IVOS
Getting Started Guide

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Preface

Welcome to Hamilton Thornes *IVOS Getting Started Guide*.

Related Documentation

In addition to this ***Getting Started Guide***, the following manuals are included with your systems:

- *Software Manual*: Provides detailed instructions and descriptions of the software functions, see ***HT CASA II Software Manual – IVOS Pro***.
- *Validation Guide*: Defines a detailed method of validating the system, see ***IVOS Validation Guide***.

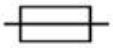
NOTE: This guide is meant to help you get started, but you will need to refer to your software manual for further information.

List of Symbols

The symbols on the table below appear on the Instrument and the Disposable Kit, in the *Getting Started Guide*, and on product labeling.

Symbols

Symbol	Meaning
	WARNING – ELECTRICAL SHOCK
	WARNING
	Caution
	Biological Risk
	Heavy Object
	Use by date

Symbol	Meaning
	Do not re-use
	Date of manufacture
	Manufacturer
	Temperature limit
	Fuse

Book Conventions

WARNING – ELECTRICAL SHOCK: Indicates that there is a risk of electrical shock that can cause injury or death to the user or other personnel. Follow the instructions in this manual and use appropriate electrical precautions to avoid electrical shock. Do not attempt to open or remove the instrument covers. Doing so can expose you to electrical hazards.

WARNING: Indicates a hazardous situation that, if not avoided, could result in the possibility of injury or death to the user or other personnel if the precautions or instructions are not observed.

CAUTION: Indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury. This symbol may also be used to alert against unsafe practices or potential damage to the instrument.

NOTES: Identifies important points, helpful hints, special circumstances, alternative methods, or other supplementary information.

This guide also uses the following typographical conventions:

Blue	Indicates a cross-reference. A cross reference provides the location additional information related to the topic. For example: For more information, see **About this Manual on page ##.**
Bold	Indicates the selection from a menu or a button name. It is also used to put emphasis on a specific part being called out. For example: From the **File** menu, select **Exit**.
Screenshots	All screenshots included in this guide are intended as examples depicting default settings.

Intended Use

The IVOS Pro is used to determine the concentration, morphometry, motility, and movement parameters of a sperm sample in a slide chamber. No diagnoses are performed by the IVOS, and no diagnostic interpretations are provided.

The **IVOS Pro Getting Started Guide** is designed to help with the physical setup and provide a quick overview of the program, optical settings, and instructions for operating the hardware components of the device.

NOTES: This device is intended for inside use only.

All users must carefully read the instructions for use before attempting to operate this device.

Chapter 1: Device Overview

Topics included in this chapter:

Safety Considerations

Read this manual before setting up or operating the IVOS. The safety protection provided by IVOS may be compromised when the system is used in any way other than as is described in this manual.

- Observe all warnings, cautions, biological risks, and notes in this manual.

Operational Warnings and Cautions

WARNING: Read this manual before operating the IVOS Pro System. Safety protections may be impaired if it is used in any way other than as is described in this manual.

WARNING: Do not use the IVOS Pro unless you have adequate training for safe use.

CAUTION: No modification of the Instrument is allowed.

NOTE: The IVOS Pro should be turned OFF and unplugged from the power source whenever cables are connected or disconnected. Failure to do so could damage the system.

Mechanical and Operations Safety

Heavy Object: We recommend using two people to lift and move the device into place.

CAUTION Provide at least 3 in (7.62 cm) of clearance behind and around the instrument, for proper ventilation. The lack of adequate ventilation can cause the instrument to malfunction. Do not block the optics door. Install on a counter depth of no less than 20 inches.

CAUTION Observe and ensure the surrounding area does not have HVAC ducting for excessive cooling and heating near the instrument. If the system is near any windows, be sure the daily solar heating will not affect the system in fluctuating heating throughout the day. In addition, if the environment conditions of an open window may add to dust and debris.

CAUTION: Keep all doors of the device closed during operation.

ELECTRONIC WASTE: Do not dispose of electrical or electronic equipment in municipal and/or public waste facilities. Dispose of it in accordance with your local, state, and country regulations. Contact your internal representative for Environmental Health and Safety for collection and proper waste instructions for electrical and electronic equipment.

Electrical Safety

WARNING – ELECTRICAL SHOCK: The system and all accessories need to be grounded. Use the grounding plug to ensure the system is safely grounded.

WARNING – ELECTRICAL SHOCK: To prevent electrical shock:

- Turn off power and unplug the Instrument before cleaning.
- Do not allow any liquids to penetrate the inside of the Instrument.
- Do not spray clean or spray disinfect the Instrument.

Only plug the Instrument back into the wall receptacle if it is completely dry, both inside and out.

CAUTION: Use an uninterruptable power supply (UPS). In case of lightning strike, power outage, or brown out, your equipment will have additional protection if all components are plugged into the surge suppressor.

System Specifications

Computer

Hardware

CPU	12th Gen Intel i7
RAM	Typical 32GB
Disk space	Typical 2TB
Display	Typical 24” wide screen 1920x1080p
USB	USB 3.2
Network	2x10/100/1000

Table 1-1. Hardware Specifications

Software

Operating System	Windows 11
.NET	.NET Framework V3.5 and V4.8
HASP HL	Driver software for Version 5 or higher (licensing is done via USB key)
IVOS	HT CASA II

Table 1-2. Software Requirements

Camera

Models Supported	2/3-inch, 5 MP Camera
Interface Type	USB3 Vision

Table1- 3. Digital Camera Requirements

Operating Environment

Factor	**Metric**	**United States**
Temperature		
Operating	0° ~ 40°C	32° ~ 104°F
Storage	0° ~ 60°C	32° ~ 140°F
Relative Humidity (non-condensing)		
Operating	0~ 90%	Non-condensing at 60°C
Maximum Altitude (unpressurized)		
Operating	2,000m	13,000 ft.
Non-operating	9,000m	30,000 ft.

Table 1-4. Operating Environment Requirements

Equipment Rating

Voltage Range	100-240 VAC
Frequency Range	50- 60 Hz
Current Rating	3 A
Supply Voltage	Tested to +/- 10%
Pollution Degree	Tested to PD 2
IVOS	HT CASA II

Table 1-5. Equipment Requirements

Introducing IVOS Pro

The IVOS Pro features an integrated optical system, equipped with an automated motion system, heated sampling area, and an internal computer powered by HT CASA II software.

The HT CASA II software uses high-resolution images to analyze samples. The concentration and movement of sperm is derived using sequential frames acquired at a set acquisition rate. The software also performs alive morphometry on the images. It classifies sperm based on morphometry and motion parameters, calculates dosing parameters for artificial insemination, and stores the results in an internal database. The data can be transferred to reports or output ASCII files when required.

The basic setup for the IVOS is covered in the following sections. For further information, please contact your Hamilton Thorne Service and Support for assistance.

Chapter 2: Hardware Overview

Hardware Checklist

1. IVOS Pro
2. Monitor
3. Keyboard and Mouse
4. USB Software License Key
5. Power Cable (x2): (Computer, Monitor)
6. Phase Adjustment Tools
7. DisplayPort Monitor Cable
8. IVOS Pro Getting Started Manual
9. Alignment Slide
10. USB Software Installation Drive
11. USB Flash Drive Mother Board Drivers and Sample Images
12. Windows Box Set

Hardware Overview

Stage controls, **Focus knob**, and **Stage slot door** are located on the front of the unit. The stage emerges from the stage slot door for specimen placement. On the right side of the enclosure, a door provides access to the optical components while protecting them from light and dust when closed.

*The **Side door** must always remain closed while operating the device, and the area around the **Stage slot door** should be kept clear during stage loading and unloading.*

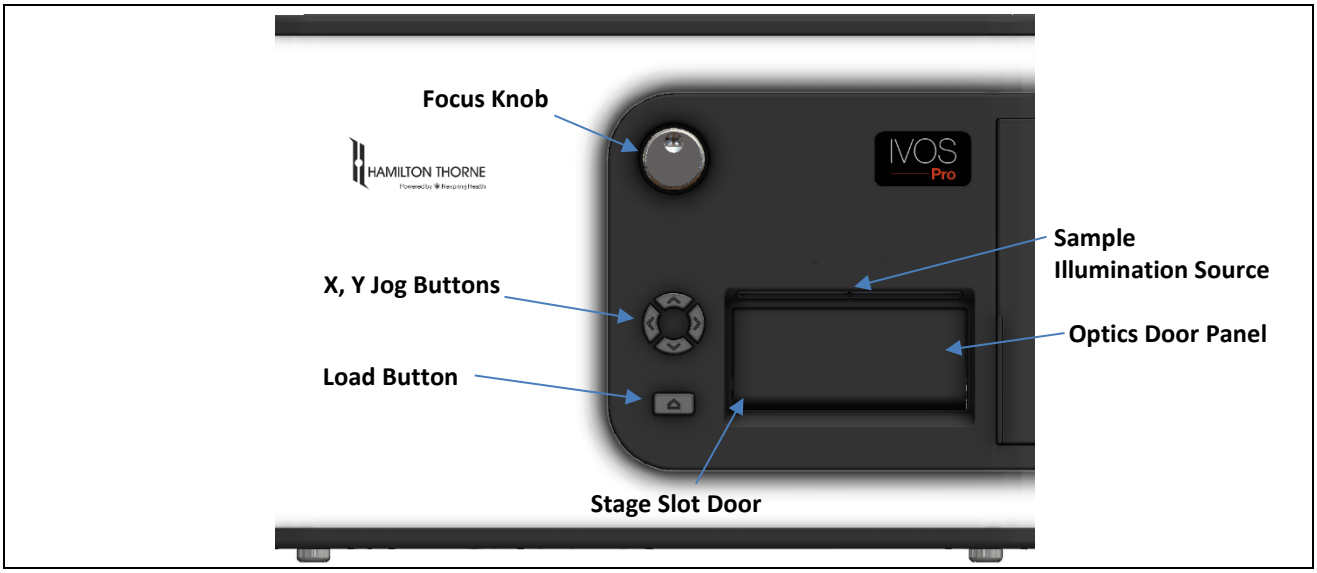


Figure 2-1: IVOS Pro System

Rear Panel Ports and Connections

The back panel of the device provides additional ports and cable connection options. This is where the device's main power switch is located along with the power cable input and camera connection cable.

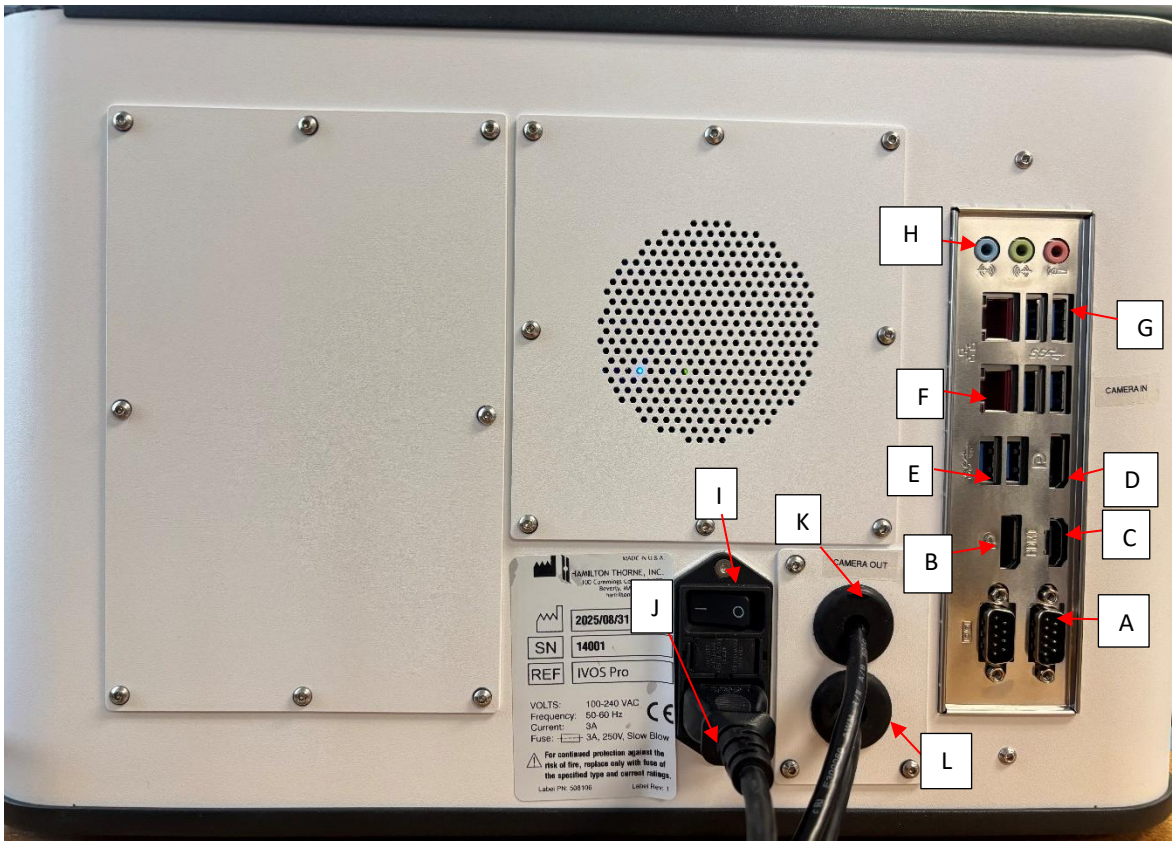


Figure 2-2: IVOS Back Panel

A: COM1 & COM2 RS-232/422/485 Ports

B: Display Port

C: HDMI Port

D: Display Port

E: USB 3.2 Connector (Ports CN3A, CN3B)

F: 2.5 Gigabit LAN (Intel I226-LM) +USB 3.2 (CN5A,CN5B **(CAMERA IN Ports**))

G: 2.5 Gigabit LAN (Intel I226-V) + USB 3.2 (CN6A,CN6B)

H: HD Audio Connector

I: Mains Power Switch

J: Power Cord Input

K: USB 3 Vision Camera Cable (**CAMERA OUT**)

L: USB Hub Cable

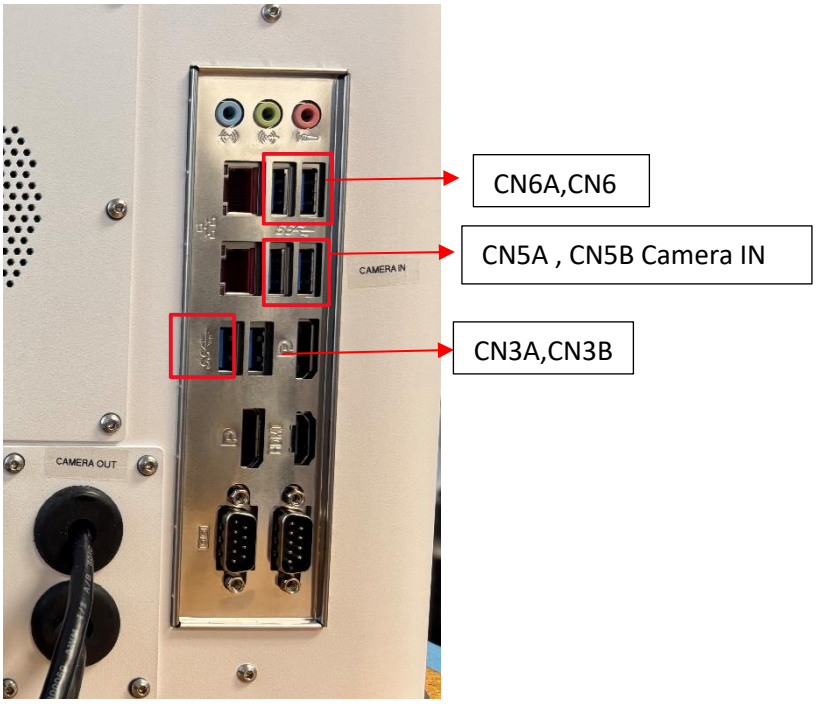


Figure 2-2a: Expanding USB 3.2 Ports on Rows E,F,G

The IVOS should be powered down through Windows and unplugged when cables are being connected and disconnected. Failure to do so could result in damage to the analyzer.

The IVOS should not be positioned in such a way that it prevents strain and damage to the rear power switch and power cable. Please leave a minimum of 150mm (6in) of clearance.

Left-Side Panel

On the left side of the device is where the chassis fan is located along with the power button and USB ports.

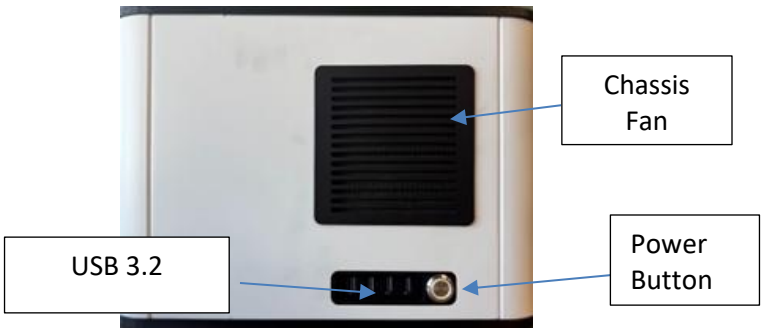


Figure 2-3: Left Side Panel

NOTE: The chassis fan requires regular maintenance. **See Chapter 5** on regular maintenance and cleaning procedures.

Connecting the Computer and Monitor

1. The monitor should be connected using the included DisplayPort cable.
2. The included mouse and keyboard receiver should be plugged into the back of the IVOS.

NOTE: The wireless mouse and keyboard included with the system use USB wireless receiver(s).

Power Cable

In countries outside North America, the power cable plug must be compatible with the local (100–250V, 50-60 Hz AC) socket. The IVOS automatically adapts to the supplied voltage. The cable must be a 3-pin grounded type. Please only use the included power cables, otherwise contact Hamilton Thorne for assistance.

Figure 2-4. Power Cable

Security Key

The green Security Key with the IVOS serial number on it must be plugged into the device to run the HT CASA II program. Each key is programmed with the appropriate modules specified upon purchase of the system.

Figure 2-5: HASP Key

Opening the Optics Door

Access to the optics is located through the side door of the IVOS system.

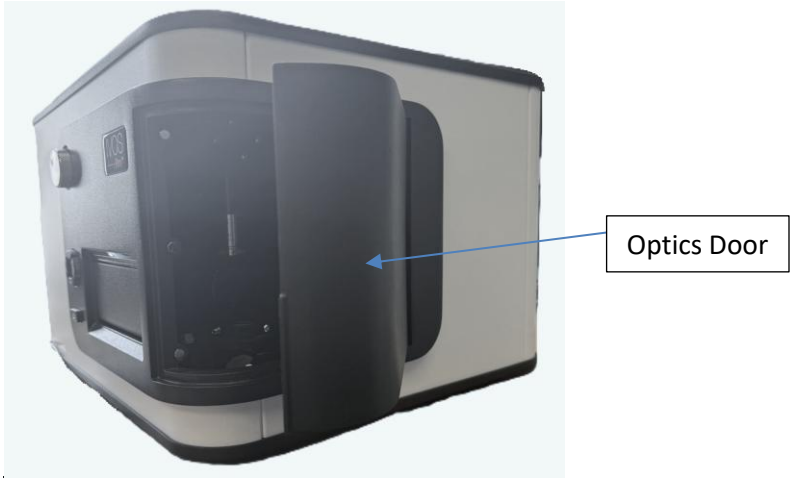


Figure 2-6: Accessing the IVOS II Optics Door

The Optics Door Panel must remain closed during image acquisition and while the stage is in motion.

Integrated Optics

The IVOS Pro features an integrated optical system using infinity optics. The IVOS Pro uses millisecond strobing illumination to visualize sperm motion. This strobed illumination eliminates motion-related blurring along the length of the sperm head, resulting in more precise sperm tracking.

Objectives

The device uses a Zeiss 10X Negative Phase objective.

Figure 2-7: Objective

Heated Specimen Stage

The integrated optical system has a heated stage. The stage is heated to the temperature specified in the software and the readout is displayed on the main screen in the software.

NOTE: *Extreme fluctuation of environmental changes that occur after installation can have an impact on stage temperature.*

Starting the System

To turn the system ON press the power button on the left side panel.

NOTE: *Always shut down the device using Windows rather than the power button on the side.*

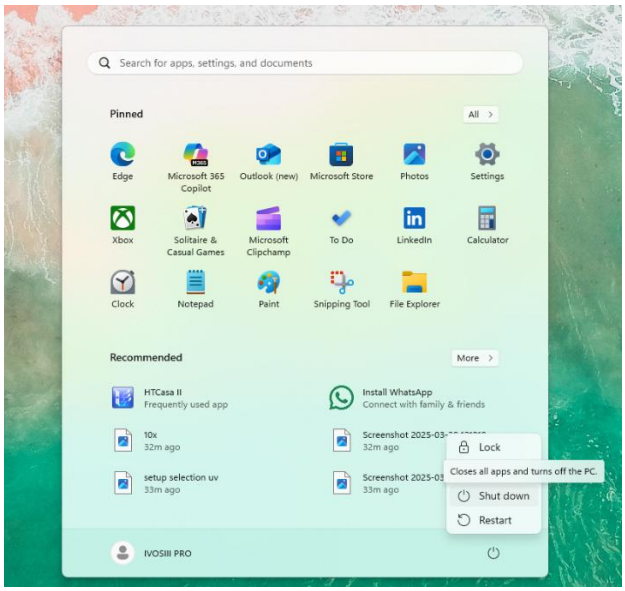


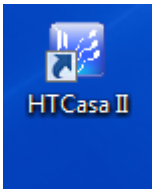
Figure 2-8: Windows Shutdown Option in Software

Chapter 3: Understanding the Software

Topics included in this chapter:

Turning On the IVOS System

1. Turn "ON" the **Monitor** using the **On**/**Off** button.
2. Turn "ON" the IVOS, first by turning flipping the **Power Switch** in the back and then by pressing the **On/Off** button on the left side of the device. The computer begins the initiation process.
    - If an IVOS system password has been employed, enter the **Username** and associated **Password** and select **OK**. Once entered the *Windows* desktop appears.
3. Launch the HT CASA Motility program by double-clicking the HT CASA II icon.



Alternatively select **Start** > **All programs** > **Hamilton Thorne** > **HT CASA II**.
The CASA II program window appears.

NOTE: The software and its operation are further described in the ***HT CASA II Software Manual – IVOS Pro System***.

HT CASA II Screen Layout and Controls

NOTE: The screenshots provided are samples. The screens and toolbars on your system may look different.

The HT CASA II software screen is comprised of the following:

- Main Menu: top of the screen
- Motility Sub-menu: left side of screen
- Motility Toolbar
- Stage Toolbar
- Info, Notes, Data Fields, Results, Charts, and Offsets
- Image Area: center of screen
- Video Thumbnail Gallery: bottom of the screen
- Status Bar

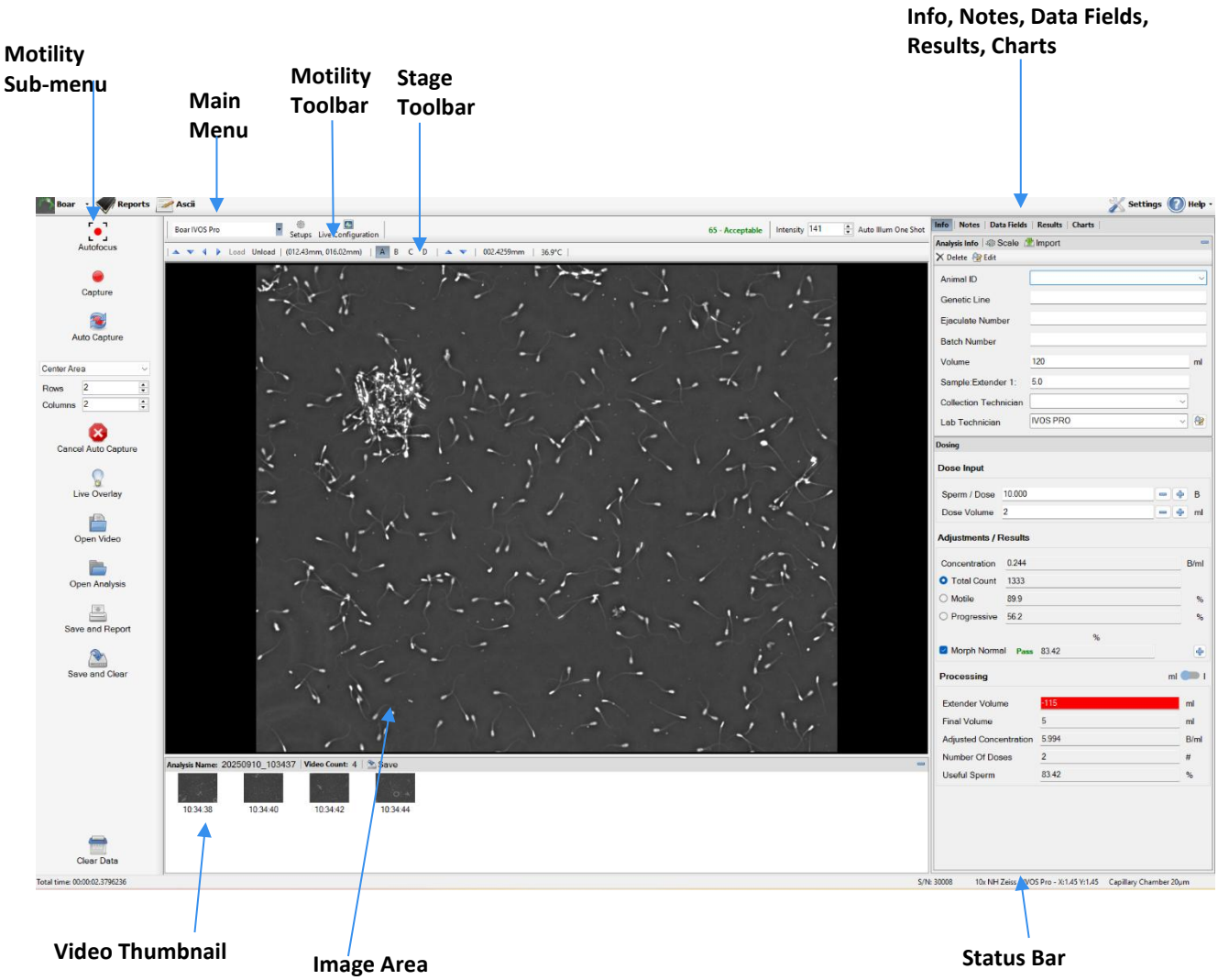


Figure 3-1: HT CASA II Screen

The following sections describe the parts of the HT CASA II screen in more detail.

Main Menu

The Main Menu provides quick access to frequently used controls.

Figure 3-2: Main Menu

Table 3-1: Main Menu Items and Functions

Item	Function
HT CASA II Dropdown	Allows selection of the software program to run.
Reports	Provides access to the built-in reporting feature which includes the creation of unlimited report formats.
ASCII	Permits data selection and output in ASCII format.
Settings	Provides access to the parameters governing analysis, camera settings, objective setup and general hardware and software settings.
Help	Provides access to database utilities and support options.

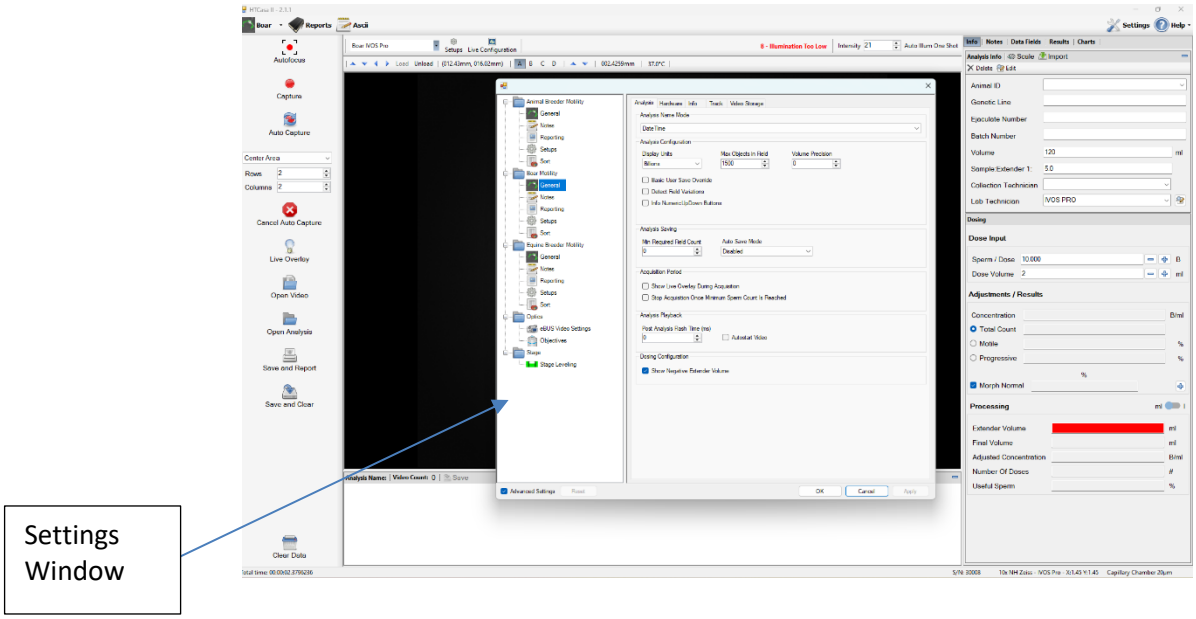


Figure 3-3: Software Home Screen Displaying Dropdown Settings Options

Motility Sub-menu

The Motility Sub-menu provides controls for capture, analysis and storing data and the ability to open saved video images.

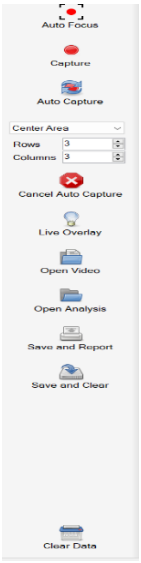


Figure 3-4: Motility Sub-menu

Table 3-2: Motility Sub-menu

Item	Function
Auto Focus	Automatically focuses the sample image
Capture	Initiates the image capture process for the current field.
Auto Capture	Initiates the image capture process with IVOS stage automatically moving to capture the next field using either Sequential, Center Area, or Manual mode.
Cancel Auto Capture	Stops the Auto Capture process before all fields are analyzed.
Live Overlay	Shows the current live image with overlays on sperm head (blue) and tail (red) to help in interactive adjustment of focus and illumination.
Open Video	Opens any single saved video file (.hmv format).
Open Analysis	Opens all videos stored in one analysis folder.
Save and Report	Saves current data to the database. Saves video files, prints/views reports, exports ASCII data to file, and clears data if enabled under Settings.
Save and Clear	Saves current data to the database. Saves videos if enabled under Settings. Automatically clears data.
Clear Data	Clears data and video thumbnails without saving.

Motility Toolbar

The Motility Toolbar is located below the Main Menu and provides access to setups and illumination Controls.

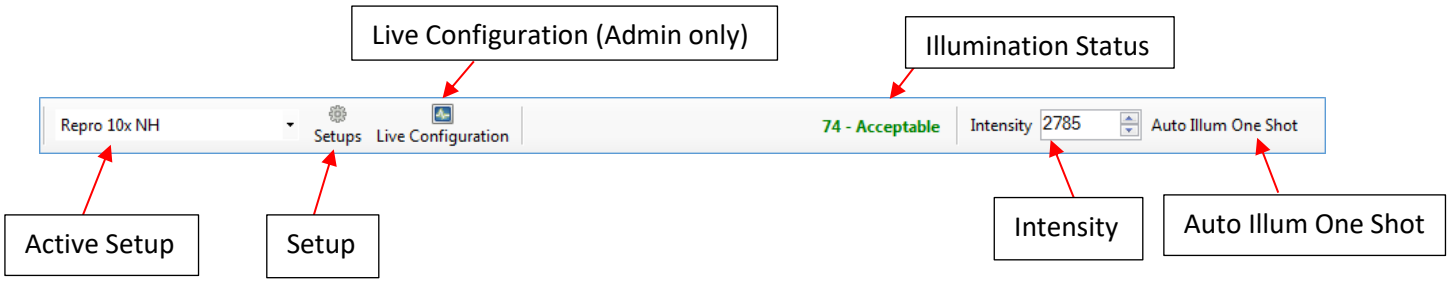


Figure 3-5: IVOS II Motility Toolbars

Table 3-3: Motility Toolbar Items and Functions

Item	Function
Active Setup	Shows the setup being used in the analysis. Click the dropdown list to select the desired setup.
Setups	Opens the Setup dialog box directly. The Setup provides access to the control parameters used for a particular analysis.
Live Configuration (Admin only)	Enables optimization of illumination and focusing of image and displays Motility Setup Configuration.
Illumination Status	The Illumination status appears in green if it is Acceptable and in red if it is Too High or Too Low.
Intensity	Increases or decreases the level of selected illumination source.
Auto Illum One Shot	Automatically adjusts the IVOS II illumination to the proper settings.

Stage Toolbar

On IVOS Pro systems, the **Stage Toolbar**, which provides access to stage controls, is displayed beneath the **Motility Toolbar**.

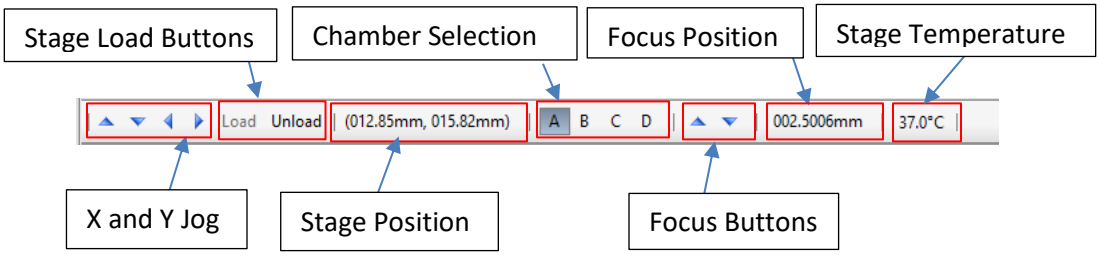


Figure 3-6: IVOS Pro Stage Toolbar

Table 3-7: IVOS Pro Stage Toolbar Items and Functions

Item	Function
Jog Buttons	Jog In, Jog Out, Jog Left, and Jog Right buttons are used to adjust stage position.
Stage Load Buttons	Stage Load and Unload options within the software. Can be used in place of the Load button on the front of the device
Stage Position	Shows the current position of the stage, in mm, from the side and front of the stage.
Chamber Selection	ABCD selects the chamber to view, based on Chamber Positions defined in setup.
Focus Buttons	Use these buttons to focus the sample on the stage.
Focus Position	Shows the current position of the stage focus (in mm).
Temperature	Shows the current stage temperature.

Info, Notes, Data Fields, Results and Charts

- Depending on the software purchased, the Info panel may contain more fields than what is shown. Refer to the ***HT CASA III User Guide*** for your product.

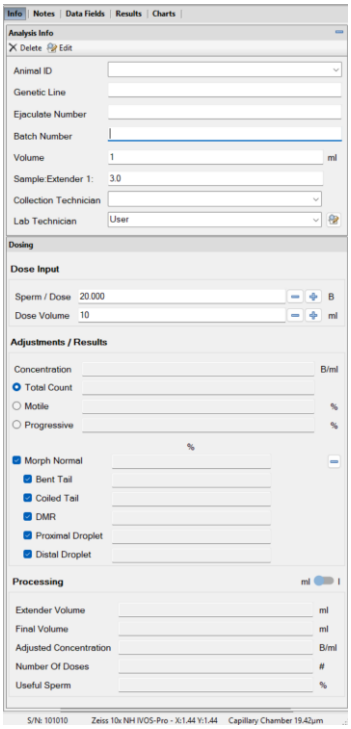


Figure 3-8: Info, Notes, Data Fields, Results and Charts

Image Area

The image area of the HT CASA II software shows the live image, playback image, zoomed image, or saved video file.

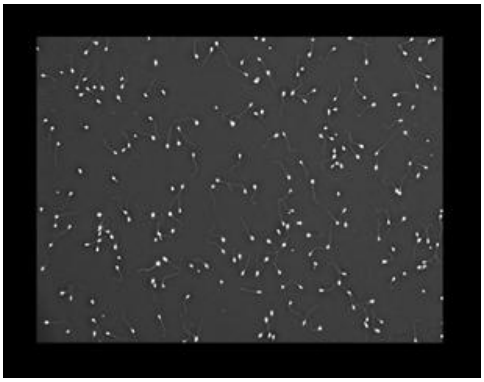


Figure 3-9: Image Area

Video Thumbnail Gallery

Once live fields are captured and analyzed, or video files are opened and analyzed, each file analyzed appears in the Video Thumbnail Gallery below the Image Area.

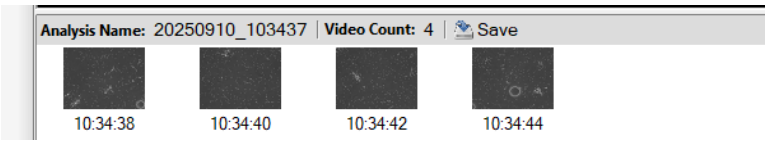


Figure 3-10: Video Thumbnail Gallery

Status Bar

The status bar for the current analysis and selected setup appears along the bottom of the screen. This shows the analysis time, system serial number, the currently selected objective, its calibrated magnification values and the chamber type and depth.

Figure 3-11: Status Bar

Chapter 4: Chapter 4: Quick Start Guide

1. Open the HT CASA II Software.

2. Select the appropriate module and Setup.

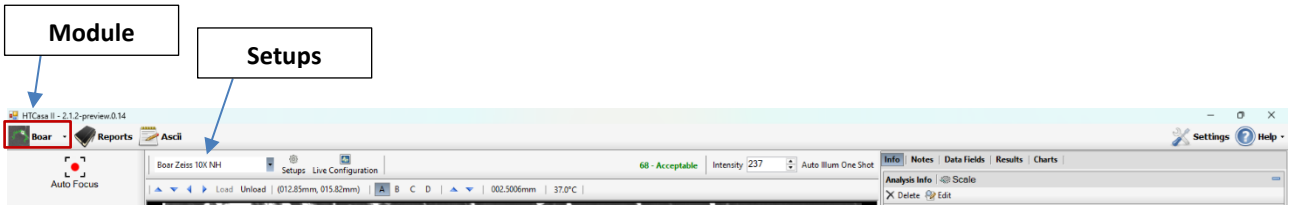


Figure 4-1: Setup

Checking Phase Alignment

To check phase alignment, pull out the phase alignment slider. This is located at the top of the optics with a brass knob shown below. Pull the brass knob until a physical detent is felt. Lower the brightness until the image matches the example below.

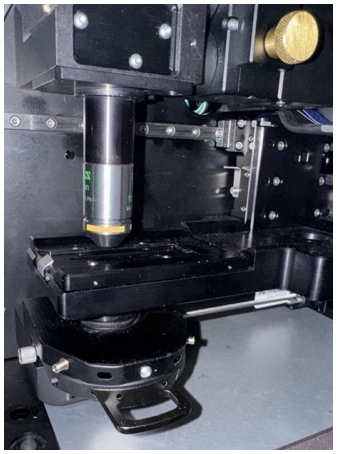


Figure 4-2: IVOS PRO

NOTE: The alignment is preset in production, but it should be checked using the phase alignment slide during installation following the steps described below.

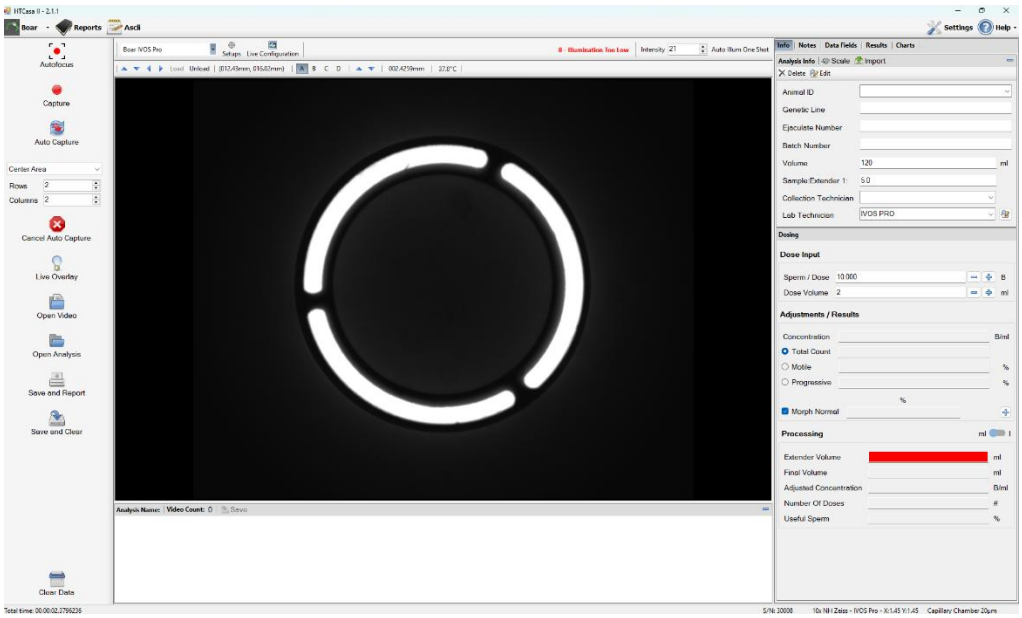


Figure 4-3: Phase Alignment Image

The phase annulus (illuminated white light) should be positioned within the objective phase plate (darker background ring). If it requires alignment, please follow the steps described below.

Performing Phase Alignment

Move the **Phase Alignment Lens Slider** into place, so both the phase annulus and objective phase plate images are overlayed on the screen. Using the phase alignment tools (two 1.5 mm hex drivers) adjust the phase annulus until it is centered to the objective phase plate.

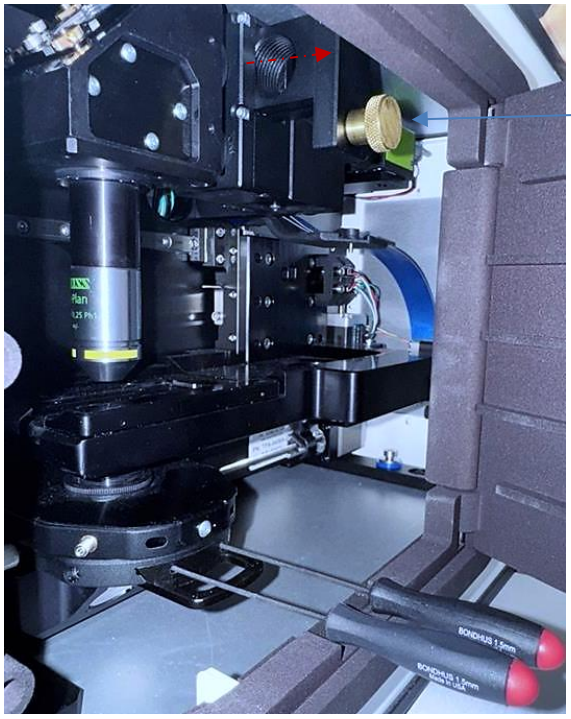


Figure 4-4: Configuring the Optics in Pro System

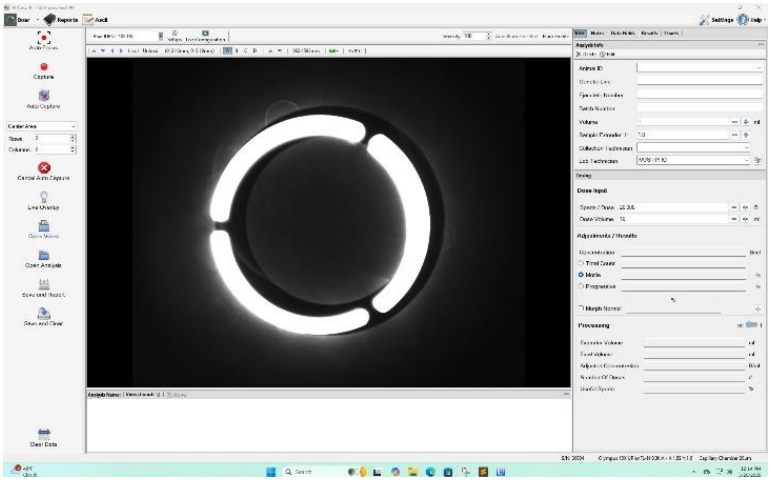


Figure 4-5: Phase NOT Aligned

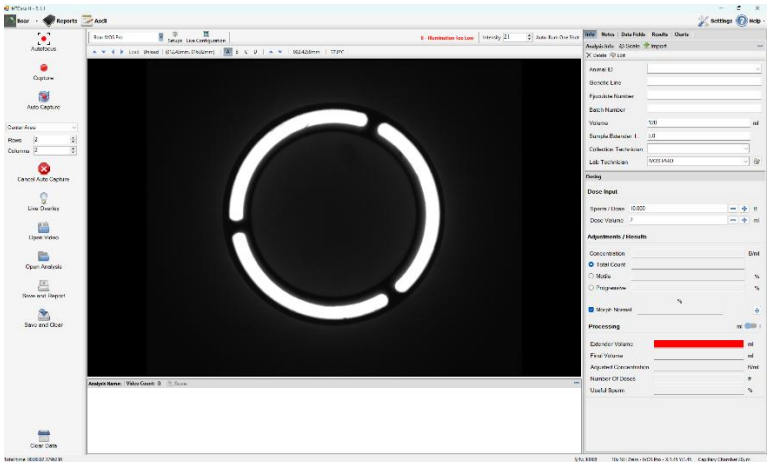


Figure 4-6: Phase Annulus and Phase Plate Displayed in Software During Alignment

Stage Leveling

1. Insert Hamilton Thorne Alignment Slide (Part #508093)
2. Go to Settings.
3. Under “Stage”, select “Stage Leveling”

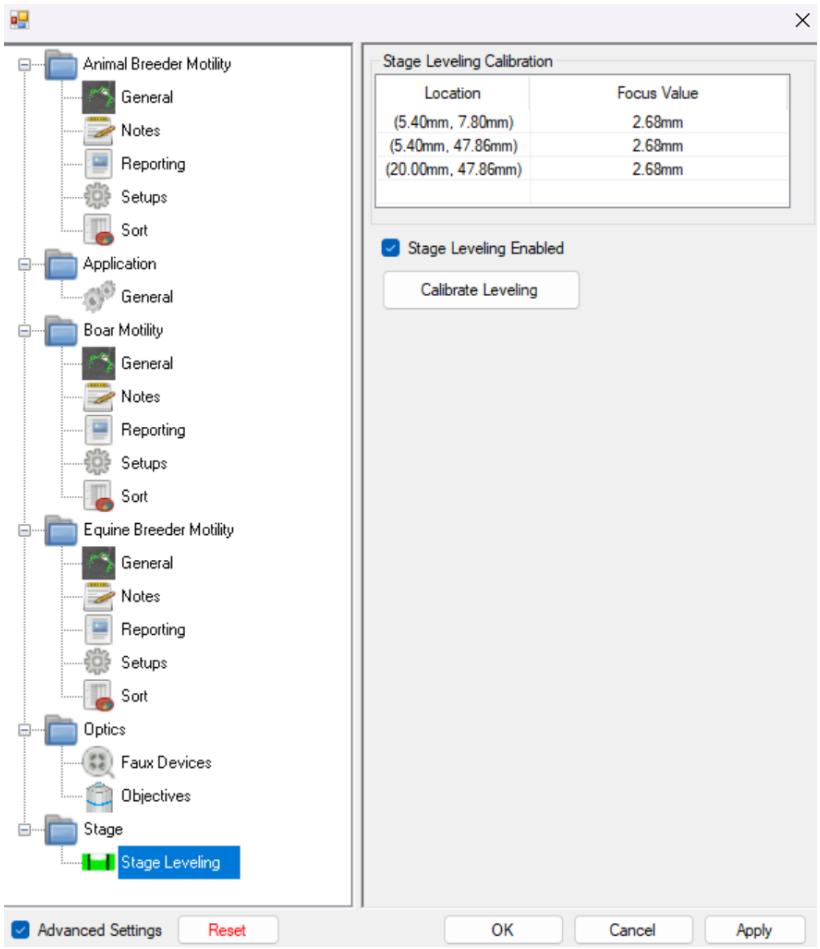


Figure 4-7 Stage leveling Settings

4. Click “Calibrate Leveling” button.

5. Focus the image using focus knob or mouse wheel.
6. Click “OK” button.

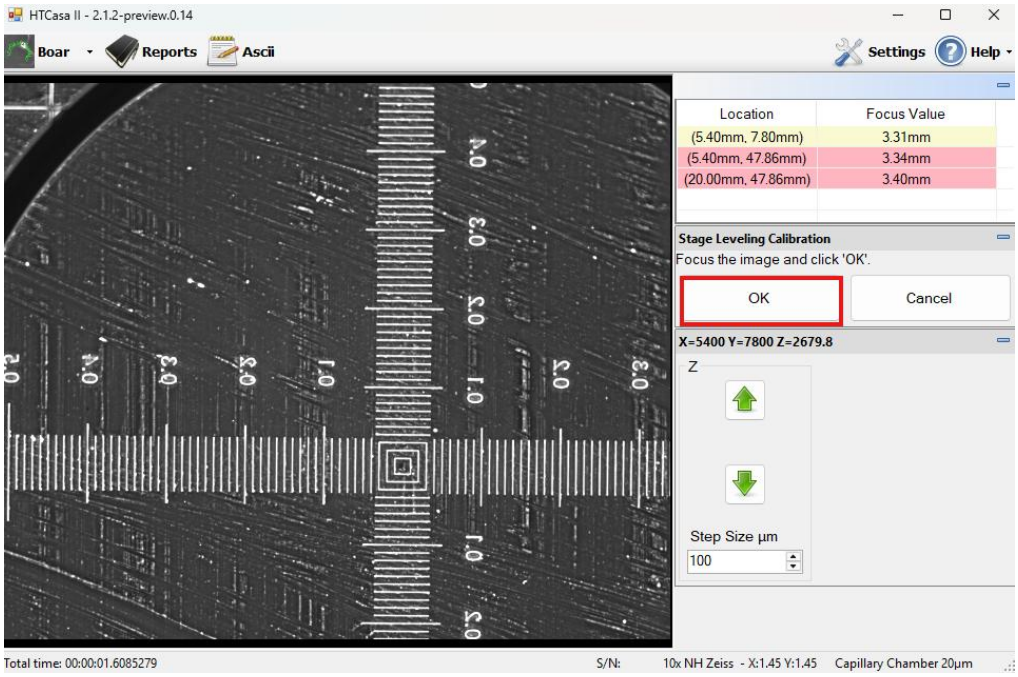


Figure 4-8 Stage Levelling Calibration

7. Repeat steps 5-6 for the remaining two locations.

Stage Control and Focusing

1. The front panel of the device contains the Stage Door, directional jog buttons (x/y axes), focus knob and the eject (load / unload) button.

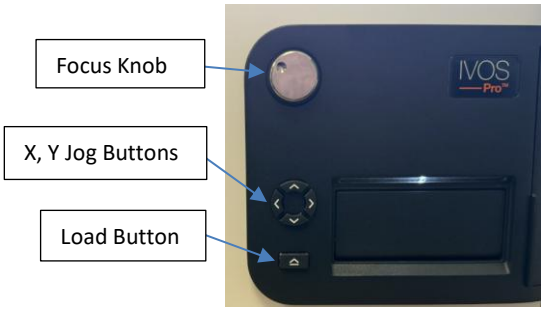


Figure 4-9: Stage Controls Located on the Front of the Device

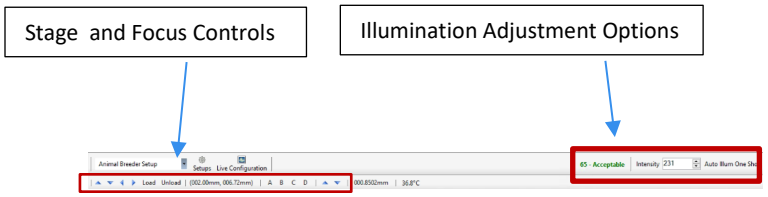


Figure 4-10: Software Stage Controls

2. Press the **Load** button to eject the stage. Place a slide on the stage and load one chamber with sample using the appropriate pipette. Press **Load** button on the front bezel or the **Load** button in the software.

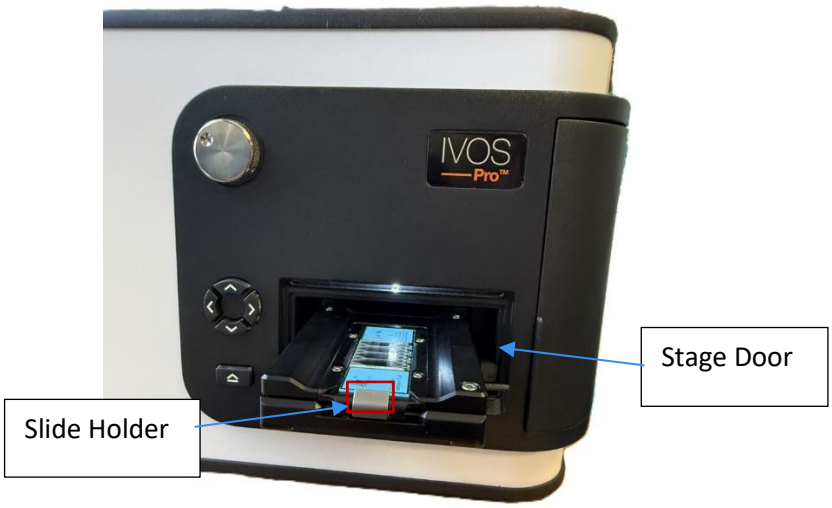


Figure 4-11: Stage Load Position

NOTE: *If possible, it is recommended to load the slide before placing it on the stage. This is to eliminate risk of sample build up on the stage impacting image quality.*

Always mix the extender powder with the solution away from IVOS Pro system. Make sure the stage has retracted into the system and both front and side doors are closed. This ensures that the optical system is not contaminated with particulates from the extender powder.

3. The stage withdraws into the IVOS and positions under the objective at the **Stage Position specified in the software**.
4. Manually enter a value or select Auto Ilum One Shot to adjust the illumination to the appropriate intensity.
5. By pressing and holding the directional (X and Y) jog buttons on the IVOS Pro system, the stage position adjusts, and the stage moves. This can also be done by clicking the stage controls in the software.
6. The image can be focused using the focus knob on the front bezel of the IVOS system or the focus adjustment arrows in the software. To automatically focus the image, select the Auto Focus option in the Motility Sub-Menu on the left side of the screen.
7. Ensure all cells are traced by selecting Live Overlay.

a. If the cells are not tracked the head and tail brightness can be adjusted in the Live Cell Configuration settings. For more information on proper tracking using Live Configuration refers to the **Software Manual**.

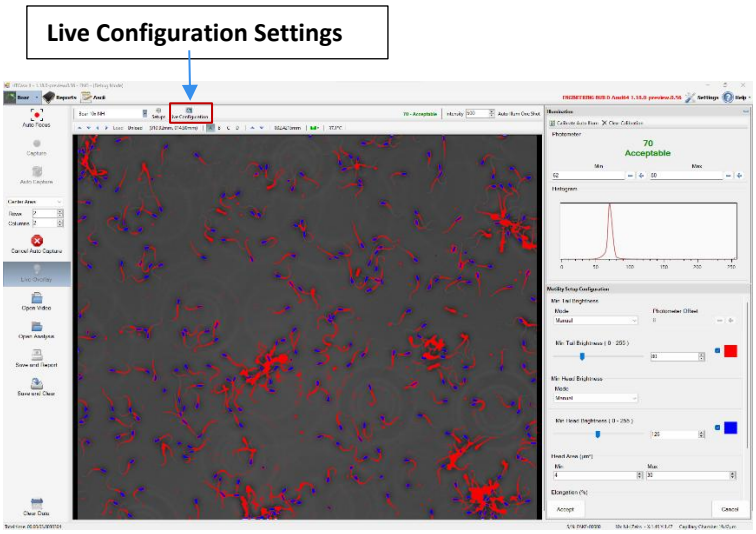


Figure 4-12: Live Cell Configuration Settings Under 10 X Negative Phase

8. Capture images using capture options

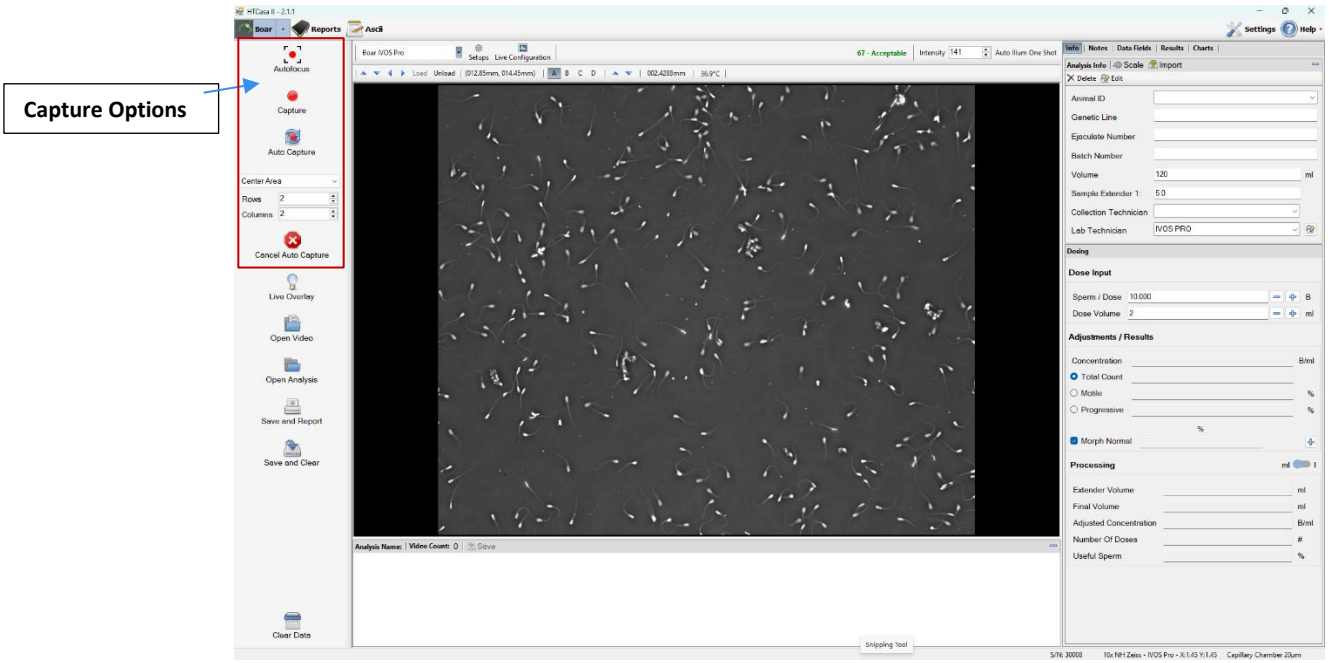


Figure 4-13: Capture Options

Analyzing Data

1. Analyze data by selecting an image from the Thumbnail Gallery.

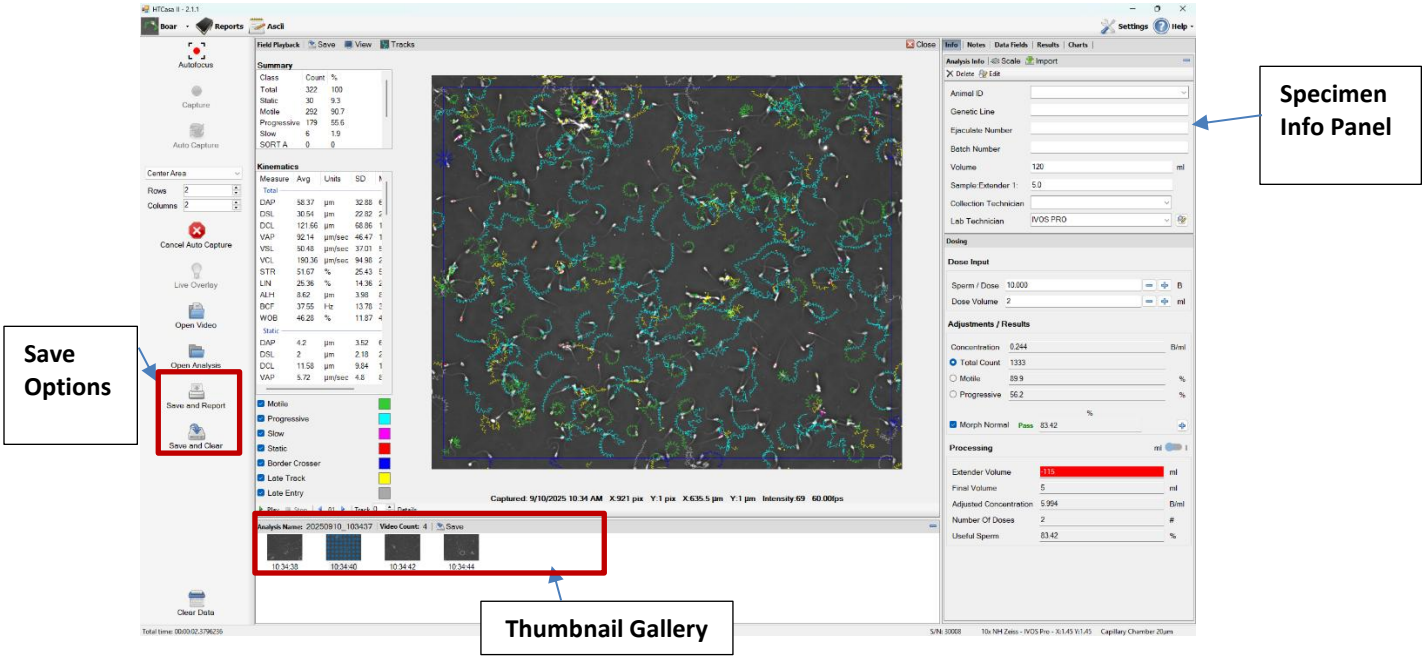


Figure 4-14: Thumbnail Gallery and Playback

2. To analyze a specific track, click on the cell track to view the data.

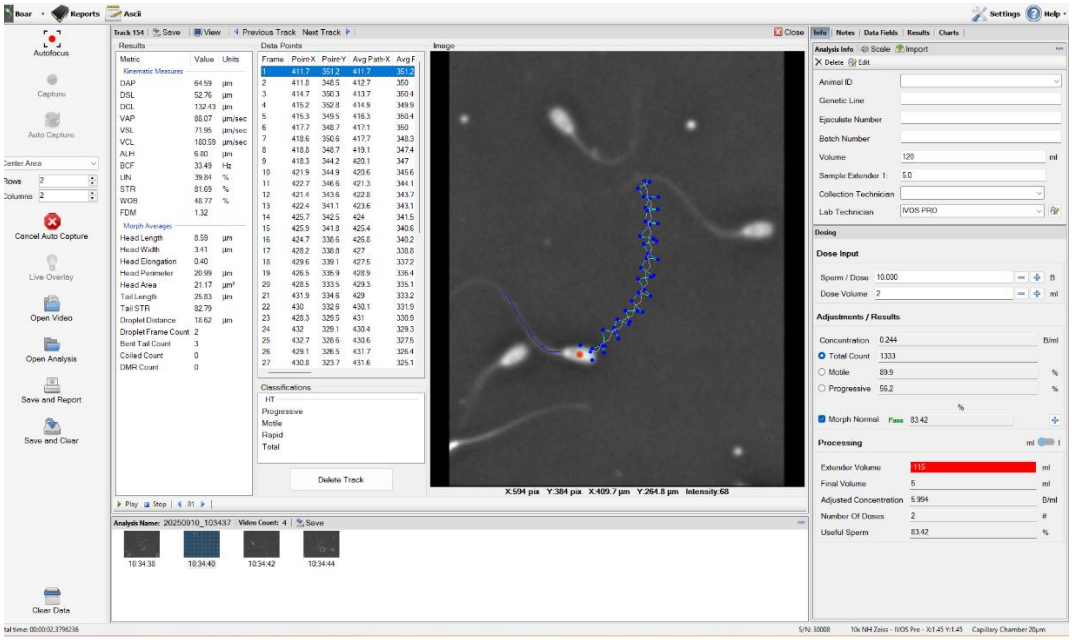


Figure 4-15: Zoomed Track from Playback Image

3. Press Save and Clear to save image and data and clear images displayed in the thumbnail. Press Save and Report to save images and data and display the results in a report format.

4. Click the **Close** button on the window. The program closes.

Chapter 5: Cleaning and Maintenance

Ensure all maintenance is performed with the optic side door closed to reduce the chance of debris from getting inside the device.

Any cleaning should be performed after turning off the system and unplugging it.

Cleaning Condenser Lens

*The front lens of the condenser has a soft coating and using any solvents or wiping is **NOT** recommended. Technicians should use the puffer and vacuum to clean and if necessary, an extra soft brush for cleaning optics.*

Cleaning the Monitor

- Use a soft, clean cloth to wipe the monitor.

This procedure should be performed every six months, or as needed.

Cleaning the Keyboard

- Use clean compressed air to blow any foreign matter out of the keyboard.

This procedure should be performed every two months, or as needed. Ensure the stage door and side door of the IVOS are **CLOSED** while doing so.

Replacing the Fan Filter

Figure 5-1: Fan Filter Cover

- Depending on the environment, it is recommended to have the fan filter replaced every year or as needed.

Stage Cleaning

Sample accumulation on the stage over time can impact slide positioning on the stage, potentially compromising image quality.

To Clean the Stage

1. Eject the stage out of the system using the load button on the front of the device.
2. Add a drop of 70% Isopropyl alcohol to a Kimwipe and wipe the stage with it.

Do not pour the Isopropyl Alcohol directly onto the stage.

Do not unscrew the stage insert to clean the stage. The stage motion system has been precisely aligned and calibrated at the factory and the warranty will be void if tampered.

Appendix: Warranty, Service, and Returns

WARRANTY, SERVICE INFORMATION, RETURNS AND LIMITATION OF LIABILITY

WARRANTY

HAMILTON THORNE INC. (HT) warrants that its products will perform in accordance with HT published specifications (or the specifications agreed to, in writing, by Buyer and HT and made a part of the sales contract) for a period of one year, starting from date of installation. This warranty does not cover lost parts or security keys, and shall not apply to damage to the Equipment resulting from abuse, negligence, accident or loss due to fire, flood, theft, power fluctuations or power failures, lightning strikes, temperatures or humidity outside of HT published Operating Environments, storage or use in a corrosive environment, off-label use, user directed system changes such as incompatible computer systems, computer virus or mal-ware induced system changes, use of non- HT approved software on HT provided computer systems and any other damages covered under Distributor's or final user's Insurance Policy, or damage in transit. The warranty may be voided should the Buyer attempt any repairs, alterations or additions, including installation of third party software, without prior written permission of HT. This Warranty is not valid unless a completed Installation checklist for the system is returned to HT within 30 days from the installation date.

SERVICE INFORMATION

During this warranty period, HT will, at no cost, repair or replace any defective equipment returned to HT. Transportation charges to return the equipment to HT will be prepaid by the sender. The shipping method and packaging are critical to the repair process. Consult HT before shipping. When the Buyer requests expedited shipping or special handling, the Buyer shall pay any associated charges.

HT PROVIDES Software Maintenance which includes updates to software such as patches and reliability enhancements during the warranty at no charge. The Warranty does not include major software Upgrades.

Back up all files before returning the equipment for repair or replacement. HT recommends that you have an external back-up system at all times to reconstruct lost or altered files, data, or programs. HT IS NOT RESPONSIBLE FOR ANY LOSS OF YOUR DATA.

RETURNS

A Return Authorization Number must be obtained before returning any product to HT. Please call 1-800-323-0503 in the U.S., 1-978-921-2050 outside of the U.S., your local distributor, or email support@hamiltonthorne.com for this Return Authorization Number. When calling or contacting HT, please have the serial number of your system available.

LIMITATION OF LIABILITY

HT makes no other warranty, expressed or implied, and HT disclaims any implied warranty of merchantability or fitness for a particular purpose.

The Buyer and HT agree that the sole and exclusive remedies for breach of any warranty concerning the goods shall be repair or replacement of defective parts upon the terms above described or, at HT option, refund of the purchase price. HT shall not be liable for contingent or consequential damages to persons or property, and its sole liability is as above set forth. Any action by Buyer for any alleged breach of the warranty set forth herein shall be brought to the attention of HT by Buyer within the warranty period, but not later than 30 days after the alleged breach.

This statement of warranty and limitations of liability is a complete and exclusive statement of all warranty and liability representations of HT. It may not be varied, supplemented, qualified or interpreted by any prior dealings between the parties or by any usage of the trade or upon the face or reverse of any form to which this is attached or a part of, nor may it be modified by any agent, employee or representative of HT unless such modification or representation is made in writing and signed by a duly authorized officer of HT.

Repairs and/or replacement under the terms of this warranty shall not extend the warranty life of the original equipment supplied. After the warranty period, all repairs and service must be performed by HT service engineers or by authorized agents.

For information about purchasing an additional Service Contract, please contact sales@hamiltonthorne.com

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Innovations to Rely On

HAMILTON THORNE

Securing and Protecting your Computerized Hamilton Thorne Systems

Hamilton Thorne Inc. (HT) products are designed to operate with Window operating systems. Therefore, as the owner of a Hamilton Thorne system, you have a great deal of freedom in determining how and whether to connect your system to a network, load other programs on the computer, and manage and protect your data. There may also be regulatory standards which pertain to your environment such as risk management for IT networks.

General Use:

First and foremost, this is medical/research equipment and needs to be treated as such. Overloading the system with unnecessary programs, exposing unprotected systems to the internet, inserting virus infected memory sticks and other similar actions which routinely cause problems on personal computers are also risks to your HT system. It is recommended that additions or modifications be limited to those required for proper operation of your HT system. It is strongly recommended that you backup your system before making any major changes.

Data Backup:

It is recommended that important data be externally backed up on a routine schedule to a location such as an external hard drive or a cloud backup service. Microsoft Windows includes backup utilities and there are also 3rd party backup and restore solutions available so that data you create as well as the "state" of the system can be backed up and then used in emergency situations to restore the system to an operational state.

Networking:

Hamilton Thorne ships most of its systems "network capable". Hamilton Thorne is not responsible for networking the HT system. Networking of HT systems is considered acceptable and is your responsibility as the owner of the system. There are some basic guidelines which are recommended.

a. First, the HT system should be validated and used to satisfaction prior to network setup.
b. The system should be backed up/stored at this state. Only then should the networking steps be pursued.
c. Be aware that although networking is the easiest way to share data, joining a domain is not recommended as it can lead to problems especially if the HT system is trying to boot from or run programs from a domain. HT programs typically require administrator access to the local hard drive.
d. A preferred method is to Map a shared network drive that the HT programs can access.

Virus and Malware Protection:

Unless an HT system is secured and isolated both physically and electronically from sources of computer virus or malware (sandboxed), the use of an anti-virus anti-malware program is strongly recommended and is your responsibility. Windows Security Essentials and Windows Defender typically work well and are free to download from Microsoft or are included with Windows. Hamilton Thorne may opt to pre-install anti-virus software on HT systems. You may opt to install your preferred antivirus program at your discretion. Ultimately virus and malware protection is your responsibility.

HT Software Program Note:

Many HT programs must install with Administrator privileges. Certain HT programs must run with Administrator privileges. Certain HT programs require custom Windows User Account Control settings. Be aware that limiting these existing privileges may interfere with HT program operation.

Third Party Hardware and Software:

1. It is important to ensure that third party software, such as anti-virus programs, do not use excessive CPU resources during times which may interfere with HT system use (e.g. running virus scans or live updates during the day). It is recommend to run these programs on an after-hours automated schedule.
2. Installing third party programs such as spreadsheet, database or PDF capabilities is possible on HT systems (e.g. Open Office, Microsoft Office). This is generally acceptable but it is recommended to minimize the installation and use of additional programs to only what is required to run with the HT system.

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