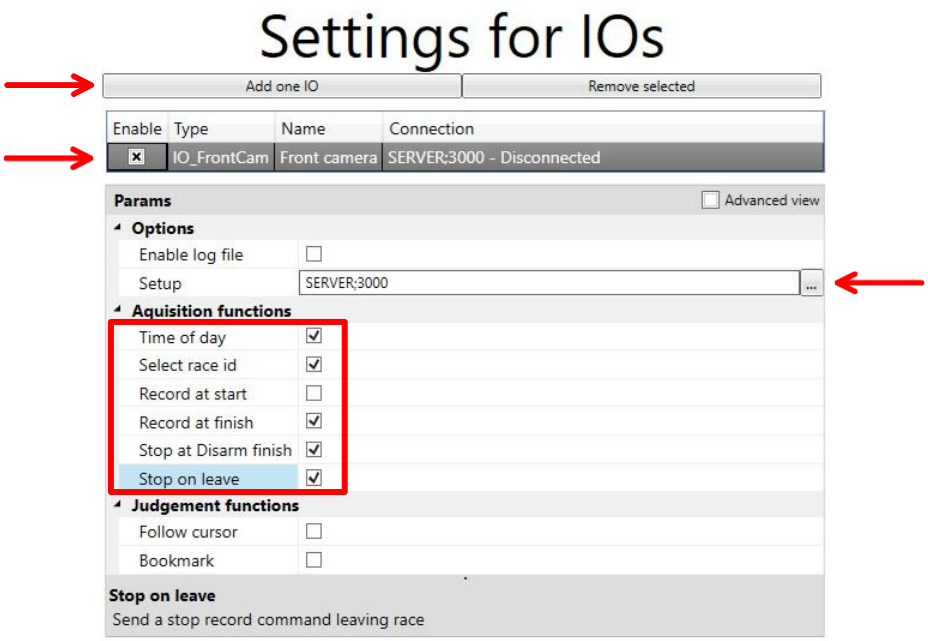


4.3.2 OSV9 software

Open the Scan'O'Vision software and click on "Connections" button.



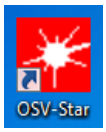
Add one IO and select the Output type "Front Camera".
Choose the tab Server Socket for the Setup and type a port number (i.e. 3000)
Do not forget to check the checkbox as shown on the image below.
Check the checkbox on the left to activate this service.



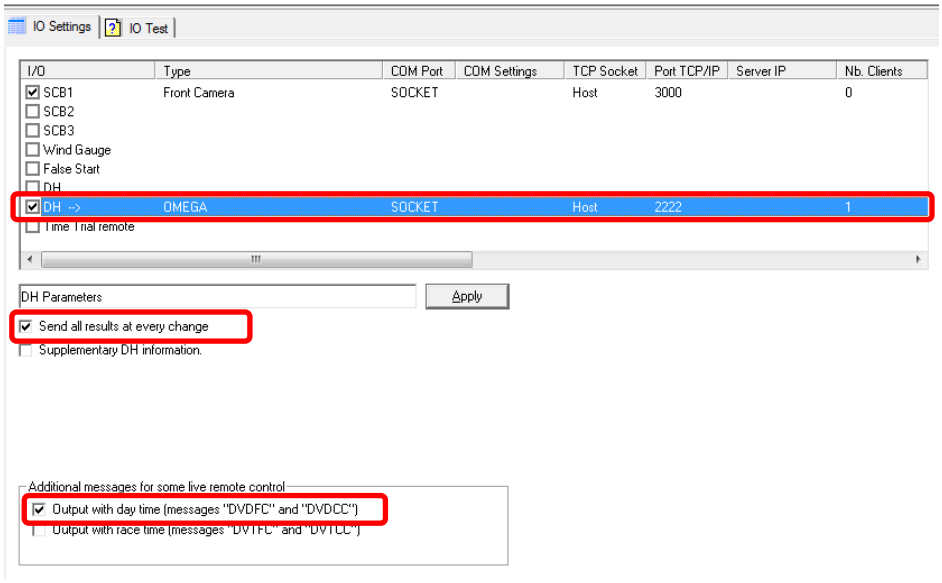
4.4 Set up an IO for the Front Camera (On the Judgment computer)

4.4.1 OSV-Star / OSV8 software

Open the Scan'O'Vision software and go to "Scoreboard" -> "Setup".

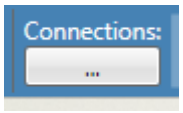


Select the "DH ->" line.
Choose the Omega Protocol, Socket as COM Port and type a port number (i.e. 2222)
Do not forget the Checkbox "Output with day time messages". See the image below.
Check the checkbox on the left to activate this service.

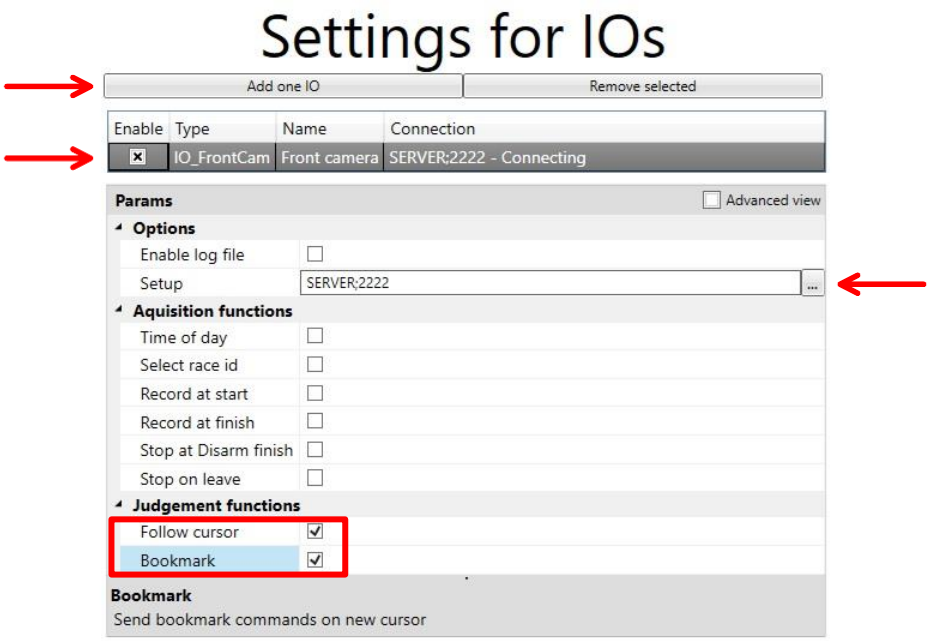


4.4.2 OSV9 software

Open the Scan'O'Vision software and click on "Connections" button.



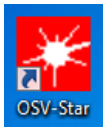
Add one IO and select the Output type "Front Camera".
Choose the tab Server Socket for the Setup and type a port number (i.e. 2222)
Do not forget to check the checkbox as shown on the image below.
Check the checkbox on the left to activate this service.



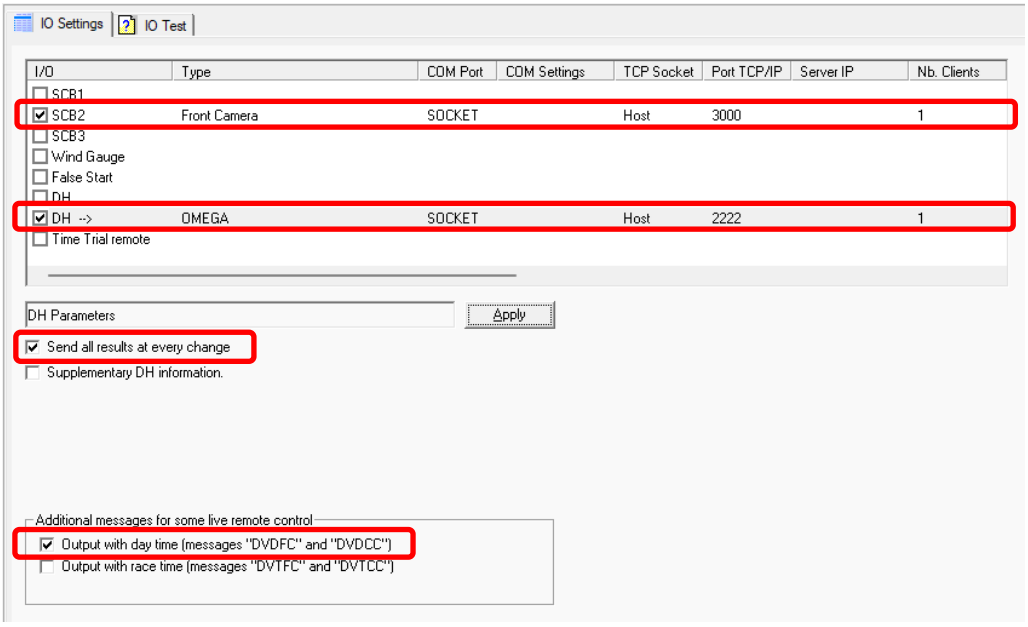
4.5 Set up an IO for the Front Camera (When Acquisition and Judgment are on the same computer)

4.5.1 OSV-Star / OSV8 software

Open the Scan'O'Vision software and go to "Scoreboard" -> "Setup".

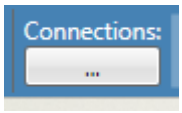


Select a SCB Line (i.e. SCB2).
Choose the Front Camera as type, Socket as COM Port and type a port number (i.e. 3000).
Select the "DH ->" line.Select the "DH ->" line.
Choose the Omega Protocol, Socket as COM Port and type a port number (i.e. 2222).
Do not forget the Checkbox "Output with day time messages". See the image below.
Check the checkbox on the left to activate this service.

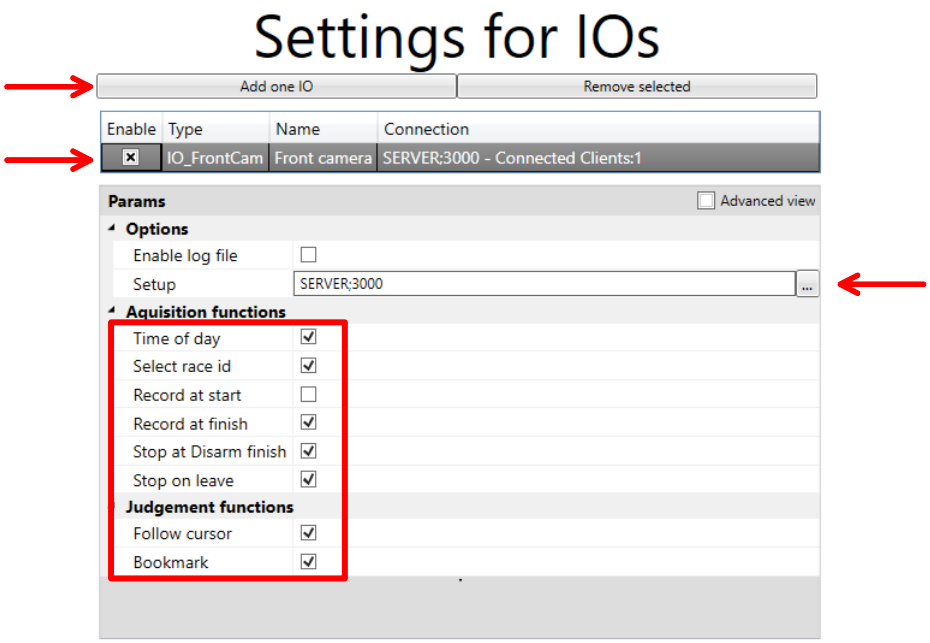


4.5.2 OSV9 software

Open the Scan'O'Vision software and click on "Connections" button.



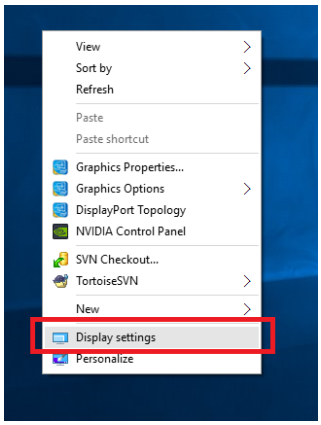
Add one IO and select the Output type "Front Camera".
Choose the tab Server Socket for the Setup and type a port number (i.e. 3000)
Do not forget to check the checkbox as shown on the image below.
Check the checkbox on the left to activate this service.

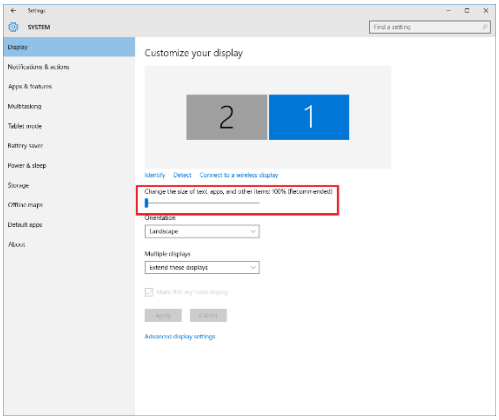


5 RUN THE SCAIDER SOFTWARE

5.1 (first run) Check Windows text size

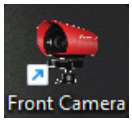
- Open Display Settings by right clicking an empty area on the desktop :
- **Verify that the text size is at 100%.**





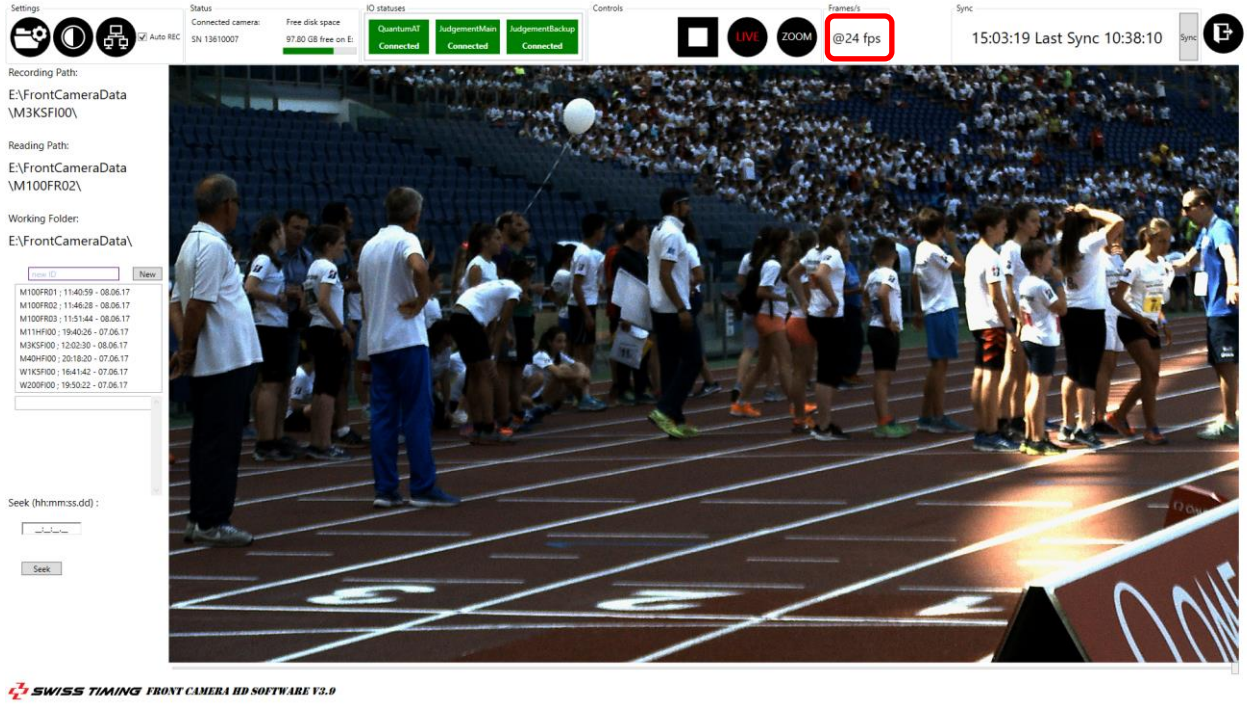
5.2 Shortcut on the desktop

Double click the Front Camera icon on the desktop.
It is supposed that you have plugged the dongle into the USB port as described in chapter 2.3

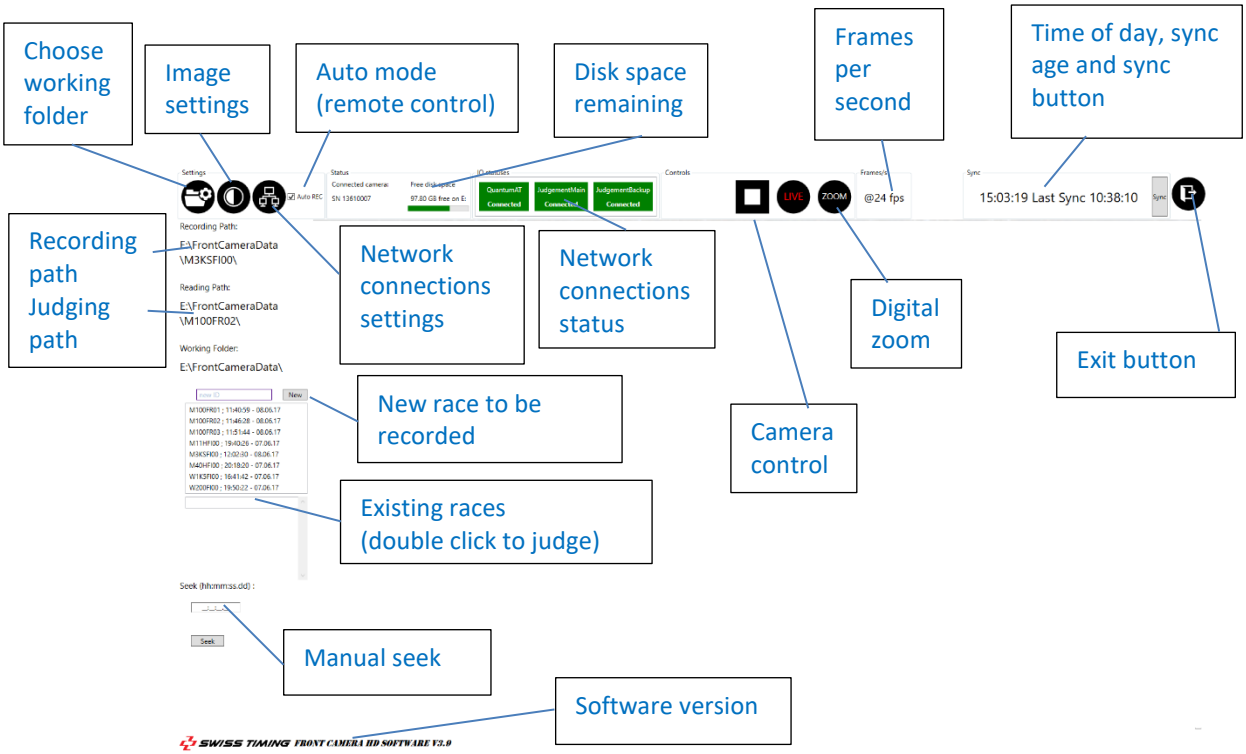


5.3 Live

The camera shall start displaying images at about 25 fps ± 1.
If this doesn't happen check the cable connections or Ethernet adapter settings.



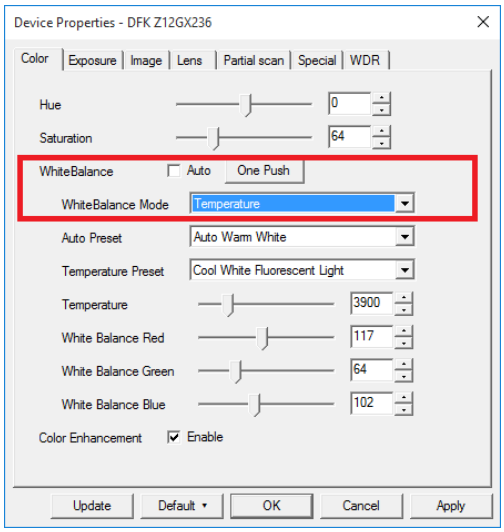
5.4 User interface explained



5.5 Image settings

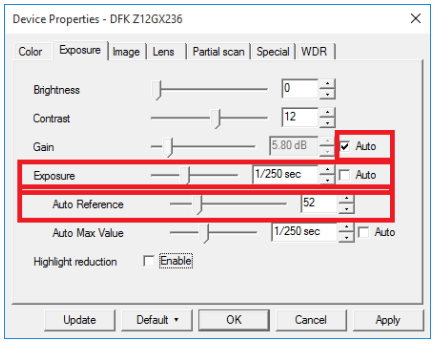
Click on the icon.

5.5.1 White balance



- Set the **White Balance Mode** to **Temperature** and push the "**One Push**" Button.
- Try to leave Hue and Saturation to values close to what you see in the picture below. Otherwise you could have non-natural colours or colour swapping (green->blue).

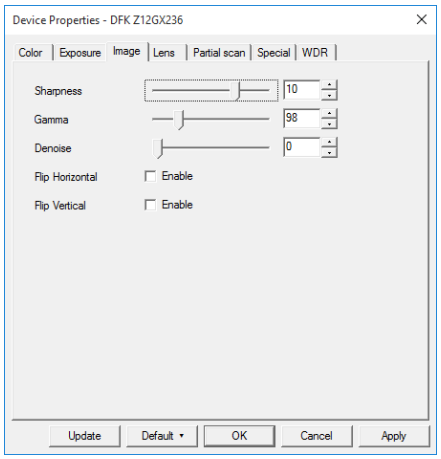
5.5.2 Exposure



- Fix the exposure time to 1/250s (!) and remove the Auto checkbox.
- Exposure cannot be higher than 1/250s.
- **Do not use the Auto checkbox for exposure**, otherwise you can have blurry images due to longer exposure time.
- **You can reduce** exposure time to 1/500s, 1/1000s or even shorter if you have **too much sun**.

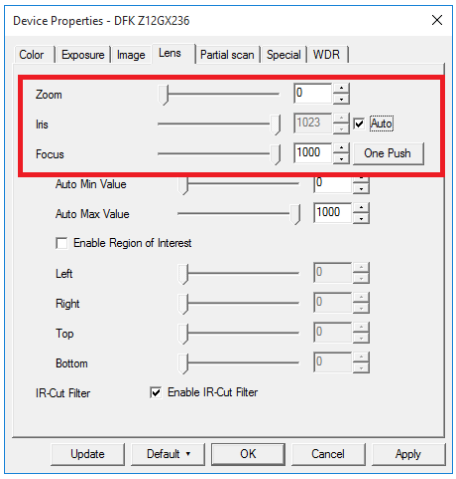
- **Auto Reference**: **Use low values < 70**. Above 70, white colours on the image will get saturated and therefore unreadable.

5.5.3 Image



- You can add digital Sharpness in a reasonable way, up to the value of 10.
- Leave the gamma at around 100.

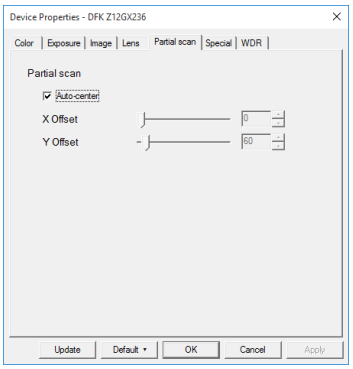
5.5.4 Lens

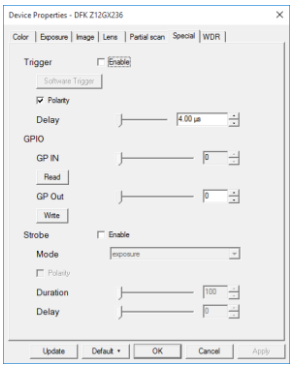


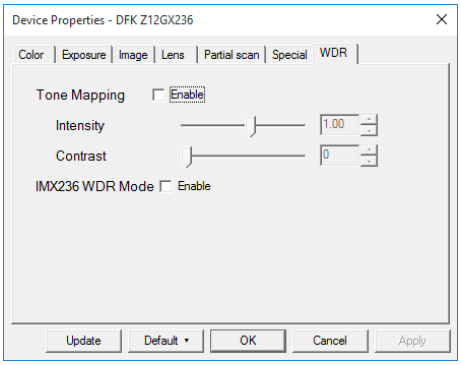
- Adjust the zoom according to your finish line and the lanes you want to capture.
- Put the Iris to Auto mode.
- Adjust the Focus once, you can do it with the “One push button”.

5.5.5 Other tabs (unused)

- Just leave the default values.



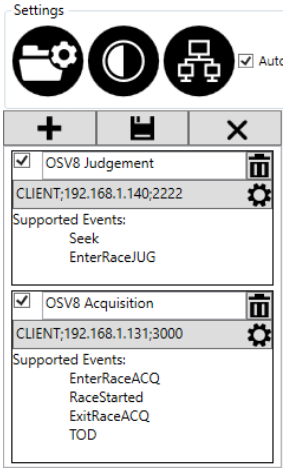




5.6 IO settings

Click on the icon.

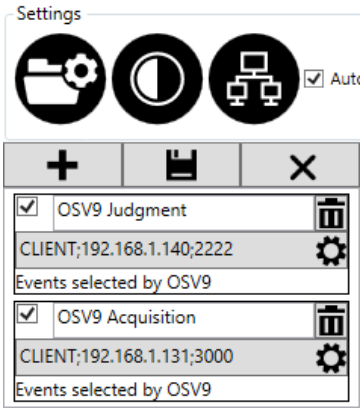
5.6.1 For Acquisition and Judgement computers with OSV-Star / OSV8 Software



- For “OSV8 Judgment”, if you use the Front Camera software on the same machine as the OSV Judgment, enter the IP address 127.0.0.1 (otherwise, enter the IP address of the Judgement computer) and choose the Port as given for Judgement computer chapter 4.4.1.
- For “OSV8 Acquisition”, enter the correct IP address of your OSV acquisition computer and choose the Port as given for the acquisition computer chapter 4.3.1.
- In case of a unique computer making the Acquisition and Judgement, enter the same IP address for both IO, but keep the two different ports of it (i.e. 2222 and 3000).

Do not forget to check the checkbox on the left and click on “save” to activate this service. Click on Close to leave this view**.** If you have changed IP addresses or ports, you may need to restart the software.

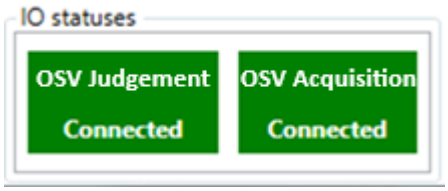
5.6.2 For Acquisition and Judgement computers with OSV9 Software

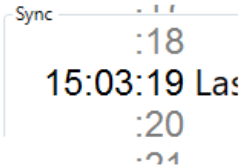


- The principle is the same as the OSV8 Setup (check chapter 5.6.1), but with the OSV9 IO there isn’t any “Event filter”. Please be careful with the configuration of the “IO_FrontCam” in the OSV9 software to avoid confusing events being sent from both instance (Acquisition and Judgement computer).
- In case of a unique computer making the Acquisition and Judgement, create only one IO, and enter the IP address and the right port of it.

5.7 Check Connection Statuses

- If everything works correctly, both statuses shall be connected and green.
- **The clock with time of Day shall be ticking.**





6 PREPARE FOR RACE

6.1 (very important) Synchro

Pay attention to this. Otherwise your time seeking orders will fail or show the wrong images!

- **Synchronise the OSV Camera with the rest of your timing devices** (Chronos, Quantum, ASC, etc.)
- **Scaider software** must be **showing the ticking Time of Day** from OSV Record (chapter 5.6 and 5.7).
- **Click** on the **Sync button**. **Wait for 5 seconds**, the live image and the fps will stop shortly and it **will write sync OK with the time when it was synced.**
- Do not press the Sync button if you have no Time of Day ticking.

- **If you do** a **new sync** of the **OSV** Camera (e.g. for the afternoon session), you **must repeat the steps** in this §.

If you plan to use the Scaider Camera without an OSV Camera, for simple video logging, be sure to delete the file sync.xml from the \config subfolder. You will then work with the Time of Day of your computer.

6.2 Get the Auto mode (remote control)

If everything is green in chapter 5.7, you can check the Auto Checkbox.

With this check, everything will work automatically:

- When OSV Acquisition computer enters a race, SCAIDER software will create a new folder in the \FrontCameraData folder with the same ID as OSV.
- When the race starts, the SCAIDER software will start recording automatically.
- When the race exits, the SCAIDER software will stop recording automatically.
- When the Judgment computer will start placing a new cursor, the SCAIDER software will display the Front image accordingly.

If the given image frame is not suitable, the user can scroll back of forth with the mouse wheel or with the Keyboard arrows ← →

6.3 Background recording / Loading another race

If the new race has already started, but the previous one still has to be judged, the user can double click on another race in the Existing Races list on the left. This will not affect the current race being recorded in background.
To return to the live race, press the Live button.

6.4 (very important) Disk space

- **Before the meeting**, **delete all** the content of \FrontCameraData in the windows Explorer.

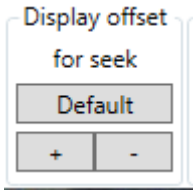
- Exceptional usage :
  - If your hard disk is of limited capacity (256Gb) you can choose not to record the short distances, by disabling the Auto Mode (§6.2) and re-enabling it before a long distance. You must not forget this, otherwise you can miss the next race. **The user is responsible for controlling this!**

  - If the remaining disk space gets low during the race in progress (< 10Gb and starts blinking red), you must go to the Windows Explorer, open the \FrontCameraData, sort the folders by Time and Date and delete the previous races. **This operation must be exceptional and handled with maximum of caution!**

7 JUDGING

7.1 Display offset

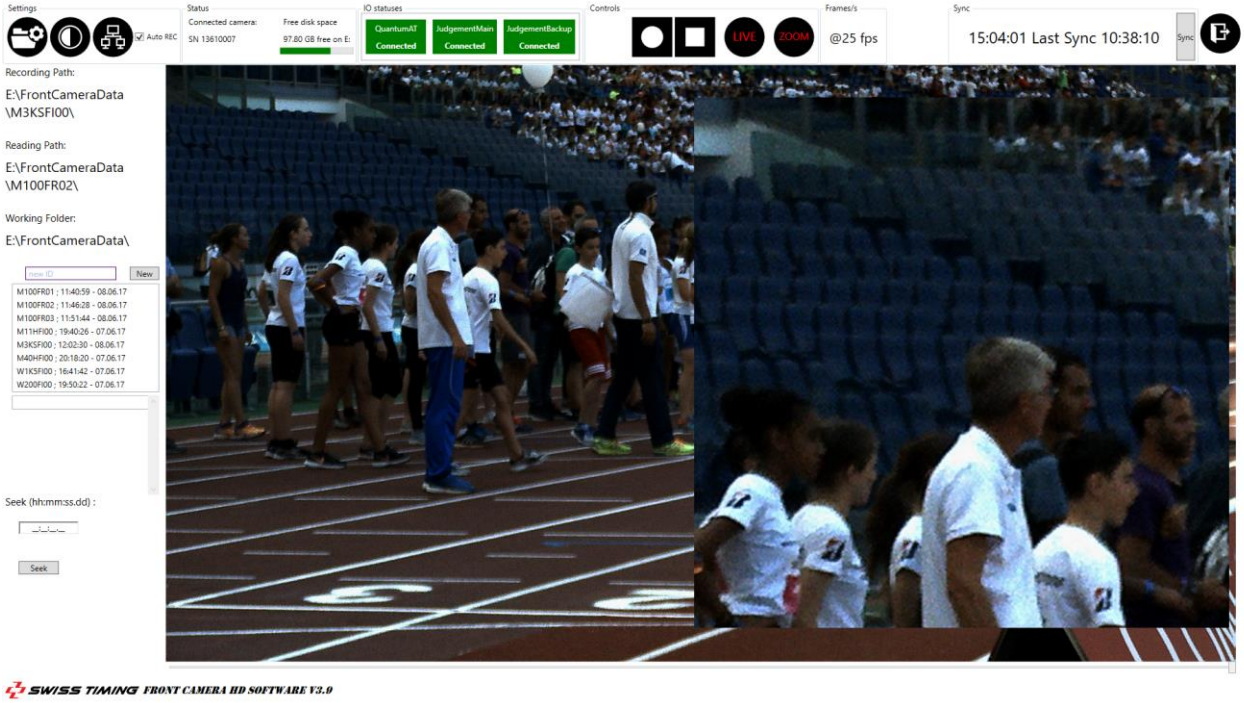
After seek, if the user notices a constant delay in images, he can introduce an offset in number of frames. Pressing +/- button increases/decreases the offset by 1 frame. The offset shall not be bigger than 5-6 frames,
The Default button will restore the offset to a central value.



7.2 Digital zoom

By pressing the Zoom button or the Z key, the zoom window will appear over the main image.

- to move the Zoom Window, drag it with the left mouse button
- to centre the point to zoom, right click on the main image the region you want to zoom
- to increase or decrease the zoom factor, place the mouse cursor in the zoom window (without clicking), hold down the CTRL Key and scroll the mouse up or down.



8 KEYBOARD SHORTCUTS

F5	Toggle recording (start/stop)
Left arrow ←	Scroll one image left
Right arrow →	Scroll one image right
Z	Toggle the digital Zoom view

9 PROPERTIES

9.1 Specifications Scaider

Dimensions (LxWxH):	76 x 79 x 187 mm
Lens:	Integrated 12x zoom motor lens
Weight:	0.485kg
Resolution:	1920x1080px Full Hd
Frame rate:	25 fps
Connection:	Gigabit LAN, up to 100m
Power:	Power Over Ethernet, POE
Temperature:	-5°C to +45°C
Protection class:	IP43
Certifications:	CE and RoHS compliant

10 APPENDIX

10.1 Version history

Version	Date	Modifications since last version
1.0	20/06/16	Initial version
1.1	15/02/17	New chapter 3.4.1
1.2	22.06.2017	- Updated interface screenshots for new software version v3.9 - Chapter 5, New recommendation for Windows text size and Image Settings - Chapter 6, re-written the sync procedure and added information about Disk Space handling. - New Chapter 7 – Judging with new function Digital Zoom explained.
1.3	21.11.2017	Computer requirements: Microsoft Windows 10 64 bit + SSD HDD 512 GB
1.4	26.08.2025	- Chapter 4, Adding configuration for the OSV9 software - Chapter 5.6, Updated IO Settings for the OSV9 software

NOTES

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