OMEGA Scan'O'Vision MYRIA – PHOTO FINISH CAMERA

USER'S MANUAL

3503.502.02 l Version 1.1 l April 2023

MYRIA 10 & MYRIA 16

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Caution and safety precautions

- 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 proper, 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.
- This program 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.

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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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1 INTRODUCTION

With its patented technology, the OMEGA Scan'O'Vision MYRIA camera lets you align the camera very easily on any finish line using a video image.

This manual explains the general principles of the OMEGA Scan'O'Vision MYRIA camera (OSV MYRIA), its installation, its working and its connections. It also contains information to install the software and driver on your computer and specific software function for this camera. The complete use of the software is described in the manual 3434.501.

A 10x (MYRIA 10) or 16x (MYRIA 16) optical zoom lens is integrated in the camera housing. It is fully remote controlled (zoom, iris and focus). It allows setting the camera in almost any location and having a perfect image framing.

OSV MYRIA camera is weather proof. Its temperature sensor will automatically control the internal fan.

1.1 MYRIA parts

1. Lens protective cap (lens is behind)
2. Air output (with internal filter)
3. Status LEDs
4. Air input (with internal filter)
5. I/O connector
6. Ethernet connector
7. Fixation plate

Figure 1 – MYRIA 10/16 front view

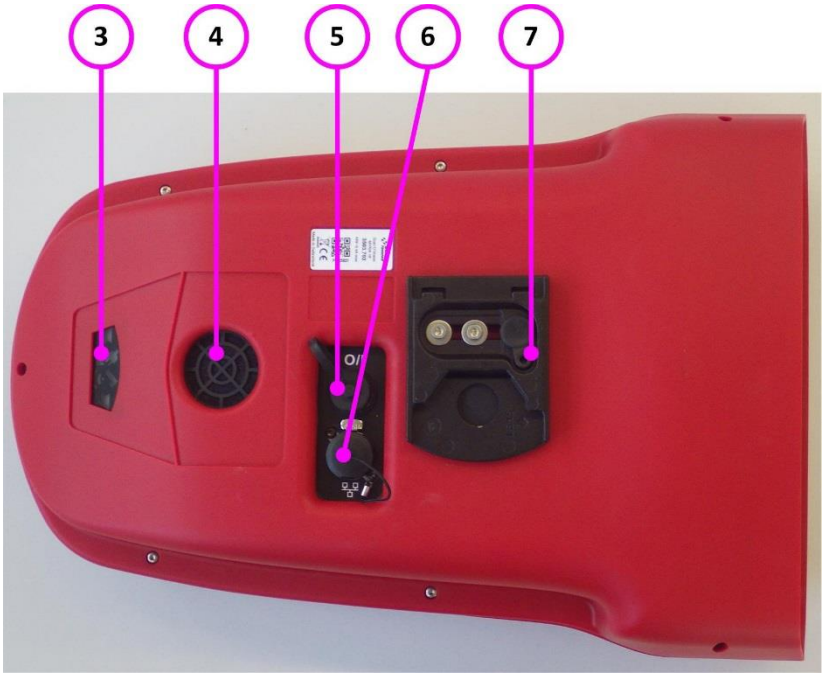


Figure 2 – MYRIA bottom view

1.2 Definitions

The camera is typically supplied with a support permitting the setting of its position according to 4 axes, here are the definitions used in this manual:

Translation	Horizontal displacement, perpendicular to the finish line.
Pan	Rotation in the horizontal plane.
Tilt	Rotation in the vertical plane, in the axis of the finish line.
Swivel	Rotation in the vertical plane, perpendicular to the finish line (to have the sensor "vertical" in the plane of the finish line).

2 INSTALLATION

2.1 Installation of the camera

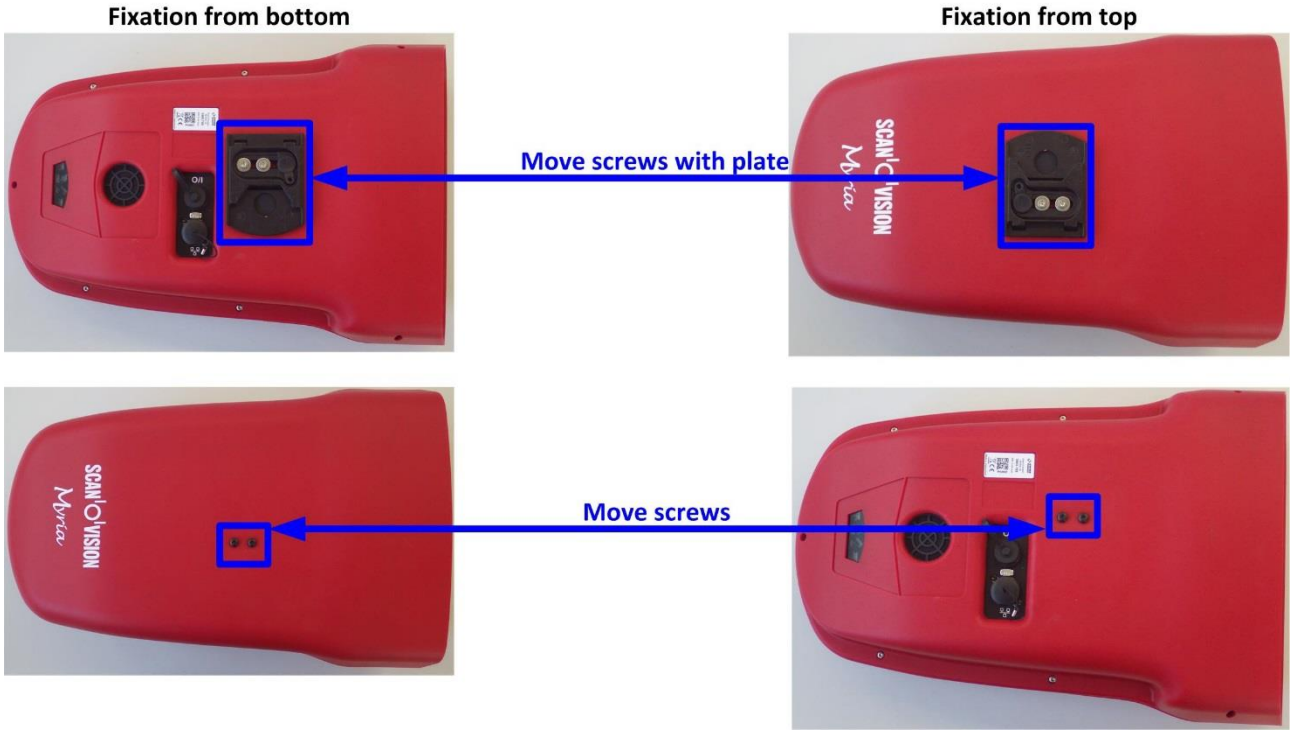
The photo finish camera must be installed exactly on a virtual extension of the finish line and the sensor must be vertically perpendicular to this line.

The inclination of the camera is important for the ease of judgment. In general, a vertical inclination of 8° to 10° is used for the rowing and the canoeing, and of 10° to 20° (in relation to the middle of the finish line) for the cycling, the horse-racings and of greyhound. For athletics, an angle of 25° to 30° is recommended in relation to the farthest lane in order to prevent the competitors in the foreground masking another.

- Centre the tripod on the extension of the finish line. If it is equipped with a spirit level, align the bubble precisely in the middle of the reference mark. Then slowly tighten all screws checking bubble does not move. For a better stability, spread the legs as far apart as possible and do not raise the central extension tube:

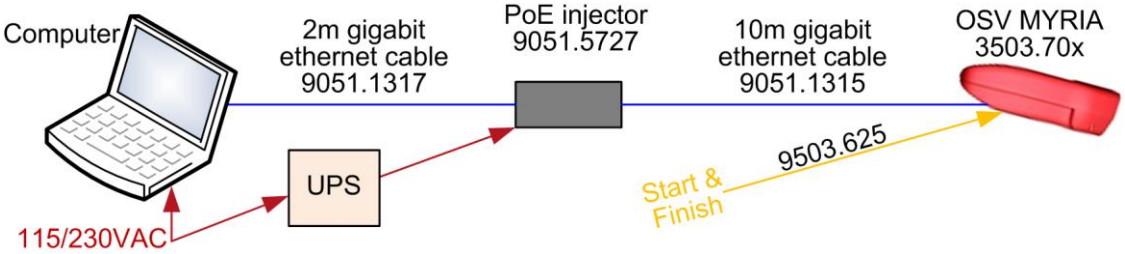
- On the tripod, first to fix the slide permitting the translation then the support permitting the three way rotation. If required, move the tripod so that the translation movement can be made perpendicularly (horizontally) to the finish line.
- Fix the camera on the support (quick lock). Thereafter, to remove the camera, it is sufficient to disassemble this quick lock (with security button). For more of details, please refer to the manual for the support.

The camera can also be fixed from top (for example to fix it under a roof); for that you should invert the fixation plate with its screws between bottom and top:



2.2 Wiring the installation

Connect the delivered Start-Finish cable (3503.625) on the bottom of the camera on the I/O connector. Connect the start device on the TUCHEL Start plug and the finish photocell on the FINISH bananas. If you want to do manual recording of images, it is recommended to connect a pushbutton (option 2872.003) on the FINISH bananas.



Connect the 10m network cable Ethernet Gigabit (9051.1315) between the Ethernet connector on the camera and the PoE connector of the PoE injector (power supply). Connect the 2m network cable Ethernet Gigabit (9051.1317) between the LAN connector of the PoE injector and the computer.

Connect the power cord between the PoE injector and the mains; the camera will automatically start up. To secure system availability during power disturbance, it is recommended to connect the PoE connector on an Uninterruptible Power Supply (UPS).

2.3 Power ON / Power OFF

As soon the camera is powered by the Ethernet cable (PoE), the camera will boot; it takes about 40 seconds to be in operation. There is no ON/OFF switch.
When the power is removed (Ethernet cable unplugged or PoE injector switched off), the camera will turn off, losing its time base (synchronisation).

2.4 Indicators

On the rear panel, different LEDs indicate the state of the camera:

LED	Name [color]	Description
	Inclinometer left [yellow]	If blinking: see from rear, the left side of the camera is too high. The faster the LED blinks, the closer the sensor is to vertical.*
	WiFi status [blue]	ON: WiFi enabled.
	Ethernet status [green]	Flashing when Ethernet activity.
	General status [green]	ON: µC powered, initialization in progress or freeze. Fast blinking (~5Hz): µC working, time based not sync. Slow blinking (~1Hz): µC working, time base sync.
	PoE status [green]	ON: AT type 2 compliant PSE detected.
	Inclinometer Right [yellow]	If blinking: see from rear, the right side of the camera is too high. The faster the LED blinks, the closer the sensor is to vertical.*

*: sensor is vertical when **and** are switched ON.

3 SOFTWARE

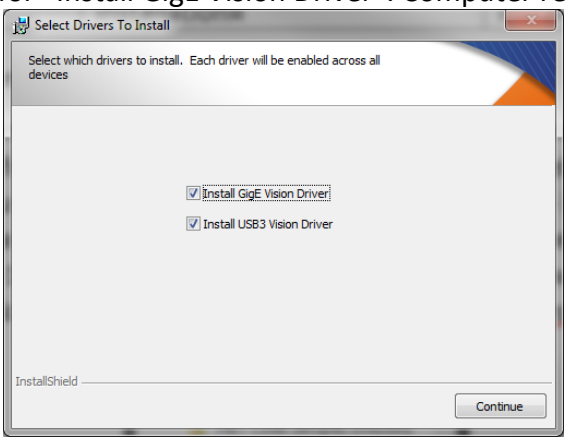
3.1 Computer specification

OSV MYRIA camera works with a computer (laptop or desktop) with the following minimum specifications:

	For acquisition computer (with camera connection)	For judging computer (without camera connection)
Operating system	Windows 7 or 10	Windows 7 or 10
Screen resolution	1920x1080 pixels	1920x1080 pixels
Hard disk	SSD, minimum 100GB	any
Network for camera connection	1Gb/s MTU 9kB (jumbo frame packet size)	
Network for computers connection	2nd network adapter (different from camera). 1Gb/s recommended. For example USB3-Ethernet adapter DeLock 62121	1Gb/s recommended
Various	USB port for software installation	USB port for software installation

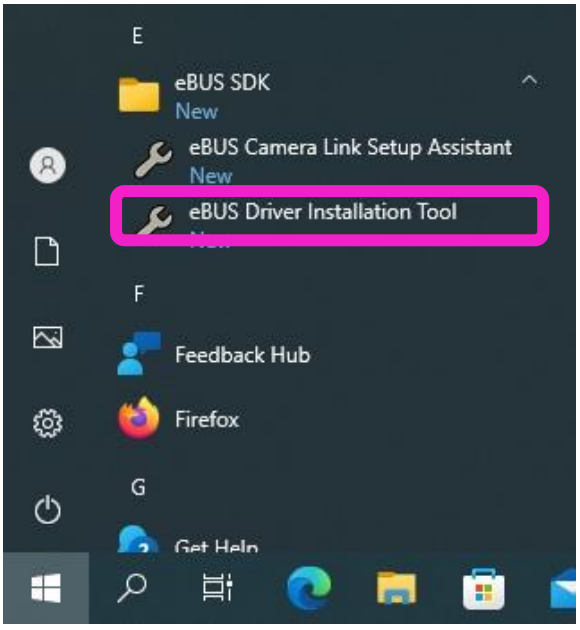
3.2 Software installation

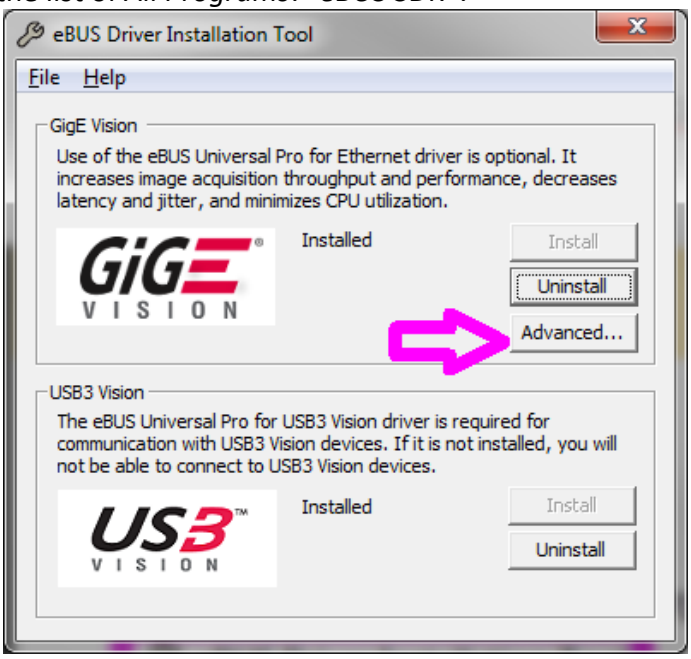
1. Install the software available on the delivered support. Installer will also install eBUS Runtime SDK 64-bit (driver for camera Ethernet connection). During installation, do not remove the check box for “Install GigE Vision Driver”. Computer reboot can be requested.



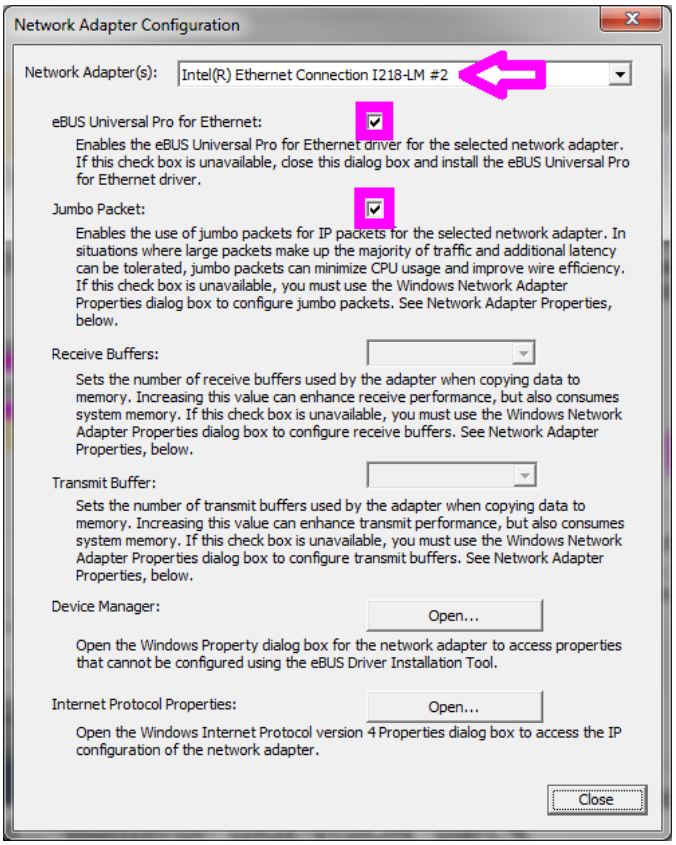
2. For a computer used without camera (judgment, diffusion), installation is finished. For computer with camera or Bridge connected, continue with next points.

3.Run “eBUS *Driver Installation Tool*” from the list of *All Programs*: “*eBUS SDK*”.





4. Click on the “Advanced…” button of “GiGE VISION” part.
5. In the scroll list, select the network adapter where the camera is connected. Ensure that check boxes “eBUS Universal Pro for Ethernet” and “Jumbo Packet” are checked.

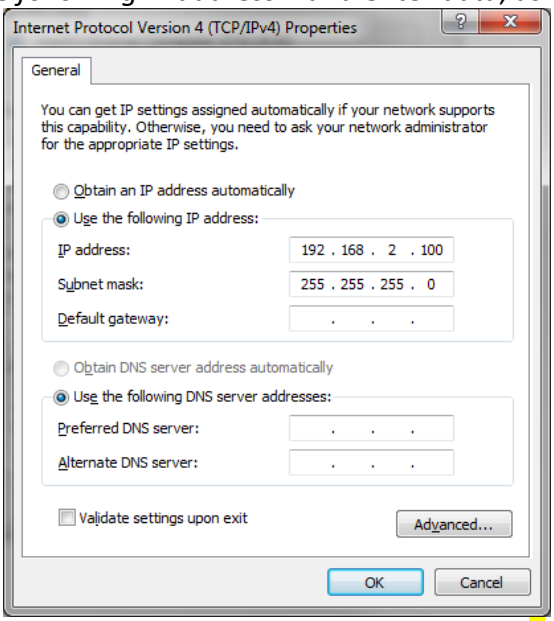


6. Close the windows.
7. To run the software, use the shortcut on the desktop (created by the installer) or run C:\OSV8\OSV7.exe.

3.3 Network card configuration

In addition to above driver setting, you should specify the TCP/IP address:

- Press the windows button "*Start*", "*Settings*" then "*Control panel*".
- Double click on "*Network Connections*".
- Right click on the line corresponding to the network card on which MYRIA camera is connected and choose "*Properties*".
- Highlight "*Internet Protocol (TCP/IP)*" then to click on the "*Properties*" button.
- Click on "*Use the following IP address:*" and enter data, as in the picture below:

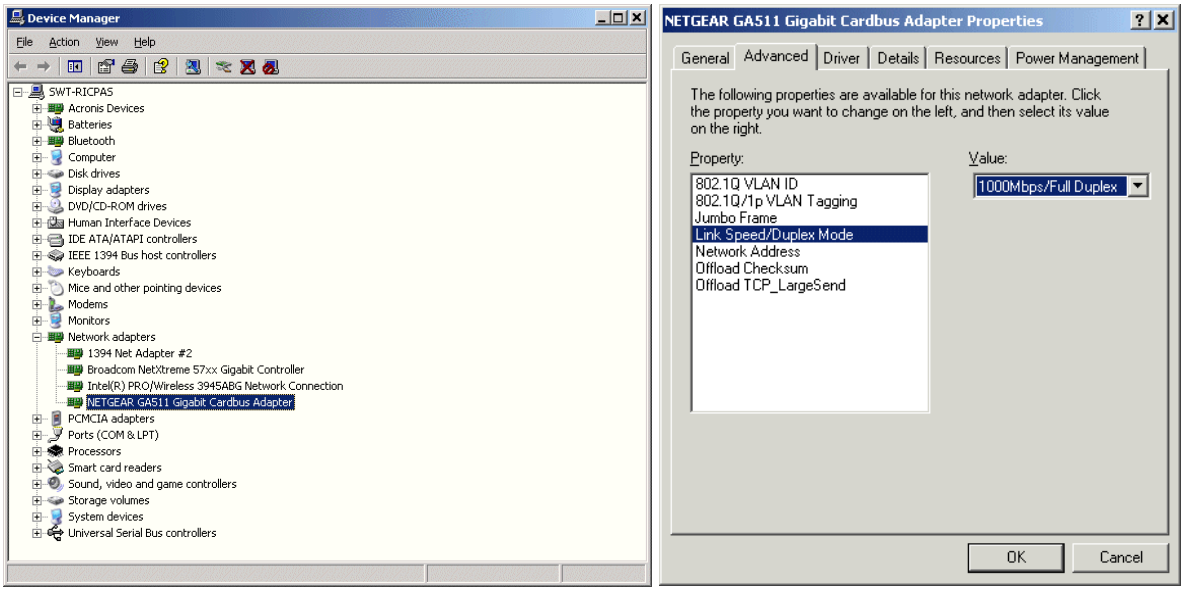


Note: IP address is 192.168.2.100 for OSV MYRIA connection and 192.168.0.100 for OSV-STAR connection.

- Click on the "*OK*" button of this window, and then on the "*OK*" button of the previous "*Connection Properties*" window.

It is also recommended to fix the transmission speed to 1Gb/s between the computer and the camera (this setting is not available for all network interface):

- Press the windows button "*Start*", "*Settings*" then "*Control panel*".
- Double click on "*System* ".
- Click on the "*Hardware*" tab and then on the "*Device Manager*" button.
- Right click on the network adapter where the camera is connected and select "*Properties*".



- Select the "*Advanced*" tab; select "*Link Speed/Duplex Mode*" in the list and change the value from "*Auto Negotiation*" to "*1000Mbps/Full Duplex*". Note: the previous text in magenta may change depending of the network adapter.
- Close all the opened windows by clicking on the corresponding "*OK*" button.

3.4 Software use

- You can read OSV-STAR and OSV MYRIA images with any OSV7 software configuration.
- The complete use of the software is described in the manual 3434.501 (available in the *Documentation* sub-directory. Following are some change related to MYRIA camera.

3.4.1 Information about cameraWith "*Help*", "*About Hardware*" menu, you can get a lot of information about the camera; for example its inclination or the temperature inside the camera (hottest point).

3.4.2 Test Window

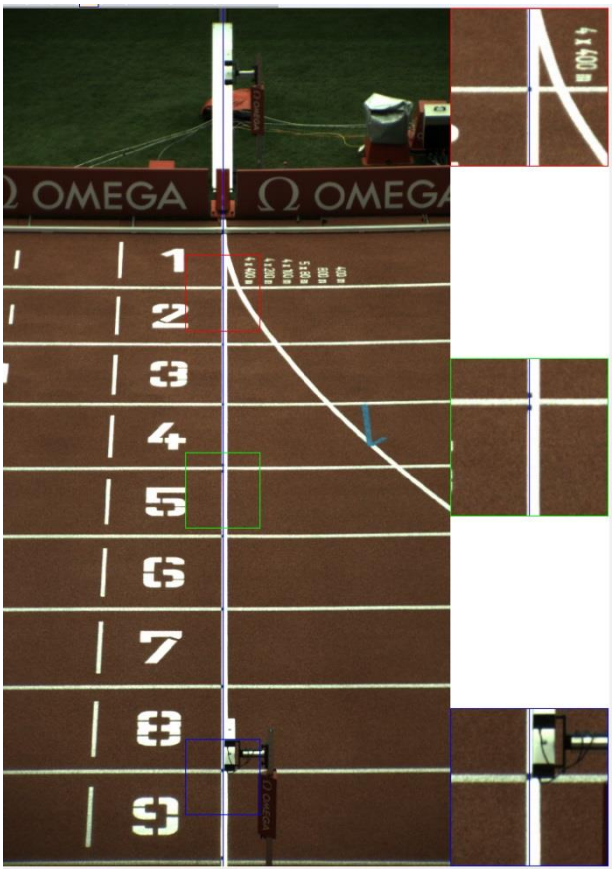
With OSV MYRIA camera, when ready is set, it is automatically reset if a start pulse is received (with OSV-STAR camera, Ready is independent of Start impulse).

3.4.3 Synchronization Window

The logo representing the synchronization status has a different signification.

	OSV-STAR	OSV MYRIA
	Sync not done or sync done automatically with PC time	Sync not done or Manual sync done or sync done automatically with PC time
	Sync done (manual or with start pulse)	Sync done with start pulse

3.4.4 Camera settings



White balance

To do the automatic white balance:

- In *Camera settings* active the matrix view (should be displayed).
- Enable the *horizontal references* (should be displayed).
- With the left mouse button, draw a rectangle in the live image where white should be.
- Click on the *Auto-Adjust* button.

Zoom in matrix

To change the location of one of the three zoom square:

- In *Camera settings* active the matrix view (should be displayed).
- Disable the *horizontal references* (should be displayed).
- Click on one of the three zoom (at the right of the matrix view) to select it.
- Click in the matrix view to assign the center location of the vertical position (horizontal position is automatically fixed).

Choice of timing line in matrix

The vertical line (timing line) can be move by using < and > buttons. The | button will replace it in the center. When the *horizontal references* are enabled (is displayed), you can also do SHIFT-right-click in the matrix image to place the timing line.

Active Link

Active Link+ is not available with MYRIA software. Instead you should:

- Open the race or do Fast Open on both instances.
- If the race is not "seen", wait until the start occurs - that should solve the problem.
- When race is "seen" on both instances, press "Active link" button **on main instance**.

4 TECHNICAL SPECIFICATIONS

4.1 General specification

Acquisition speed	500 to 2'000 lines per seconds or 500 to 10'000 lines per seconds[1]	
Resolution	2048 pixels (at any speed)	
Nbr. of color per pixel	>16 millions	
Time base precision	±0.1ppm (oven-controlled)	
Transmission	Ethernet 1Gb/s (PoE PD), 9kB jumbo frame IEEE 802.3at (25W) IEEE 1588 (Precision Time Protocol)	
Max. distance between camera and computer[2]	100m (Cat5e Ethernet cable)	
Temperature	Working: 0°C to +50°C Storage: -20°C to +70°C	
Protection	IP55	
Camera dimension	415 x 270 x 143mm (LxWxH)	
Camera weight	MYRIA 10: 3.6kg	MYRIA 16: 4.5kg
Lens (included in camera housing)	MYRIA 10	MYRIA 16
Zoom ratio	10x	16x
Vertical field angle	6.5° to 58.8°	4.2° to 61.3°
Max. aperture	F1.4	F1.8
Minimum object distance	1.2m	1.0m
Remote control	Zoom, Aperture, Focus	Zoom, Aperture, Focus

4.2 Electric specification

	Condition	Min	Typ	Max	Unit
Power supply	PoE injector side (up to 100m cable)	48		56	V
Power supply	On camera input	42		56	V
Power consumption	10m cable		14	15	W
Power consumption	100m cable		19	21	W

4.3 Certification

CE

According to IEC 61326-1:2014 Class A equipment:

- IEC 61000-4-2:2009 Electrostatic discharge
- IEC 61000-4-3:2008 Electromagnetic fields
- IEC 61000-4-4:2004 Electrical fast transients (Burst)
- IEC 61000-4-5:2005 Surge
- IEC 61000-4-6:2008 Conducted disturbances
- IEC 61000-4-8:1993 / A1:2001 Power frequency magnetic field
- IEC 61000-4-11:2004 Voltage dips and interruptions
- CISPR 16-2-3:2010 Radiated electromagnetic field
- CISPR 16-2-1:2008+A1:2010 Conducted disturbance mains

[1] Depends of purchased option

[2] Between 100 and 200m, an amplifier can be inserted; for longer distance, an optical fibre should be used. Please contact Swiss Timing for information about available interface.

	RoHS 2 compliant 2011/65/EU Restriction of Hazardous Substances
METAS	METAS (Swiss Federal Institute of Metrology) $\Delta t / t = (-5.8 \pm 4.0)\ 10^{-8}$ ➔ ~5ms / 24 hours

4.4 Connections

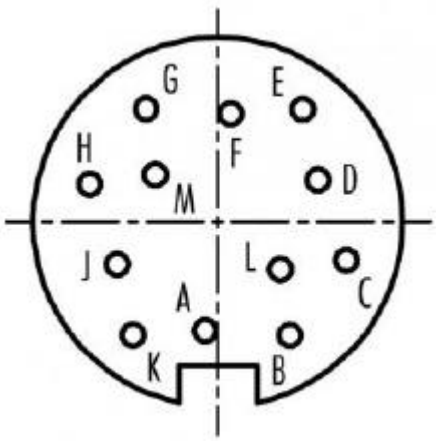
Ethernet

Standard RJ45 Ethernet connector Cat 5e. Support also cable plug housing Neutrik NE8MC-B IP54 connector. Ethernet 1Gb/s, 9kB jumbo frame, Powered Device (PoE PD).

Pin nbr	Signal
1	TxRx A+ and VDC1+
2	TxRx A- and VDC1+
3	TxRx B+ and VDC1-
4	TxRx C+ and VDC2+
5	TxRx C- and VDC2+
6	TxRx B- and VDC1-
7	TxRx D+ and VDC2-
8	TxRx D+ and VDC2-

I/O

Matching cable connector: Binder serie 723 (09-0129-70-12)

Pin nbr	Signal	View
A	Not connected	
B	Ready + (1)	
C	Finish + (2)	
D	Finish - (2)	
E	Start + (2)	
F	Start -(2)	
G	Rx [RS232 input] (3)	
H	GND	
J	5VDC output [max 100mA]	
K	PPS input	
L	Ready - (1)	
M	Tx [RS232 output] (3)	

Notes:

(1) Output to control an armed LED indicator on the starting device.

(2) Timing pulse input.

(3) Rx & Tx can be used for GPS connection or for Remote Positioning Support connection.

5 PREVENTION AND MAINTENANCE

5.1 Storage

Ideally, the Scan'O'Vision MYRIA camera should be stored in its transporting case in a place which is not too humid and where the temperature is around 20°C.

5.2 Maintenance

Never touch the glass in the front of the camera with your fingers. After use, please always replace the protection cap.
It is recommended to clean the glass in the front of the camera regularly with a photographic link free cloth.

6 APPENDICE

6.1 Index figures

Figure 1 – MYRIA front view 2
Figure 2 – MYRIA bottom view 2

6.2 Version history

Version	Modifications since last version
1.0	Initial version
1.1	Correction in chapter 3.2 Software installation

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