



# Oqus

Qualisys motion capture camera with high-speed video

**100, 300 and 500 series**



The Oqus range of cameras is the new platform for Qualisys motion capture systems. In addition to the precision and real time marker generation, the cameras are also capable of recording high-speed, high-resolution video. The dual functionality opens the door to entirely new areas of applications.

The third generation of high quality cameras from Qualisys, builds on the proven and unique concept of real-time marker calculation inside the camera.

## Product Information

### KEY FEATURES

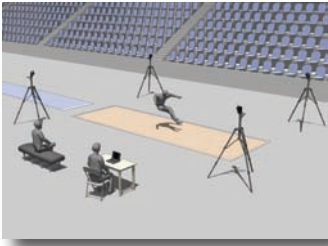
- High-speed motion capture
- High-speed video \*
- Sensor resolution: 0.3, 1.3 and 4 Mpixel
- Real-time with network architecture for low latency
- Wireless communication \*
- Battery power \*
- Virtually unlimited cameras
- Virtually unlimited markers
- Water resistant IP67 housing available \*
- Silent operation, no fan
- Runs with portable or stationary computer
- No hub or workstation
- Single cable from cameras to computer or wireless, WLAN

### OEM FEATURES

- Custom colors and labelling
- Other sensors
- Open Camera Architecture
- Custom applications such as web server

\* Optional accessory/feature





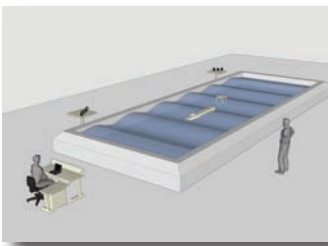
Motion capture is ideal for a wide range of sports applications in research, rehabilitation, physical education and training.



The system consists of a set of digital motion capture cameras, software, acquisition units, calibration equipment, markers and mounting devices. External equipment, such as force plates and EMG can be synchronized.



The versatility and flexibility of the system make it suitable for many applications within psychology and facilitates the study of both simple and complex movements.



Tracking a model vessel's motions under different wave, current or wind conditions, is one of the fundamental tasks at a hydrodynamics lab or a naval test site.

## HIGH-SPEED VIDEO

The Oqus camera has integrated, full-frame, high-speed video capability as an option. High-speed video can be captured at full resolution up to 500 fps or reduced resolution up to 10 000 fps. The 12.9 Gb/s bandwidth memory, can be expanded up to 1.1 GB. The capture mode, HSV or marker mode, can be set individually for each camera.

## WLAN

Communication with the cameras can be done wirelessly. The communication uses an internal WLAN at 54 Mbps and can operate in two different configurations. The first configuration requires only one camera in the system to be equipped with WLAN, the other cameras are wired together. The other configuration requires all cameras to be equipped with WLAN and together with a battery pack for each camera the system can operate entirely wireless.

## REAL-TIME

Center positions of markers are calculated in real-time regardless of frame rate and number of markers. The marker position data is available for transmission as soon as the image is read out from the sensor.

The cameras, network architecture response times and host software are all designed for minimum latency. The Oqus system has built in time-stamping of captured frames which facilitates precise latency calculations in 3rd party software.

Wireless communication can be used via an internal WLAN at 54 Mbps.

Oqus has real-time marker calculation and integrated, full-frame, high-speed video capability as an option, inside the camera.

The strobe is changeable to infrared, red or cyan light.



Oqus is convection cooled and is therefore, completely noiseless during measurements.

The Oqus cameras can be run on an optional battery pack.

## INTEGRATION

The Oqus cameras are easily synchronized with external systems such as EMG and force plates. Qualisys data acquisition software QTM, takes full advantage of all the new features and possibilities in the Oqus cameras. The entire system can be controlled by a single laptop or desktop PC. This means that no heavy workstation is needed for data acquisition.

## MOBILITY

A motion capture system based on the Oqus cameras, is uniquely mobile. The Oqus cameras were developed with mobility, robustness and trouble-free operation as key parameters. Communication with the host computer is normally done through a single Ethernet cable at a speed of 100 Mbps. The cameras are daisy-chained and no additional hub is needed to link them together. Alternatively, wireless communication can be used via an internal WLAN at 54 Mbps.

The Oqus cameras can be run on an optional battery pack. An Oqus based system is presently the only system on the market that can be run completely wireless. Oqus is available in an IP67-classed version and can therefore be used in harsh condition environments. The low weight of 1.9 kilo and small dimensions, makes it easy to move the equipment between different measurement locations.

## FLEXIBILITY

A range of different size, light-weight, passive retro-reflective markers, as well as battery powered active LED markers, makes reliable data capture possible in almost any condition, indoors as well as outdoors.

In order to match the different application needs, the Oqus cameras are available in three different series, the Oqus 1, 3 and 5 series. The three series are distinguished by the choice of the image sensor. The user can then optimize the price/performance for his particular application.

The high resolution series, enables the use of a large number of small markers, without sacrificing accuracy. It is even possible to mix the different series within the same system.

## USABILITY

Oqus cameras are versatile and easy to use. They have a large, high-contrast OLED display showing information such as, the number of markers in view and their intensity. The new Qualisys MMO-technology eliminates the problem with merging and partially occluded markers. Oqus is convection cooled and is therefore, completely noiseless during measurements.



The large OLED display has good visibility at long distances. It shows information that simplifies set-up and usage of the cameras.



The two data ports are used for the Ethernet communication. The two power ports are used to supply the cameras with 48 VDC and the battery port is used to supply the camera with 12 VDC. The control port is used to externally control and synchronize the camera.



Easy to adjust aperture and focus by rotating the strobe. Rotate and unmount the strobe to change lens or strobe.

## SPECIFICATIONS

|                           |   |
|---------------------------|---|
| Camera output modes       | Marker coordinates, high speed video, streaming video   |
| Built-in camera display   | 128 × 64 graphical high contrast OLED                   |
| Camera body               | Custom, die-cast aluminium                              |
| Camera size Oqus 100      | 185 × 110 × 124 mm (7.3 × 4.3 × 4.9 inches)             |
| Camera size Oqus 300/500  | 200 × 145 × 155 mm (7.9 × 5.7 × 6.1 inches)             |
| Weight including optics   | 1.9 kg Oqus 100 - 2.1 kg Oqus 300/500 (4.2 - 4.6 lbs)   |
| Cooling                   | Convection cooling                                      |
| Camera protection level*  | Water resistant IP67 housing available                  |
| Operating temperature     | 0-35 °C   |
| Firmware                  | Upgradeable from host computer                          |
| Position data noise level | +/- 1 camera units                                      |
| Adjustable threshold      | Yes   |
| Frame buffer speed        | 12.9 Gbit/second  |
| Maximum frame buffer size | 1152 Mbyte  |
| Cabeling                  | Hybrid cable with Ethernet and power                    |
| Wired communication       | Hubless daisy-chained Ethernet 802.3@100Mbps            |
| Wireless communication*   | WLAN 802.11b/g@54Mbps                                   |
| Power supply              | Daisy-chained power from mains adaptor                  |
| Power                     | 36-72 VDC, 10-16 VDC (battery) at 30 W maximum          |
| Battery*                  | Available Q4-2008                                       |
| Lens types*               | Standard 40 degrees HFOV (many other options available) |
| Strobe types supported*   | Infrared, red and cyan                                  |



|   | <b>1-SERIES</b> | <b>3-SERIES</b> | <b>5-SERIES</b> |
|---|-----------------|-----------------|-----------------|
| CMOS sensor size (pixels)                                       | 640×480         | 1280×1024       | 2352×1728       |
| Maximum frame rate at full resolution and field-of-view         | 250 fps         | 500 fps         | 180 fps         |
| Maximum frame rate at full resolution and reduced field-of-view | 1000 fps        | 10000 fps       | 10000 fps       |
| x-coordinate full scale range (camera units)                    | 41000           | 82000           | 150000          |
| y-coordinate full scale range (camera units)                    | 31000           | 65000           | 110000          |
| Maximum video frame rate  | 250 fps         | 500 fps         | 180 fps         |
| Maximum video buffer capacity                                   | 3800 frames     | 900 frames      | 290 frames      |
| Maximum video buffer capacity                                   | 15.2 s          | 1.8 s           | 1.6 s           |

\* Optional accessory/feature

Qualisys reserves the right to change specifications without notice

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