



HAMILTON THORNE

IVOS[®] II & CEROS[™] II



**Featuring Next Generation
Boar Breeder II Software
for Swine Sperm Analysis**

Proven & Trusted Sperm Analysis

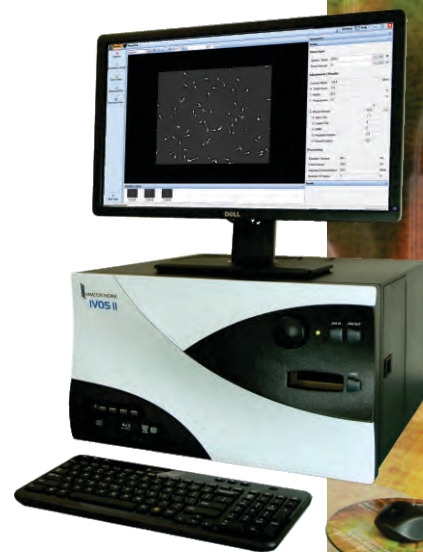
With the proven performance of our sperm analyzers and our respected standing in the industry, you can **trust in both your sperm analysis results and our dedication to your success**. To meet your specific needs, we offer two analyzer models, the IVOS[®] II and the CEROS[™] II, to boar breeding facilities and university research laboratories.

Our sperm analyzers provide:

- Accurate, objective and repeatable results
- Intuitive software interface for ease of operation
- Rapid analysis - **1/2 second** per analysis field (30 frames @ 60Hz)
- Compatibility with reusable and disposable analysis chambers
- Real-time quality control through interactive illumination settings
- Labor savings
- High level data security

Detailed analysis results include:

- Counts & Concentrations
- Motility, Progressive Motility, Velocities and Kinematic Measures
- Dosage calculations with adjustments based on morphology results



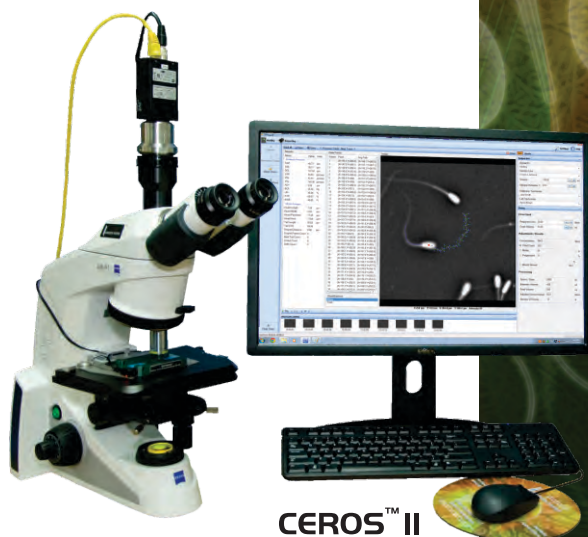
IVOS[®] II

IVOS[®] II

- Automation for speed, increased precision and decreased technical variation
- Auto-selection of fields for fastest analysis
- All optics components combined into one integrated unit - the microscope is inside!
- Strobe illumination provides sharpest imaging
- Automated stage for precise temperature control and sample positioning
- Optional IDENT fluorescence capability

CEROS[™] II

- External negative phase contrast microscope (included) saves space - computer can be stored under the lab bench
- Familiar, standard microscope illumination
- Portable MiniTherm Stage Warmer (optional) maintains samples at 37°C
- X-Y stage movement increases number of fields available for motility and morphology analyses



CEROS[™] II

ALL NEW Boar Breeder II Sperm Motility Software

What is New?

- Completely redesigned graphical user interface based on standard Windows® conventions
- Language localization - available in English, Russian, Chinese, French and Spanish (with more language translations to follow)
- Color-coded, interactive illumination setting for best accuracy in sperm head and tail identification
- Morphometry analysis of sperm head and tail, including identification of cytoplasmic droplets
- Thumbnail image gallery of all fields analyzed, with ability to view video playback of every field analyzed and to remove selected fields from the analysis
- Additional kinematic outputs: Distance of Average Path (DAP), Straight Line Distance (DSL), Curvilinear Distance (DCL) and Wobble (WOB)
- View summary, field and individual cell results along side the analyzed image
- Tabbed data input and results panels
- Option to turn on/off field and cell results and motility overlay
- Built-in database with customized reports (report designer optional)
- Unlimited storage of pre-defined analysis setups

IVOS® II Hardware Enhancements

- Smoother, faster integrated stage featuring acceleration and deceleration. Thanks to a new stage drive motor, the IVOS stage now can move from maximum speed down to start speed in the blink of an eye.
- High speed digital camera provides excellent image quality and allows seamless image capture and playback
- A rearrangement of user controls and the addition of inputs on the IVOS front panel make for a better user experience:
 - ▶ On / Off switch added to the front panel
 - ▶ Stage LOAD button separated from the JOG buttons to avoid inadvertent stage loading/unloading.
 - ▶ Four high speed USB 2.0 ports for easy data transfer and connection to external devices

CEROS™ II Hardware Enhancements

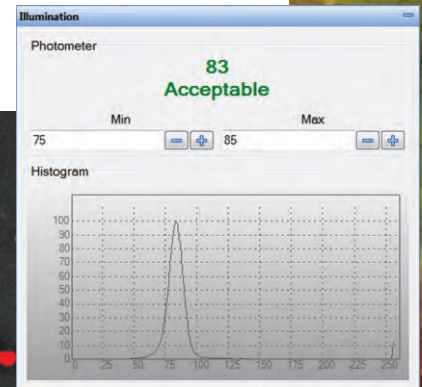
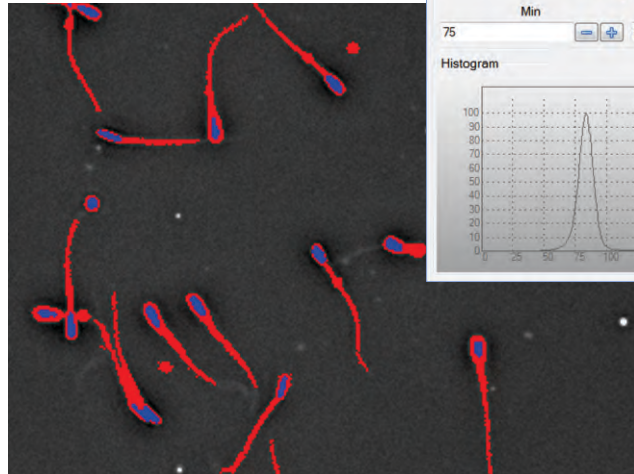
- High speed digital camera provides excellent image quality and allows seamless image capture and playback
- Choice of Olympus Cx41 or Zeiss Axio Lab.A1 microscope with 10x negative phase contrast objective
- High definition, 23", 1920 x 1080 wide screen monitor, wireless keyboard and wireless mouse



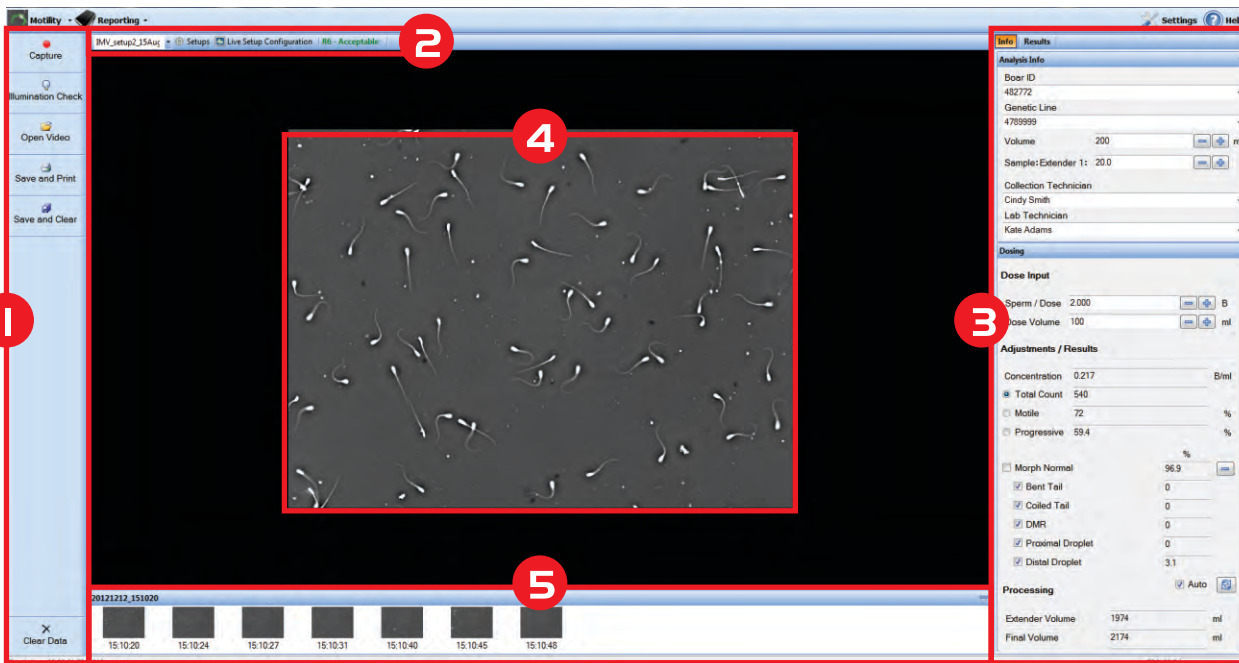
Software Overview

Interactive Illumination Check

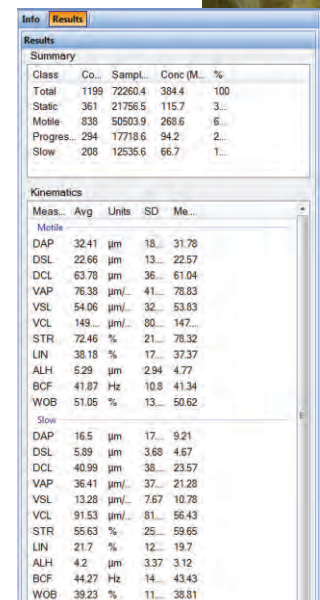
Swine Breeders II software features the unique color-coded Illumination Check to optimize identification of the sperm head and sperm tail. This feature removes any guess work in setting the illumination and promotes consistency between all users. When the microscope illumination is set correctly, the sperm heads will show a blue color and tails will be red.



Screen Layout



- 1 Controls for initiating analysis, checking illumination, saving, printing and clearing data, and opening saved video files.
- 2 Quick selection of analysis setup to be used, access to various system hardware and software settings and indication of illumination status.
- 3 Tabbed menu panels for input Analysis Info, Dosing and Adjustments, and Summary and Kinematic Results, updated in real-time.
- 4 Live image area, display of Calibration Check, full screen playback images, and zoomed individual cell images.
- 5 Thumbnail gallery for storage of captured video images, which may be played back individually for quality control.



Info Results window showing a summary table and kinematic data.

Class	Co...	Sampl...	Conc (M...	%
Total	1199	72260.4	384.4	100
Static	361	21756.5	115.7	3...
Motile	838	50503.9	268.6	6...
Progres...	294	17718.6	94.2	2...
Slow	208	12535.6	66.7	1...

Meas...	Avg	Units	SD	Me...
Motile				
DAP	32.41	µm	18.	31.78
DSL	22.66	µm	13.	22.57
DCL	63.78	µm	36.	61.04
VAP	76.38	µm/...	41.	78.83
VSL	54.06	µm/...	32.	53.83
VCL	149.	µm/...	80.	147...
STR	72.46	%	21.	78.32
LIN	38.18	%	17.	37.37
ALH	5.29	µm	2.94	4.77
BCF	41.87	Hz	10.8	41.34
WOB	51.06	%	13.	50.62
Slow				
DAP	16.5	µm	17.	9.21
DSL	5.89	µm	3.68	4.57
DCL	40.99	µm	38.	23.57
VAP	36.41	µm/...	37.	21.28
VSL	13.28	µm/...	7.67	10.78
VCL	91.53	µm/...	81.	56.43
STR	55.63	%	25.	59.65
LIN	21.7	%	12.	19.7
ALH	4.2	µm	3.37	3.12
BCF	44.27	Hz	14.	43.43
WOB	39.23	%	11.	38.81

Analysis Results

Real-time Updating

Analysis and Dosing results are updated in real-time as each field is added to the analysis. Data in the Results panel on the right side of the screen reflect the entire population of cells analyzed.

Full Field Playback

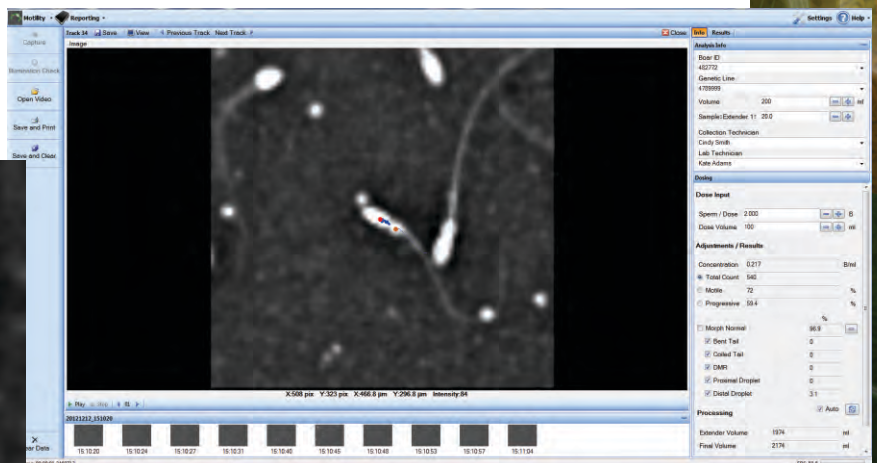
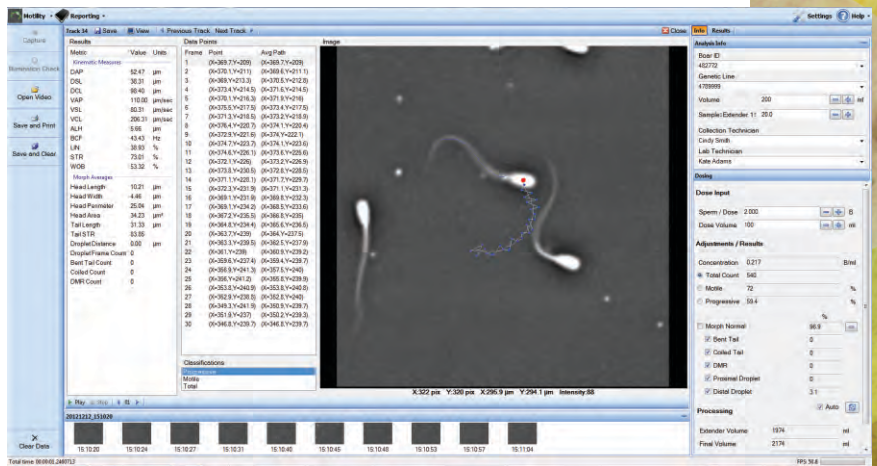
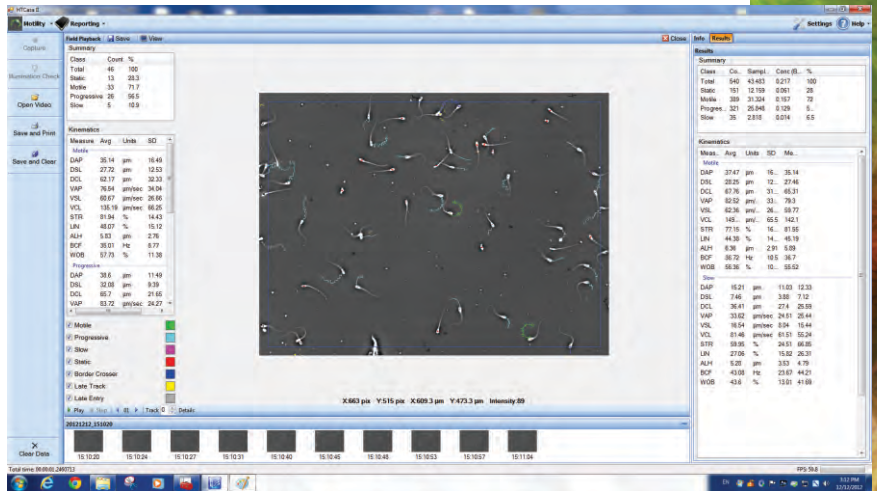
Selecting a thumbnail image from the gallery opens the captured video. The video may be replayed in full or you may scroll through frame by frame. The results along the left side of the image represent only the analysis data of selected field. The color-overlays on the playback image and the results may be turned on or off.

Zoom Cell Playback

Selecting a track from the playback image opens up a zoomed image of the cell. The Kinematic Measures shown on the left are relative only to the selected track. The video may be played or scrolled through frame by frame. You may jump to a specific frame by selecting a point on the track or the associated data points. Both motile and static cells may be selected.

Cell Morphometry

The software also provides cell morphometry values, including head length, width, perimeter and area, plus identification of droplets, coiled tails, bent tails and Distal Midpiece Reflex (DMR). On the full screen playback, droplets are identified with an orange circle.



Reporting

Report Viewer

The Human Clinical II software includes the ability to view custom designed reports. The system includes several pre-designed reports.

Report Designer

The optional Report Designer lets you customize the pre-designed forms or create entirely new forms. The user-friendly, "drag and drop" designer gives you complete control over the look and content of the report. Any input or output data may be added to the report. Free-form fields also allow the inclusion of non-analysis data such as contact information or company logo.

Components

IVOS® II Components

- IVOS II unit featuring:
 - ▶ Integrated optics
 - ▶ High speed, computer controlled, heated stage
 - ▶ High resolution digital camera
 - ▶ High performance, integrated computer with Windows 7 Ultimate
- High definition, 23", 1920 x 1080 wide screen monitor, wireless keyboard and wireless mouse
- Optional: Footswitch and bar code scanner

CEROS™ II Components

- Choice of Olympus Cx41 or Zeiss Axio Lab.A1 microscope with 10x negative phase contrast objective
- High resolution digital camera
- High speed PC with Windows 7 Ultimate
- High definition, 23", 1920 x 1080 wide screen monitor, wireless keyboard and wireless mouse
- Optional: MiniTherm Stage Warmer, footswitch and bar code scanner

Analysis Output

Counts:

Total, Static, Motile, Progressive, Slow

Sample:

Total, Static, Motile, Progressive, Slow
(Choice of billion or million)

Concentrations:

Total, Static, Motile, Progressive, Slow
(Choice of billions/ml or millions/ml)

Percentages:

%Total, %Static, %Motile, %Progressive, %Slow

Doses:

Extender Volume
Final Volume
Adjusted Concentration
Number of Doses

Kinematic Measures:

DAP, DSL, DCL, VAP, VSL, VCL, ALH, STR,
LIN, BCF, WOB
(Average, SD, Median)

Morph Averages:

Head Length, Head Width
Head Perimeter, Head Area
Tail Length, Tail Straightness
Droplet Distance, Droplet Frame Count
Bent Tail Count, Coiled Tail Count,
DMR Count

Specifications subject to change.

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