

TimeTronics

Manual MacFinish 2HS 500



SPORT TIMING SYSTEMS

Version: 2014 v1



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1. PREFACE

MacFinish Photo-finish: Concept-Idea

The idea of photo-finish is, as the name indicates, to take pictures of the finish line when an athlete or object arrives. Contrary to ordinary 'still' pictures taken with your camera, the MacFinish system records only the finish line. With a range from 100 to 9300 lines per second, the MacFinish 2HS 500 sends the resulting picture to the MacFinish PC. This allows the operator to read times with an accuracy of up to 0.5 thousandth of a second.

Welcome to the 'MacFinish 2HS 500' user manual.

May we recommend you to gently leaf through the entire manual first, just to have an initial idea of how the manual is structured. As we cannot possibly explain all details simultaneously, this might help you a bit in understanding and tracing things back. Of course, the table of contents will also help you in doing so.

If you, after reading this document, have any further question regarding the operation or service of this or any other TimeTronics equipment, please contact your local distributor or TimeTronics directly, by email; info@timetronics.be, or call us at (32) 14 / 23.19.11

Please also contact us if you have any remarks or advise regarding this user manual; info@timetronics.be.

Good luck with MacFinish 2HS 500 and thank you for your confidence in the TimeTronics products and services.

The editors.

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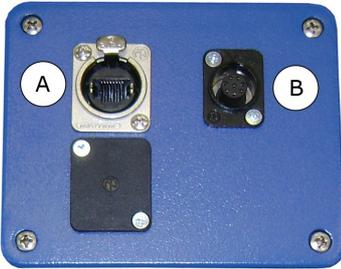
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2. HOW DO WE CONNECT ALL CABLES?

2.1 Camera connections



Note: It is **very important** for the MacFinish 2HS 500 to have a direct connection between the Ethernet cable from your camera and the photo-finish computer!

At the back of the MacFinish 2HS 500 camera, you have two connections. In the "A" connection you need to plug in the Ethernet cable, which is used to make the **direct connection** with your photo-finish computer. The "B" connection is used to plug in the cable of your Interface Box to make further connections with the battery, photocells, start signal, etc.

Note: It is **very important** that you connect the camera **directly** with the photo-finish computer! There may be no interference by an Ethernet switch or hub for this connection! This is very important for the MacFinish 2HS 500. If you need to use other Ethernet connections on your computer, you will need to work with an Ethernet switch. Plug in the 'USB to Ethernet converter' in one of the computer's USB ports.

2.2 Mounting the camera on the tripod and lens on the camera



Photos: Tripod



MacFinish 2HS 500 camera, lens and Pro camera head

Attach the camera head on the tripod or camera pole first. Then attach the camera on the camera head.

Attach the F-mount (NIKON bayonet mount) lens to the camera. Make sure that the little white ball on the lens is facing up, slide the lens into the camera, and turn left until you hear a 'click'. The lens is now fixed to the camera. Completely open the lens diaphragm (= iris) (on the smallest number, for example "F2.8"). Adjust the focus between 10 meters and "infinite" and zoom out (if you use a zoom lens).



Photo: Camera lens

2.3 Steamy lenses

You could sometimes struggle with a steamy lens in hot and moist countries. When having stored the equipment in a cool or air-conditioned room, the wet air may start condensing on the cold lens glass during the first quarter of an hour when exposed to this 'tropical' weather. Water may start dropping from the lens. In this case, we recommend you to just wait for a quarter of an hour to have the equipment adapted to this new temperature. Subsequently, you should dry both the lens glass and the CCD-sensor with a dry and clean cloth.

2.4 Interface Box

The Interface Box is used to connect the camera with different serial ports like the start detector, the finish detector, Arrival Remote Control, ScoreBoard, WindSpeed, FieldTerminal and battery (charger).

The different serial ports are explained below:



Photo: Interface Box

2.4.1 Start detection

The system can use different start signal sources, depending on which sport the system is being used for:

- starting pistol, for example with athletics
- manual start push button, for example with road cycling races of many hours.
- cable to be connected to a starting switch of the race track, for example at greyhound races.

Plug the cable of the chosen start-sensor into 'Start' = leftmost connection on the front of the 'MacFinish Interface Box', **OR** in the start connection of the 12-wire cabling system (cable-reel or Connection-box).

2.4.1.1 Start detector/start pistol

The start detector (as shown below) is a little blue aluminium box, which should be attached to the barrel of the starting pistol. If the detector cannot be attached to the barrel, it must be positioned at a maximum distance of 10 cm from the pistol's barrel.



Photo: Start detector

Note: TimeTronics also offers their customers a DOUBLE CHANNEL start detector, which is completely compatible with the (older) single channel (=standard) start detector. This double channel version has TWO build-in start sensors, and two electronic circuits, to avoid a timing problem if suddenly there would be a breakdown of a sensor. If **one or both** of these sensors detect a starting shot, a start is given to the MacFinish system. But how can YOU test that both sensors and corresponding circuits are still working correctly, even after a number of years? If you plug such a double channel start detector **DIRECTLY** IN THE START CONNECTION OF THE MACFINISH INTERFACE BOX (so not in the 12-wire cable reel or connection box on the track !), and you give it a **large shock** to simulate a start, you should see that both red leds (on the MacFinish Interface) will light up during a few seconds. If only one of the leds flash, then one of the sensors inside the start detector is damaged.

Note: If you **smoothly** knock on one side of the start detector, for example with a finger, then only ONE of the leds will illuminate. You can even test which sensor is mounted on the top of the start detector, and which one is mounted on the opposite side of the detector.

2.4.1.2 Manual Start Push Button

If no starting pistol is used, a manual start push button can initiate the timing process. The timing accuracy will be without correct 'electronic timing', but with 'manual timing accuracy'.



Photo: Manual Start Push Button

2.4.1.3 Cable to switch of starting gate

It is also possible to use your own switch (a normally open-contact, with a closing contact when the race is started) to get the MacFinish system started. Do NOT worry if other people tell you that a normally closed contact is much better, to be able to test the start cable BEFORE the start of the race. This is because we have included a 2K2 resistor in parallel to the start switch, so that the MacFinish system can also test the start cable, and give a warning beep if the cable is BROKEN or if the cable is SHORT CIRCUITED. Our method is therefore better than a start switch with normally closed contact, which can only test a broken cable...!

2.4.2 Finish detection

The system can use different finish signal sources, depending on the sport for which the system is being used:

- photocells, for example with athletics
- manual finish push button, for example with road cycling races of many hours.

Plug the cable of the chosen finish sensor into 'Arrival' on the front of the 'MacFinish Interface Box', **OR** in the finish connection of the 12-wire cabling system (cable-reel or Connection-box).

2.4.2.1 Photocells

Photocells are used to give an arrival signal to the MacFinish Interface Box, so that the recording of photo and time could take place automatically. The photocells consist of an infrared light transmitter and receiver module, which should be installed close to the finish line, on the left and right side of the track. Mount them at a suitable height (between athlete chest and hip height), depending on the age of the athletes that you want to record. Make sure that you do not mount them too high, as (small) athletes who do not interrupt the photocells will not be recorded automatically. The schematic representation may give you an idea.



Photo: Photocells

Try to position the photocells as close to the finish line as possible, but make sure that they do not obscure the view of your camera!

- The photocell transmitter is simply connected to a battery pack (12Vdc), to receive power.
- The photocell receiver is connected to the MacFinish system (Interface Box or 12-wire cabling).

You can identify the transmitter and receiver by the following;

- On the photocell transmitter you see an arrow (→) pointing AWAY from the photocell.
- On the photocell receiver you see an arrow (←) pointing TO the photocell.

You can fix your photocells easily with Velcro strips on the L-shaped metal plate, which can be screwed on top of the included tripods. Of course, they can also be fixed more permanently by means of the screws. When the IR light beam is interrupted between the transmitter and receiver, a signal is sent to the MacFinish Interface Box, indicating that a competitor is finishing, or just has finished. You may wonder how images are correctly being recorded when the photocells are placed just behind the finish line! Make sure that both photocell modules are correctly pointed towards each

other, enabling the receiver to correctly receive the infrared light from the transmitter. You can later verify this, when you have powered the MacFinish system with a battery; the led on the arrival remote control box should be out.

Note: TimeTronics also offers their customers a DOUBLE CHANNEL photocell pole, which is completely compatible with the (older) single channel (=standard) finish detector. This double channel version is a blue lacquered aluminium bar with TWO build-in photocell beams, and an electronic circuit, to give the MacFinish an arrival signal only when BOTH parallel beams are broken. The purpose of the two beams is that the scoreboard can now be stopped (showing the UNOFFICIAL time of the first competitor) when the body or torso of an athlete is passing the finish line, and not yet when a hand of a competitor is blocking a single infra-red beam ! The result is a (statistically) more correct (unofficial) time on the scoreboard, and on television ! We can not GUARANTEE that it will always be more correct, because it could still be possible that the hand of one athlete is blocking the upper beam, and the hand of another athlete is blocking the lower beam.

Note: This is only the case if nobody stands between the detectors, if both detectors are correctly pointed towards each other and if the photocell transmitter is powered with a battery!

Note: From a distance it is easier to verify the adjustment of the photocell transmitter and receiver than from a short distance, in other words; stand a few meters behind and besides the photocells to check the direction of the photocell transmitter and receiver modules.

2.4.2.2 Manual Finish Push Button

MacFinish can also be used without the use of photocells. In that case, recording of a photo-finish picture will be done manually by operating the 'Manual Arrival' Button:



Photo: Manual Finish Push Button

2.4.3 Arrival Remote Control Box

The use of any finish detector can be combined with an 'Arrival Remote Control box', equipped with an 'Off/Auto/Manual switch' plus a 'led' which indicates the status of the finish detector:



Photo: Arrival Remote Control Box

Connect the plug of the 'Arrival Remote Control box' to 'Arrival Remote Control' at the front panel of the 'MacFinish Interface Box'. The switch on the control box makes it possible for the operator to disable ('off' position) or enable ('auto' position) the finish detector (photocells), for example if some athletes are passing the finish line, but you do not want to take a picture, if they still have to run one or more laps. The third position of the remote control switch (press completely down) is to

manually generate an arrival signal if:

- there is no finish detector connected.
- there is no finish detector signal; for example; athlete diving under the photocell beam.

2.4.4 Serial port for ScoreBoard (SB) - Not for 2HS 500

This connection should be connected by means of a TimeTronics serial cable with product number 'P244' to a RS232 serial port of your MacFinish computer, if you want to drive a timing scoreboard (of any brand of type). The scoreboard(s) itself should be connected to a cable reel (mobile 12-wire cables) OR connection box (underground 12-wire cables), by means of the 12m cable (P229) that is supplied with the scoreboard, or any compatible 5-wire extension cable P063 (=50m) or P064 (=100m).

2.4.5 Serial port for WindSpeed (WS) - Not for 2HS 500

This connection should be connected by means of a TimeTronics serial cable with product number 'P244' to a RS232 serial port of your MacFinish computer, if you want to use an (optional) ultrasonic 'WindSpeed' anemometer. The WindSpeed itself should be connected by means of the 'P532' serial cable to a 12-wire cable reel, or a 12-wire connection box on the track.

2.4.6 Serial port for FieldTerminal (FT) - Not for 2HS 500

This connection should be connected by means of a TimeTronics serial cable with product number 'P244' to a RS232 serial port of your MeetManager computer, if you want to use one or more FieldTerminal(s). The FieldTerminal (s) itself should be connected to a cable reel (mobile 12-wire cables) OR connection box (underground 12-wire cables), by means of the 50m cable (P063) that is supplied with the FieldTerminal, or any compatible 5-wire extension cable P229 (=12m) or P064 (=100m).

2.4.7 Power = 12 VDC battery, with optional battery charger

You can now power-up the MacFinish system by connecting a fully charged 12Vdc battery pack (P041) to the rightmost connection on the front of the MacFinish Interface Box, marked with '12VDC Power supply'. If you think that you will need to use the MacFinish for several hours, you better immediately connect a battery charger to the battery pack, so that the battery remains fully charged.

Warning: Be sure to protect the battery charger for rain or other water sources, as it has an open structure and it is not protected against water! This could be dangerous! When you have plugged in the battery, you will hear a beep immediately. Wait for two seconds to give the MacFinish time to start up. If photocells are being used, check whether the led on the arrival remote control box is out.

You may now switch on your computer and your computer screen. We take it for granted that the computer system software has already been installed. If not: please consult your computer manual! The hardware configuration has now been installed; we will explain in the next chapter how to use the (MacFinish) software.

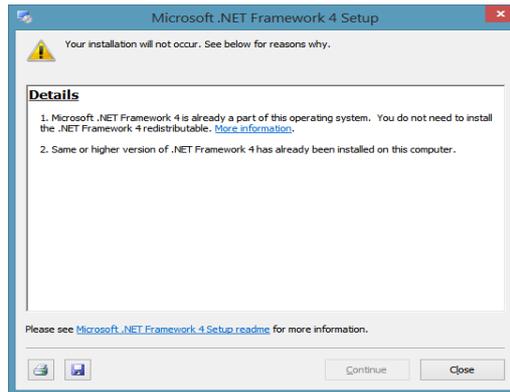
3. SOFTWARE INSTALLATION

Recommended PC operating system: Windows7 or Win8.1 (32bit or 64bit)

3.1 Framework .NET 4

Install or update to Framework .NET4: Framework_40_Full_x86_x64.exe

It is possible that you have already installed this software with other program installation. In this case you will get following message during the installation. In this case just close and proceed to the next step.

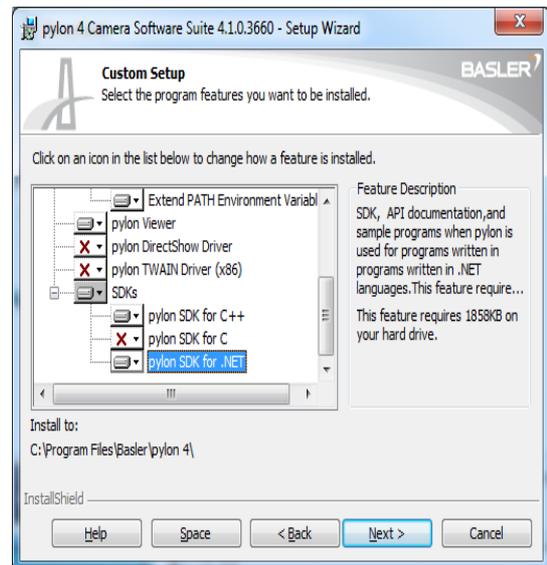
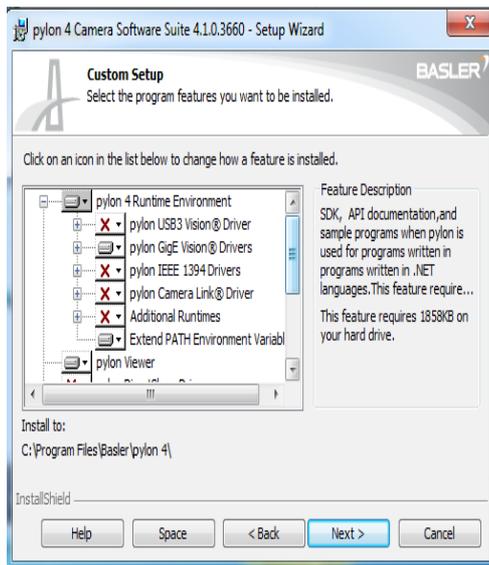


3.2 Pylon installation:

Depending on the computer system you are using you have to install the 32bit or 64bit

- Basler pylon x86 4.1.0.3660.exe (windows 32bit)
- Basler pylon x64 4.1.0.3660.exe (windows 64bit)

During the installation you have choose following components:



3.3 MacFinish 2HS 500 software installation

Install the following: MacFinish_2H5500.msi

4. SOFTWARE

4.1 In general

Open the software by double clicking on the MacFinish 2HS 500 icon



Photo: MacFinish 2HS 500 icon

If you open the software, you will see the main page of the software. Our software has a particular structure. First of all, it has 5 **tabs (see picture below)** on your left hand side (File/Camera, Position/Zoom, Image, Export, Results).



Photo: Camera/File tab

Every tab contains different **parts (see picture below)**. These part are built up by items, check boxes, line bars, (as on the picture) ... In the middle there is a gray window which displays the different parts, items, check boxes, ... of the tabs.



Photo: Virtual Photo cells part

On top of this gray window there is a white field which shows you in what **mode** you are operating. There are 8 different mode, which all have a different purpose.

1. Position mode
2. Zoom mode
3. Pixel Shift mode
4. Photocell mode
5. Delete mode
6. BW Calibration mode
7. Debug mode
8. Second View mode



Photo: Position Mode

On your right hand side, you will see the camera window. This is the window where your camera will display the photo finish. On top of the camera window, there is a time ruler which indicates the arrival time.

You can command the software by using your mouse, your keypad or the shortcuts on your keyboard. **Look at the fifth chapter (Shortcut keys) in the manual for the list of shortcut keys!**

4.2 File/Camera tab

If you click on the File/Camera tab, you will see 2 different parts: File and Cameras.

To start, you first have to make a connection between your camera and your PC (software). Click on the 'Camera' button in the 'Cameras' part. Select the camera you are using and click OK.



Photo: Camera selection

If you have set up a connection between your camera and your computer, then your camera view should now be displayed on the right part of your computer screen. If you want to disconnect the camera, just click on the 'Close' button.

4.2.1 File

To name your finish pictures, click on the 'Set File Name' button in the 'File' part. Enter the name you want to give to your photos (for instance the name of the race). By clicking the '+' and '-' buttons or by hitting the Page down (+) and Page up (-) button, you can shift between the different photos. The number of the photo is displayed between the '-' and 'Set File Name' button.

4.2.2 Viewer check box

If you mark the 'Viewer' check box, a new window will appear on the rightmost side of your computer screen. This shows your camera view. You can now start recording by clicking on the 'Record' button or by hitting F5 on your keyboard. You will notice that the white field which displays the operating mode, will turn red during recording.

4.2.3 Virtual photo cells

If you want to use 'virtual' photo cells, mark the check box in the 'Virtual Photo Cells' part or hit the F6 button on your keyboard. Virtual photo cells can be used if you want to record automatically. It is the **software** that will detect that an object is passing the finish line (by continuously looking at the live camera picture), and then will activate the recording of the camera in memory. You can also enable & disable such 'virtual photo cell' and 'set the sensitivity' of this to the desired value.

4.2.4 Line Rate bar / Gain Rate bar

The 'Line Rate' bar can be used to set the amount of lines of capturing. The higher your line rate, the more lines your camera will capture. Please note that the higher you set the line rate, the more light your camera requires. This can be set in the 'Gain Rate' bar. The higher this bar, the more light your camera gets.

4.3 Position/Zoom

The second tab is used for the display settings of the picture on your computer screen. You will notice three parts: Position, Zoom and Orientation.

4.3.1 Position

In the Position part you have 8 buttons. From left to right:

Upper row:

1. Shifting backward rapidly in the picture
2. Shifting backward in the picture
3. Shifting forward in the picture
4. Shifting forward rapidly in the picture



Photo: Upper row in 'position' part

Lower row:

1. Shift to the top of the picture
2. Shift to the bottom of the picture
3. Shift to the beginning of the picture
4. Shift to the end of the picture

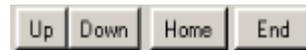


Photo: Lower row in 'position' part

By using the arrows on the keyboard, you can shift in the picture as well.

4.3.2 Zoom

Use the 'Zoom' part for zooming in and out on the picture. Use the 'Vertical' line to zoom in and out vertically. The 'Horizontal' line can be used for zooming in and out horizontally.

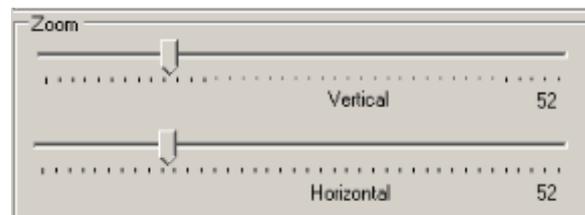


Photo: Zoom line

4.3.3 Orientation

Mark the 'Flip Hor' check box for flipping your picture horizontally. Mark the 'Flip Vert' check box for flipping your picture vertically.



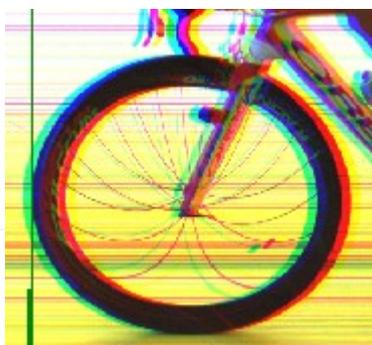
Photo: Flip check boxes

4.4 Image

The 'Image' tab contains four different parts: Pixel Shift, Black/White Calibration, Contrast/Luminosity and Delete.

4.4.1 Pixel Shift

This part can be used for fixing the color of your picture. Sometimes the RGB calibration does not contain the same values (example below), which makes you to fix the colors of the picture. The 'Pixel Shift' part contains two bars. The 'Top' bar can be used for fixing the top part of your picture. The 'Bottom' bar can be used for fixing the bottom part of your picture. You can also use the Q and W touches on your keyboard to control the Pixel Shift.



Photos: Before using Pixel Shift

After using Pixel Shift

4.4.2 Black/White Calibration

This part can be used for fixing the colors of your picture manually. If you want to set the level of darkness of your picture, click on the black pixel and then on a black point in your picture which you define as being the 'perfect' black. The picture will then take over the level of blackness you indicated. If you want to fix the lighter parts of your picture, click on the white pixel box, then on the white part of your picture which you define to be the 'perfect' white. All white parts will adjust to that level of whiteness. For example: on the picture below, after clicking the white pixel box, the white in the upper part of the ID number was selected to be the perfect whiteness. All light parts will adjust to this level of whiteness.



Photo: Perfect whiteness

4.4.3 Contrast/Luminosity

The 'Contrast' bar is used for fixing the contrast of your picture (dark – light).

4.4.4 Delete

In the 'Delete' part you have 4 buttons and 1 check box. This part is used for deleting (empty, unnecessary, ...) parts of your picture.

If you want to delete parts of your picture, first click on the 'Delete' button next to the check box. This way you activate the Delete mode (check white field on top). Then select the part of your picture you would like to delete, click again so that the selection area turns yellow or green, then hit the delete button on your keyboard. Now you have deleted the zone you selected.

If you click on the 'Auto Cel' button, the system detects the empty spaces in the picture and selects them. Then you can hit the delete button on your keyboard to delete these spaces.

The 'Auto Res' button gives you the possibility to choose how many lines you would like to keep after each time indicating line (see picture below). This gives you the possibility to scroll faster in the picture.



Photo: 100 lines after time indicating line (green)

If you would like to see again all the parts you deleted (for instance to check), then mark the 'Show hidden' check box.

If you want to undo your delete actions, click on the 'Undel All' button.

4.5 Export

You can export your pictures to another destination. The export tab contains three parts: Export Settings, Ticket and Remote Control. If you want to export your picture to an external screen, mark the 'Enable' check box.

To export, click on the 'Export' button and select the desired destination.
To print your picture, click on the 'Print' button.

4.5.1 Export Settings

In this part you can select what part of your picture you would like to export.

4.5.2 Ticket

In this part, you can define to what port you would like to export.

4.5.3 Remote Control

--- Under construction ---

4.6 Results

The 'Results' tab contains 1 part: Race settings.

If you click on this part you set the race information like the type of race and the distance

The results of the race will be displayed underneath the 'Export' and 'Partants' button.
The table contains 9 columns. You can define your own columns, which will be explained later in the Advanced User Settings chapter.

All results will be filled in automatically, but you can also add results by hand. Move your mouse on the picture to the front side of the competitor's front wheel and click. A red line with a small box will appear displaying his time, you just have to fill in the ID number of the competitor.

As we mentioned above, the results table contains 9 columns. Some columns are used for different sports, which means that you possibly don't need some of them.

Explanation of the different columns:

Pos: position of the competitor.

Bib: ID number of the competitor.

Name: Name of the competitor.

Time: time of the competitor.

Gap: difference with competitor.

Gap: difference with first horse.

Distance: calculated formula for distance difference with first competitor.

Avg: --- *Under construction* ---

T/K: calculated formula for the average speed (Time/Kilometer)

You can export these results by clicking on the 'Export' button.

You can also import a participants file by clicking on the 'Partants' button.

5. ADVANCED USER SETTINGS

5.1 Data file

All pictures, results and configuration files can be found in the MF DATAFOLDER. This file can be found on C:/MF DATAFOLDER. All pictures will be stored here.

Three files will be created for every picture:

- .CFG file which contains all actions that were carried out in the picture
- .OPF file which contains the finish picture
- .Txt file which contains the results of the picture

Besides these three types of documents, there is also a fourth type which can be used. This is a .reg file or also called a PARTicipants file. This file can be used to import a participant list.

5.2 Settings

The settings document 'Settings.txt' which contains all parameters can be found in the map where you have installed the MacFinish software.

All parameters are set in this document. **Only change them when necessary!**

Explanation of the parameters:

CELL_ZONES=0,557,1082,459

- --- Under construction ---

FILE_PREFIX=NAME

- This is the name of the file you are using.

MAX_CHECK_TIME=2000

- --- Under construction ---

RESULT_FIELDS=pos:sR_Pos,bib:sI_Bib,time:sBR_Time,gap:sR_Gap,horse_gap:sR_Horse_Gap,distance_gap:sR_Distancep,color:sH_Color,avg:sI_Avg,tkm:T/K

- These are the different columns that can be set in the 'Results' tab.

- pos:sR_Pos = Position of the competitor
- bib:sI_Bib = ID number of the competitor
- time:sBR_Time = Time of the competitor
- gap:sR_Gap = Difference with first competitor
- horse_gap:sR_Horse_Gap = Difference with first horse
- distance_gap:sR_Distancep = calculated formula for distance difference with first competitor
- color:sH_Color = --- Under construction ---
- avg:sI_Avg = --- Under construction ---
- tkm:T/K = Time/Kilometer of the competitor

REMOTE_DIRECTORY=C:\Testje

- This is the directory which has to contain the participant files

CELL_SENSIVITY=52

- This is the maximum sensitivity value of the virtual photocells

SAVE_DIRECTORY=C:\Testje

- This is the working directory

ENABLE_DATABASE=FALSE

- --- Under construction ---

MIN_CHECK_TIME=1050

- --- *Under construction* ---

NEW_TIME=1000

- --- *Under construction* ---

6. SHORTCUT KEYS

Action	Keyboard	Mouse	What mode?
Modes			
Switch to Position mode	P	Left button	
Switch to Zoom mode	Z	Middle button	Navigating between Zoom and Position mode
Switch to Pixel Shift mode	S		
Switch to Photocell mode	C		
Switch to Delete mode	"delete" button		
Switch to BW Calibration mode	B		
Switch to Debug mode	D		
Switch to Second View mode	E		
Moving			
To front of the picture	"home" button		
To end of the picture	"end" button		
Shifting up	Left/right arrow		In Position mode
Shifting down	Up/down arrow		In position mode
Scrolling in the picture	Arrows	- Wheel - Clicking on the edge of camera screens	In Position mode
View			
Show/hide preview	F7		
Present screen on new screen	F9		
Leading competitors on new screen with red line	F10		
Horizontal flip of picture	H		
Vertical flip of picture	V		
Zooming			
Zooming in by multiples of 2	*		
Zooming out by multiples of 2	/		
Zooming in by 1	+	Wheel	In Zoom mode
Zooming out by 1	-	Wheel	In Zoom mode
Recording			
Start recording/stop recording	F5		
Start recording by photocells/stop recording by photocells	F5		
Identification			
Search by ID number	CTRL + F		
Selecting		Left button	
Add indicating line at the end		Right button	In Position mode
Color adjusting			
Adjusting Pixel Shift by +1	- Q - ↓ and → arrow		In Pixel Shift mode
Adjusting Pixel Shift by -1	- W - ↑ and ← arrow		In Pixel Shift mode
Adjusting Pixel Shift by +5	ALT + Q		In Pixel Shift mode
Adjusting Pixel Shift by -5	ALT + W		In Pixel Shift mode
Deleting			
Start new deleting zone/recycle zone		1 st click	In Delete mode
End of deleting zone		2 nd click	In Delete mode
Confirming delete commands/recycle commands	"Enter" or "Delete" button		
Delete space of red bar		SHIFT + Left button	In position or Delete mode
Export			
Export to a serial port	T		In Second View mode
Export	E		In Second View mode
Print	P		In Second View mode