TIMS MVP®

SETUP AND CONFIGURATION GUIDE

Rev. 2

TIMS MEDICAL®

TIMS Medical Video Platform® | Record • Edit • Archive • Collaborate

060000-91, Rev. 2

TIMS MVP® Setup and Configuration Guide

About TIMS Medical & Foresight Imaging LLC

TIMS Medical is a division of Foresight Imaging LLC focused on finished medical devices for the recording, editing, archiving, and real-time collaboration on medical imaging studies. Applications include modified barium swallow studies, FEES, endoscopy, interventional radiology, ultrasound, surgery, DICOM & PACS/VNA connectivity, and much more. Over 5000 systems are installed in hospitals, imaging centers, and medical schools worldwide. For further information, visit www.tims.com or email info@tims.com.

Foresight Imaging LLC is a world leader in the design of high accuracy, high performance video streamers, frame grabbers, & medical imaging hardware and software. Foresight Imaging video acquisition boards are the imaging engines of many finished medical devices and military imaging systems in use throughout the world. The company is certified to the ISO 13485 quality standard.

Regulatory Information

EC REP

EMERGO EUROPE
Prinsessegracht 20
2514 AP The Hague
The Netherlands

Foresight Imaging
One Executive Dr Ste. 202
Chelmsford MA 01824
USA

CE

Caution: Federal law restricts this device to sale by or on the order of a licensed medical practitioner. Rev 5, 1/07

SGS
C US

Conforms with ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1, FCC Part 15 Class A

Refer to ANSI/AAMI ES60601-1 for requirements applicable to the TIMS MVP system.

Intended Use

There are no known contraindications to use of the TIMS MVP System.

Explanation of Symbols

Symbol	Explanation
	**Manufacturer**
	**European Authorized Representative**
	**Serial Number**
	**Date of Manufacture**
	**Caution, Consult Accompanying Documents**
	**Catalogue Number**
	**Caution**
	**Temperature Operation Limitations**
	**Humidity Operation Limitations**
	**Atmospheric Pressure Operations Limitations**
	**Alternate Current (AC)**
	**Direct Current (DC)**
	**Antenna**
	**Standby Switch**

Handling the Medical Equipment

Warning:

Use proper hygiene when using the TIMS MVP System within the patient environment.

Please ensure that your medical facility is in strict compliance and adherence to all applicable laws and regulations regarding the handling of electronic equipment with respect to cleanliness, disinfection and sterile environments and all other use and care instructions when operating this equipment within the patient environment.

To avoid electrical shock, this equipment must only be connected to a supply main with protective earth.

Do not position unit such that it is difficult to disconnect the device.

Environmental

	Temperature, Operating: Storage:	10° to 40° C -40° to +70° C
	Relative Humidity, Operating: Storage Humidity:	30 to 75% rH 10 to 95% rH
	Atmospheric pressure, Operating: Storage:	700 to 1060 hPa 500 to 1060 hPa

Standby button operation should be pressed for < 1 second.

Power Supply

Warning:

The Power Supply (MeanWell model GSM120A12-R7B) shipped with the TIMS MVP System is a medical grade power supply and is the only power supply to be used with the TIMS MVP System computer. Do not use any other power supply with the TIMS MVP System as this may result in unsafe operation.

Input voltage rating of 100/240Vac, 50/60 Hz, 1.4-0.7A

Servicing Equipment

Warning: **No user serviceable parts.**
No modification of this equipment is allowed.

Electromagnetic Compatibility (EMC)

This device has been tested for compliance with the EMC requirements. The guidelines in this section will help you to make sure that your medical equipment will meet the requirements of the standard.

Warning: Medical equipment should not be used, stacked, or located on or around equipment that may create electromagnetic inferences.

Cables and Accessories

Use of all included cables and accessories is required for proper use of this equipment. Any cable or accessory not released with the device may compromise safety and performance.

Any cable included or provided by TIMS is the proper and required length needed to operate the equipment.

Replacement parts, such as cables and accessories, must be purchased through TIMS to ensure proper compliance requirements.

Warning: Using other manufacturer's cables and accessories may affect EMC and product performance. Unauthorized use of these items will void warranty and may cause injury harm to you, others and/or the equipment.

Emissions

This equipment does not contain any RF communications equipment.
Note: Mobile RF communications equipment can affect medical electrical equipment.

Failure to use this equipment in the specified type of shielded location could result in degradation of the performance of this equipment, interference with other equipment or interference with radio services".

Product Disposal Information

This product should not be disposed of with household waste. It should be deposited at an appropriate facility to enable recovery and recycling.

Table 1 – Guidance and MANUFACTURER'S declaration – ELECTROMAGNETIC EMISSIONS – for all ME EQUIPMENT and ME SYSTEMS

Guidance and manufacturer's declaration - electromagnetic emissions		
The TIMS MVP System needs special precautions regarding EMC (Electro Magnetic Compatibility) and needs to be installed and put into service according to the EMC information provided in this manual. When TIMS MVP System is exposed to electromagnetic (EM) disturbances, the system may show abnormal behavior. For instance, the measured traces may be become obscured, the software may crash or, in case of very high-level transient voltage events like for instance ESD, parts of the system may even become defective.		
Emissions test	**Compliance**	**Electromagnetic environment — guidance**
RF emissions CISPR 11	Group 1	The TIMS MVP System uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The EMISSIONS characteristics of the TIMS MVP System make it suitable for Class A use in industrial areas and hospitals. (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Table 2 – Guidance and MANUFACTURER'S declaration – electromagnetic IMMUNITY – for all ME EQUIPMENT and ME SYSTEMS

(see 5.2.2.1 f)

Guidance and manufacturer's declaration — electromagnetic immunity			
The TIMS MVP System is intended for use in the electromagnetic environment specified below. The customer or the user of the TIMS MVP System should assure that it is used in such an environment. When the TIMS MVP System is exposed to electromagnetic (EM) disturbances, the system may show abnormal behavior. For instance, the measured traces may be become obscured, the software may crash or, in case of very high-level transient voltage events like for instance ESD, parts of the system may even become defective.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±15 kV air	±8 kV contact ±15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±1 kV for input/output lines ±2 kV for AC and DC powerlines	±1 kV for input/output lines ±2 kV for AC and DC powerlines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 differential mode ±2 kV common mode	±1 differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0 % UT (100 % dip in UT) for 0,5 cycle at 0°,45°,90°,135°180°,225°,270° and 315° 70% UT (30% dip in UT) for 25 cycles 70% UT (30% dip in UT for 25 cycles)	0 % UT (100 % dip in UT) for 0,5 cycle at 0°,45°,90°,135°180°,225°,270° and 315° 70% UT (30% dip in UT) for 25 cycles 0% UT (100% dip in UT for 5 sec)	Mains power quality should be that of a typical commercial or hospital environment, If the user of the TIMS MVP System requires continued operation during power mains interruptions, it is recommended that the TIMS MVP System be powered from an uninterruptible power supply or a battery.

	0% UT (100% dip in UT for 5 sec)		
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the a.c. mains voltage prior to application of the test level.			

Table 4 – Guidance and MANUFACTURER'S declaration – electromagnetic IMMUNITY – for ME EQUIPMENT and ME SYSTEMS that are not LIFE-SUPPORTING

(see 5.2.2.2)

<table>
<tr><th colspan="4">Guidance and manufacturer's declaration — electromagnetic immunity</th></tr>
<tr><td colspan="4">The TIMS MVP System is intended for use in the electromagnetic environment specified below. The customer or the user of the TIMS MVP System should assure that it is used in such an environment.

When the TIMS MVP System is exposed to electromagnetic (EM) disturbances, the system may show abnormal behavior. For instance, the measured traces may become obscured, the software may crash or, in case of very high-level transient voltage events like for instance ESD, parts of the system may even become defective.</td></tr>
<tr><th>Immunity test</th><th>IEC 60601 test level</th><th>Compliance level</th><th>Electromagnetic environment — guidance</th></tr>
<tr><td>Conducted RF
IEC61000-4-6

Radiated RF
IEC 61000-4-3</td><td>3 Vrms
150 kHz to 80 MHz
6 Vrms for ISM bands
3 V/m
80 MHz to 2.7 GHz
27 V/m
385 MHz
28 V/m
450 MHz
9 V/m
710/745/780 MHz
28 V/m
810/870/930 MHz
28 V/m
1720/1845/1970 MHz
28 V/m
2450 MHz
9 V/m
5240/5500/5785 MHz</td><td>3 Vrms

3 V/m</td><td>Portable and mobile RF communications equipment should be used no closer to any part of the TIMS MVP System, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

Recommended separation distance
$d = 1,17\ \sqrt{P}$

$d = 1,17\sqrt{P}$ 80 MHz to 800 MHz
$d = 2,33\sqrt{P}$ 800 MHz to 2,7 GHz
where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).

The TIMS MVP System is fairly sensitive to conducted and radiated RF. Disturbance of the TIMS MVP System trace is possible at and below the specified test level. It may be necessary to relocate the TIMS MVP System or to apply shielding.

Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range.[b]

Interference may occur in the vicinity of equipment marked with the following symbol:
  </td></tr>
<tr><td colspan="4">NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.</td></tr>
</table>

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the TIMS MVP System is used exceeds the applicable RF compliance level above, the TIMS MVP System should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the TIMS MVP System.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Table 6 – Recommended separation distances between portable and mobile RF communications equipment and the ME EQUIPMENT or ME SYSTEM – for ME EQUIPMENT and ME SYSTEMS that are not LIFE-SUPPORTING

(see 5.2.2.2)

Recommended separation distances between portable and mobile RF communications equipment and the TIMS MVP System

The TIMS MVP System is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the TIMS MVP System can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the TIMS MVP System as recommended below, according to the maximum output power of the communications equipment.

⚠ WARNING: Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the TIMS MVP System, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Rated maximum output power of transmitter W	**Separation distance according to frequency of transmitter m**		
	150 kHz to 80 MHz $d = 1{,}17\sqrt{P}$	**80 MHz to 800 MHz** $d = 1{,}17\sqrt{P}$	**800 MHz to 2,5 GHz** $d = 2{,}33\sqrt{P}$
0,01	0.12	0.12	0.23
0,1	0,37	0,37	0,74
1	1,17	1,17	2,33
10	3,70	3,70	7,37
100	11,70	11,70	23,30

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

FCC Compliance Information

FCC NOTICE

WARNING

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. The limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Users should periodically inspect the TIMS MVP System for signs of worn or frayed cables. If worn or frayed cables are found, contact technical support immediately. Also, periodically inspect the TIMS MVP System cable connections to ensure that all cables are securely attached.

There are no user replaceable or serviceable parts in the TIMS MVP System. Please contact technical support with any questions.

Preface

The ***TIMS MVP User's Guide*** consists of two parts:

- This ***TIMS MVP Setup and Configuration Guide*** provides hardware setup and software configuration information for IT & biomedical engineering professionals.
- The ***TIMS MVP Operator's Guide*** provides technicians and medical professionals instructions to work with the TIMS MVP System in everyday operational use.

What Is TIMS MVP?

TIMS MVP is an integrated hardware/software system powered by the TIMS Medical Video Platform (MVP), a software architecture upon which all TIMS MVP medical products are built for delivering high-performance medical video applications. **TIMS MVP** provides recording, editing, labeling, review, analysis, and archiving of medical video throughout the healthcare enterprise. This includes fluoroscopy, endoscopy, cardiology, angiography, ultrasound, surgical video, and any other medical video modality. All studies can be archived to PACS/VNA in DICOM format and exported as DICOM or MP4 video for sharing, distribution, and integration into reports and presentations. Any DICOM study can be imported into **TIMS MVP** for full use within the system.

What Is IDEA Auto-SYNC?

IDEA Auto-SYNC is an application that enables you to optimize the performance of TIMS MVP with your modalities. Although TIMS MVP provides predefined common hardware profiles (CHP) files for its Foresight Imaging video capture boards, you are always recommended to create your own customized CHP files. You do this using Auto-SYNC.

About This User's Guide

The content of this user's guide may differ in some respects from the functionality of your TIMS MVP. Your system's appearance, hardware configuration, and the layout of your PC and modality connections may not be exactly the same as described and depicted in this guide.

In addition, some of the functionality described in this guide depends on which TIMS MVP product configuration you are using. See next page and margin notes throughout this guide.

This user's guide describes hardware setup and configuration for the TIMS 2000 and TIMS 2000 SP. Some features are not present on TIMS 500 and TIMS Review. *See* ***TIMS System Product Line*** and margin notes throughout this guide.

Consult the TIMS MVP Release Notes

Latest details about what is new or different in the current TIMS MVP release are contained in the Release Notes.

Open the Release Notes from the **Start** menu > **TIMS MVP** > **TIMS MVP Release Notes.**

TIMS Product Line

This user's guide describes the full range of functionality available with the following TIMS MVP configurations: TIMS 500 S, TIMS 2000 EN, TIMS 2000 SP, TIMS 2000 FEES, TIMS Review, and TIMS Connect. The key differences are **bolded** in the following summary. Where functionality is not applicable to all versions, the applicable product version is noted in the margin (left).

TIMS 500 S

- ✓ Static capture only
- ✓ For endoscopy and surgical modalities
- ✓ DICOM send and DICOM receive
- ✓ Extensive review, editing, labeling, and analysis tools
- ✓ Foresight Imaging video capture hardware
- ✓ Small footprint computer
- ✓ Support and maintenance (1 year)
- ✓ LCD monitor and typical onsite installation

TIMS 2000 EN

- ✓ Static & streaming capture
- ✓ For endoscopy and surgical modalities
- ✓ DICOM send and DICOM receive
- ✓ Extensive review, editing, labeling, and analysis tools
- ✓ Foresight Imaging video capture hardware
- ✓ Small footprint computer
- ✓ Support and maintenance (1 year)
- ✓ LCD monitor and typical onsite installation

TIMS 2000 SP

- ✓ Synched audio
- ✓ Static & streaming capture
- ✓ For fluoroscopy modalities
- ✓ DICOM send and DICOM receive
- ✓ Extensive review, editing, labeling, and analysis tools
- ✓ Foresight Imaging video capture hardware
- ✓ Small footprint computer
- ✓ Support and maintenance (1 year)
- ✓ LCD monitor and typical onsite installation

TIMS 2000 FEES

- ✓ Synched audio
- ✓ Static & streaming capture
- ✓ For FEES (Fiberoptic Endoscopic Evaluation of Swallowing) modalities
- ✓ DICOM send and DICOM receive
- ✓ Extensive review, editing, labeling, and analysis tools
- ✓ Foresight Imaging video capture hardware
- ✓ Small footprint computer
- ✓ Support and maintenance (1 year)
- ✓ LCD monitor and typical onsite installation

TIMS Review

- ✓ DICOM send and DICOM receive
- ✓ Extensive review, editing, labeling, and analysis tools
- ✓ Computer not included

TIMS Connect

- ✓ Optional add-on software to any TIMS video capture station
- ✓ Streams TIMS application including live modality video to TIMS Review system for real-time collaboration
- ✓ Two-way webcam streaming
- ✓ Two-way audio
- ✓ Chat

Table of Contents

Glossary of Acronyms

AE
Application Entity (Identifies nodes)

BNC
Bayonet Nut Connector

CHP
Common Hardware Profile file (CHP file extension)

DICOM
Digital Imaging and Communications in Medicine

DVI
Digital Video Interface

IP
Internet Protocol

MVP
Medical Video Platform

PACS
Picture Archiving and Communications System

QR
Query/Retrieve

SCP
Service Class Provider

SCU
Service Class User

SOP
Service Object Pair

USB
Universal Serial Bus

Get Connected

Connecting your TIMS Medical Video Platform (MVP) System comprises the following steps, reviewed in this chapter:

- Conduct a Site Survey
- Set Region AC Voltage Setting
- Make Standard PC Connections
- Make Modality Connections
- Connect Trigger (optional)
- Configure Network

After you connect your system, additional software configuration steps are required before the system is ready to use:

- Configure Security (optional) Go to Page 87
- Configure Channels and DICOM Class Lists Go to Page 27
- Configure Modality Worklist *See* Operator's Guide
- Configure DICOM Send *See* Operator's Guide

Site Survey

Before you set up the hardware connections or software configuration for your TIMS MVP system, you should perform a site survey to establish general requirements.

- Determine requirements and location of TIMS units, including proximity to power and network adapters.
- Determine the type, number, and location of video imaging devices you will connect to the TIMS MVP system.
- Determine if distances to video sources will exceed 6 meters, in which case. It may require a video amplifier.
- Determine network settings (domain or workgroup, dynamic or static IP address, and so on).

Typical TIMS MVP System Installation

These are the necessary preparation and installation steps you need to take for a typical TIMS MVP installation. You may have a configuration that requires additional steps not listed here. Here is a checklist with all recommended steps.

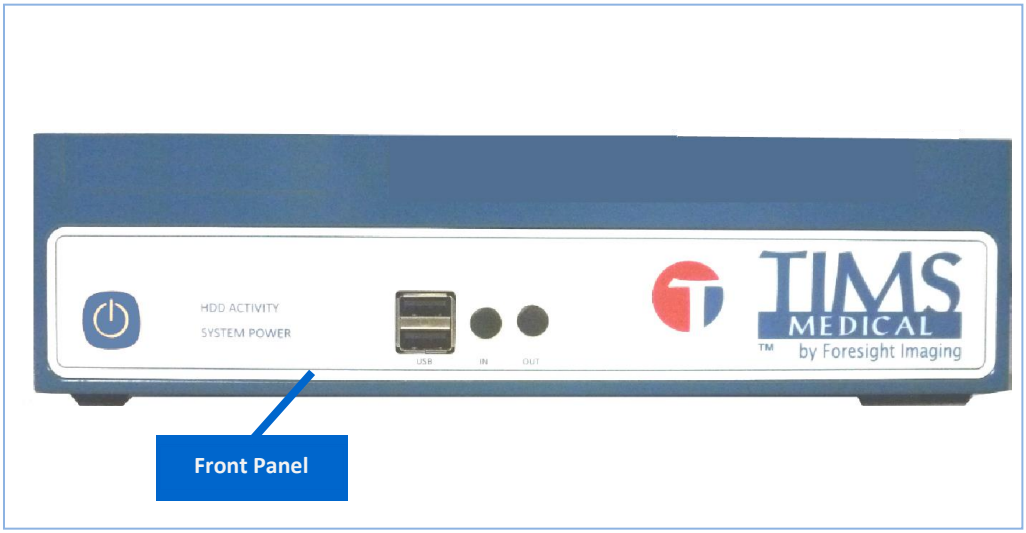
TIMS MVP System Checklist (site option) means you site may not have or require the step listed.	
☐	**TIMS MVP System serial number: _____** **TIMS MVP System Rev: _____**
☐	**Unpack TIMS MVP System from its shipping boxes.**
☐	**Determine the mounting location – usually in a control room.** • Requires three AC outlets (TIMS MVP System, LCD & Isolator-Splitter) • Requires network connection • Modality video & Trigger
☐	**Install the TIMS MVP System.** • Connect LCD, Keyboard, Mouse, network, audio cables • Set the TIMS MVP System Windows system name • Set TIMS MVP System IP Address/Subnet/Gateway • Set verify region and time settings. • Calibrate touchscreen. (site option) • Install anti-virus software (site option)
☐	**Make the TIMS MVP System connections.** • Connect TIMS MVP System to the network. • Connect Isolator video and trigger to TIMS MVP System. • Connect Modality video and trigger to Isolator. • Connect room monitor to the Isolator.
☐	**Install and configure microphone/speakers. (site option)** • Omni or wireless microphone. • Configure microphone and speaker levels in Windows.
☐	**TIMS MVP System Auto-SYNC to image.** • Adjust image aspect ratio and quality. • Adjust framing. • Adjust black/color level and gain. (site specific)

TIMS MVP System Checklist (site option) means you site may not have or require the step listed.	
☐	**Configure TIMS MVP System with TIMS MVP software.** • Set Worklist server AE title, IP address and port number. • Configure TIMS MVP Send/PACS • Configure a Worklist server.
☐	**Create a TIMS MVP channel.** • Set CHP. • Set trigger mode. • Set monochrome or color. • Set compression mode. • Save channel.
☐	**Test configuration.** • Create a test study. • Query site Worklist for patient information. • Capture images using the trigger. • Send images to PACS. • Review images on PACS. Make adjustments, if needed. • Delete test studies. • Verify touchscreen calibration. (site option) • Verify image and Auto-SYNC adjustments.
☐	**Install and configure TIMS Review workstations. (site option)** • Review studies or images on TIMS Review workstation
☐	**Save and backup TIMS MVP configuration.** • Email system configuration zip file to support@tims.com.

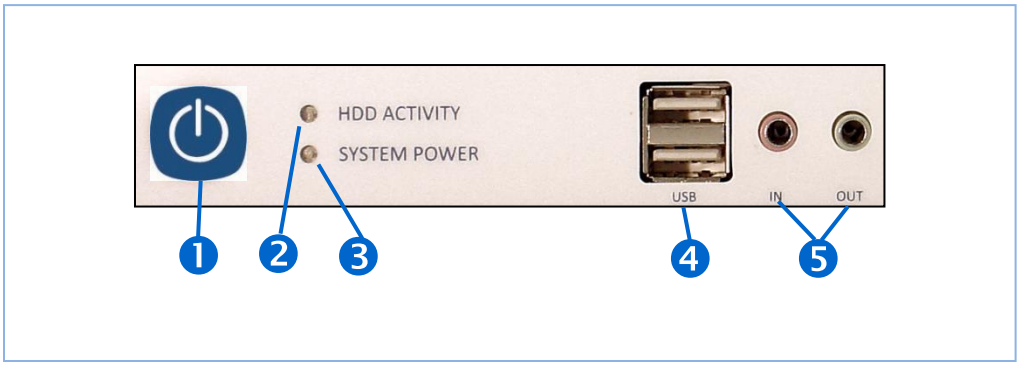
Typical System Unit

Note: The appearance of your system, its backplane ports, and supplied connection hardware may differ, in some respects, from what is shown and described here.

Front View (Front Panel)

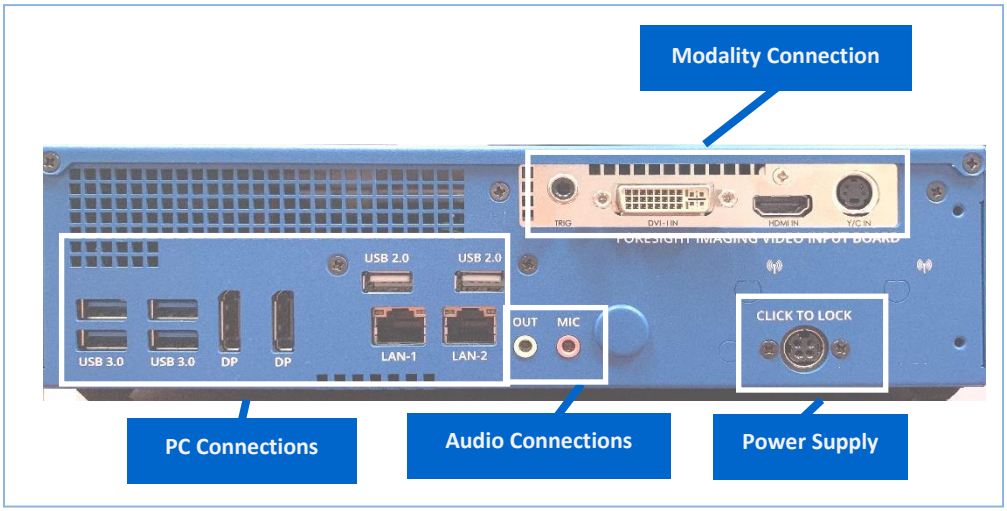


Front Panel



1	Standby Switch
2	HDD Activity – Hard Drive Activity light.
3	System Power – Indicates when power is ON.
4	USB (2)
5	Not Used.

Rear View (Backplane)



Connecting your TIMS MVP System comprises standard PC connections (including network connections) and Modality (imaging device) connections.

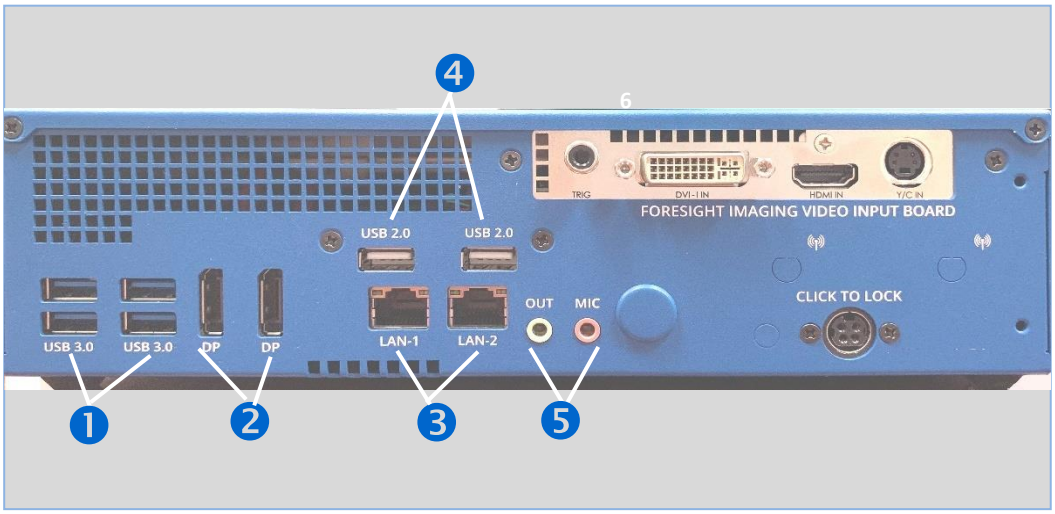
Indicate PC Connections

Your TIMS MVP System is equipped with a full range of standard PC connection options and peripherals. The items included with TIMS MVP:

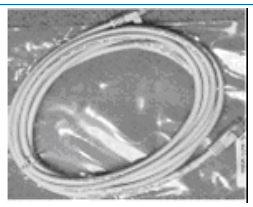
- External Medical Grade Power Supply — US, Europe, or the UK (as supplied)

IMPORTANT: Make sure the external power coupler is not difficult to disconnect from a power outlet. This includes ensuring it is not blocked or in an area where it would be very difficult to access and/or remove quickly.

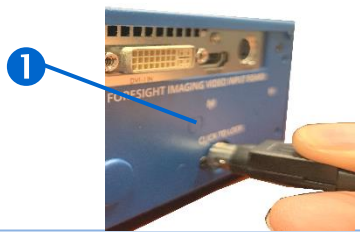
- Keyboard
- Mouse
- DVI-D Cable
- BNC Barrel Connectors, Qty 6
- S-Video Cable
- Network cable, Cat6
- BNC Video Cable, Qty 2
- BNC Trigger Adapter
- Mono BNC to DVI Video Adapter



Power Supply Connection

1	USB 3.0 (2) Typically used for higher speed DVD drives, keyboard and mouse	
2	DisplayPort (2) Used to connect a video source to a display device such as a computer monitor The DP on the right side is the primary DP connection	
3	Network (2) LAN 2 is normally not used – available for accessory devices	
4	USB (2) Typically used for keyboard and mouse	 
5	Line Out – Stereo Microphone Input	

Power Supply Connection



Make sure you feel the power cable “click” into the power connection.

1	External Power Supply **IMPORTANT:** Make sure you feel the cable “click” into the power connection to ensure it is a secure connection.	 Low voltage sealed connection

Modality Connections

Your TIMS MVP System is equipped with one high-performance video capture board. It is:

AccuStream HD+

For Standard and High Resolution RGB

For Standard and High-Resolution Monochrome

For NTSC / PAL - S-Video and Composite (requires an S-video to Composite adapter)

To Make Modality Connections

To make modality connections, you must:

1. Determine the type of video source you are connecting to.
2. Determine the type of supplied connector to use.

Use the following table for guidance.

Non-NTSC/PAL	
Video Source	**Connector**
RGB 3 Wire 4 Wire 5 Wire *or* **Monochrome** **Sync** Composite Horizontal Vertical	DVI to 5-BNC Cable 030093, Male or DVI to BNC adapter, 030175 DVI to 5-BNC Cable 030093, Male
NTSC/PAL	
S-Video	S-Video Cable, Standard 4-Pin DIN, Male, 030102
Composite Color Video	S-Video to BNC adapter, 030193 S-Video to RCA, 030194

AccuStream Express HD+

1 Trigger Adapter – Male Phone to Female BNC 	**2 DVI-I IN –** DVI to BNC Cable or DVI to BNC Adaptor 	**3 HDMI IN** - DVI-D to HDMI cable (optional) or HDMI to HDMI cable (optional) 	**4 Y/C IN –** S-video to S-video cable or for composite color an S-video to composite color adaptor (optiona 

1	Trigger Adaptor	Male Phono Adaptor (P/N: 030123) 
2	DVI-In – RGB or Monochrome	DVI-D to VGA cable (optional) or DVI to BNC Cable (P/N: 030193) or DVI to BNC Adaptor (P/N: 030175) 
3	HDMI In – NTSC or PAL	DVI-D to HDMI cable (optional) or HDMI to HDMI cable (optional)
4	Y/C In – NTSC or PAL	S-video to S-video cable (P/N: 030102) or for composite color: an S-video to composite color adaptor (optional)
5	Optional composite video cable	BNC to S-video adaptor (P/N: 030193) 

Connecting Your Video Source to AccuStream HD+

DVI-IN Video Sources

A **DVI to BNC** cable is supplied for imaging devices:

For RGB Connections
DVI to 5-BNC Cable (P/N: 030193), Male

Connection Steps:

Using the color-coded BNC wires as your guide:

1. Connect DVI to TIMS ❷.
2. Make the Red, Green, and Blue connections to device.
3. Make the Sync connection to device:
    - If Composite Sync, use Gray for Comp/H-Sync
    - If Horizontal Sync, use Gray for H-Sync
    - If Vertical Sync, use Black for V-Sync

For Monochrome Connections
DVI to 5-BNC Cable (P/N: 030193), Male

Connection Steps:

Using the color-coded BNC wires as your guide:

1. Connect DVI to TIMS ❷.
2. Make the Green to Monochrome video connection.
3. Make the Sync connection:
    - If Composite Sync, use Gray for Comp/H-Sync
    - If Horizontal Sync, use Gray for H-Sync
    - If Vertical Sync, use Black for V-Sync

For Monochrome Connections only
DVI to BNC Adaptor (P/N: 030175)

Connection Steps:

Using the DVI to BNC Adaptor:

1. Connect DVI end of the adaptor to TIMS ❷.
2. Connect the BNC end of the adaptor to a BNC cable.

For DVI Connections
DVI-Digital to DVI-Digital, P/N: 030096

Connection Steps:

1. Connect DVI male to TIMS ❷.
2. Make the DVI connection to the video source.

Optional Trigger

Connect to TIMS ❶ and to the trigger device.

Note: A trigger is a foot pedal or pushbutton device for starting and stopping video capture.

S-Video (Y/C) Color Video Sources or Composite Color Video

S-Video cables are supplied for **NTSC/PAL** imaging devices:

For S-Video (Y/C) Connections
BNC Cable, Standard 4-Pin DIN, Male

BNC Cable, Standard 4-Pin DIN, Male to Composite Color Adaptor

Connection Steps:

1. Connect to TIMS ❹.
2. Connect the S-video to Composite Color Video adaptor (P/N: 030193)

Optional Trigger

Connect to TIMS ❶ and to the trigger device.

Note: A trigger is a foot pedal or pushbutton device for starting and stopping video capture.

HDMI Video Sources

HDMI Cables are optional for **NTSC/PAL** imaging devices:

For HDMI Connections
HDMI to DVI-D Cable (P/N: 030191)
HDMI to HDMI Cable (P/N: 030190)

Connection Steps:

1. Connect to TIMS ❸.
2. Make DVD-I or HDMI Connection to device.

Optional Trigger

Connect to TIMS ❶ and to the trigger device.

Note: A trigger is a foot pedal or pushbutton device for starting and stopping video capture.

Triggers

For a trigger to use with the TIMS MVP system, contact the modality manufacturer or service provider. Also, you can use the TIMS relay trigger as an option. For the relay trigger, contact TIMS at:

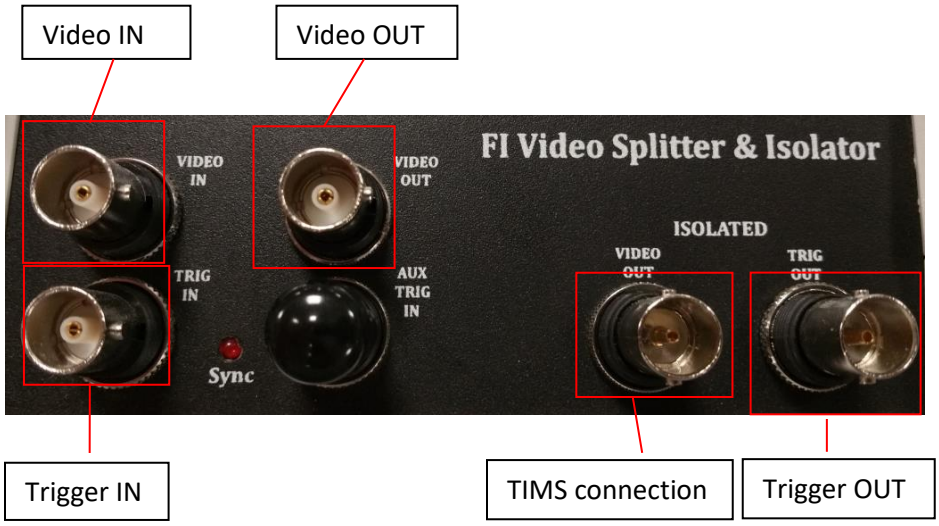
Phone: (001) 978-458-4624 ext. 204

Email: support@tims.com

FI Video Splitter Isolator

Single Channel Medical Video Splitter/Isolator P/N 012009-100

The video signal provides a second video source to a TIMS unit. This video source is for monochrome connections only. The video splitter isolator would be placed between the modality and the video monitor.



Network Setup

Your TIMS MVP System requires standard network configuration.

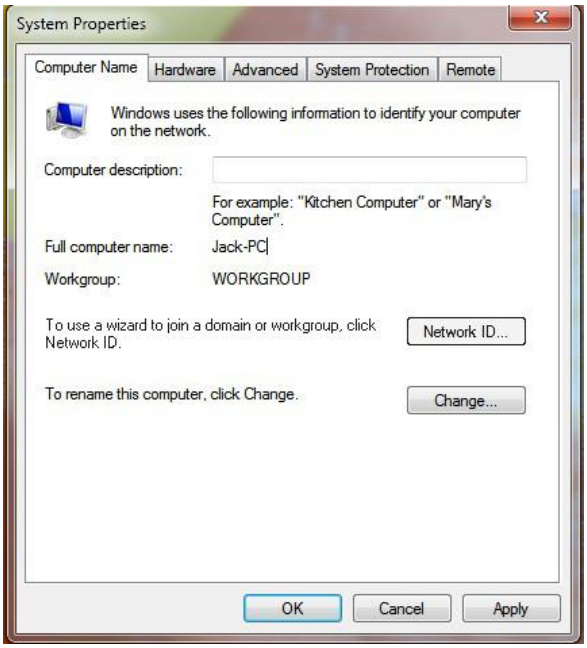
Consult your network administrator to determine the following:

- Whether the system is to be part of a domain or a workgroup.
- Whether the system is to have a dynamic or static IP address.

Set Computer Name, Domain/Workgroup

To set computer name, domain/workgroup:

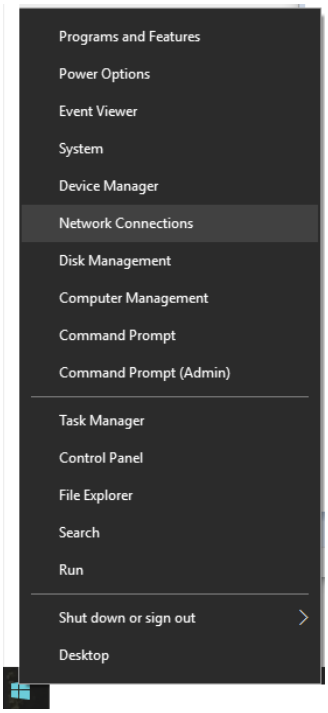
1. Open **Start** menu **> Control Panel > System > Advanced System Settings > Computer Name** tab.
2. To join a domain, use the **Network Identification Wizard** (click **Network ID**).



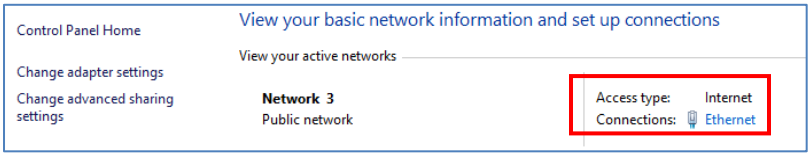
If Static IP Address Is Required

If a static IP address is required:

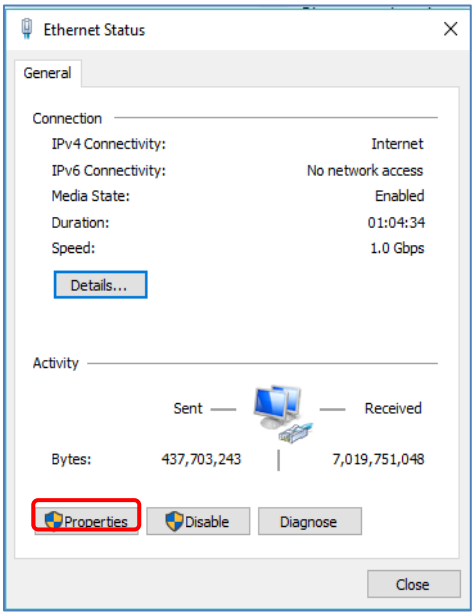
1. Right-click on the Windows Start icon and select **Network Connections**.



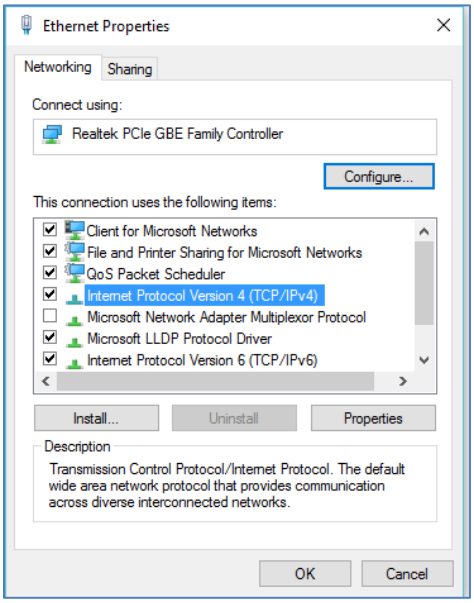
2. For your network connection, click the Connections type **Ethernet**.



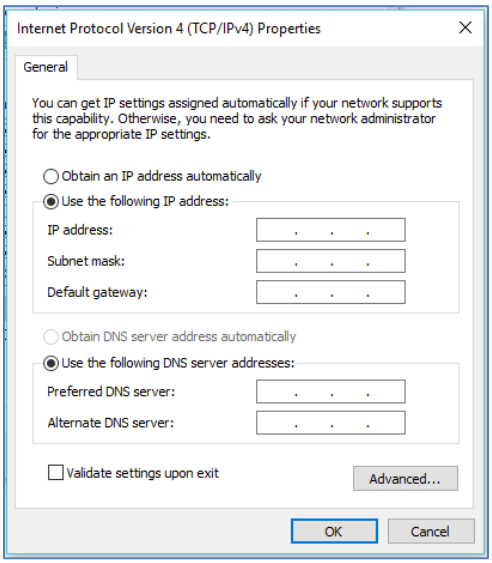
3. Click the **Properties** button to access the Ethernet Properties.



4. Select **Internet Protocol Version 4 (TCP/IPv4)** from the connection list.



5. Click the **Properties** button. Select **Use the following IP address**. Enter the required **IP** and **DNS** information**.**



6. Click **OK**.

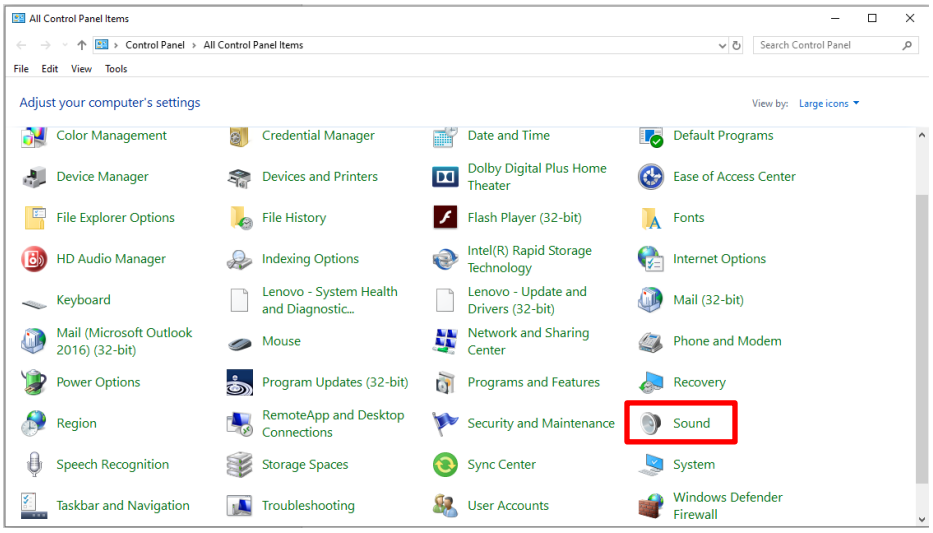
Verifying Audio

Note: It is recommended that you verify audio settings before installing TIMS MVP software.

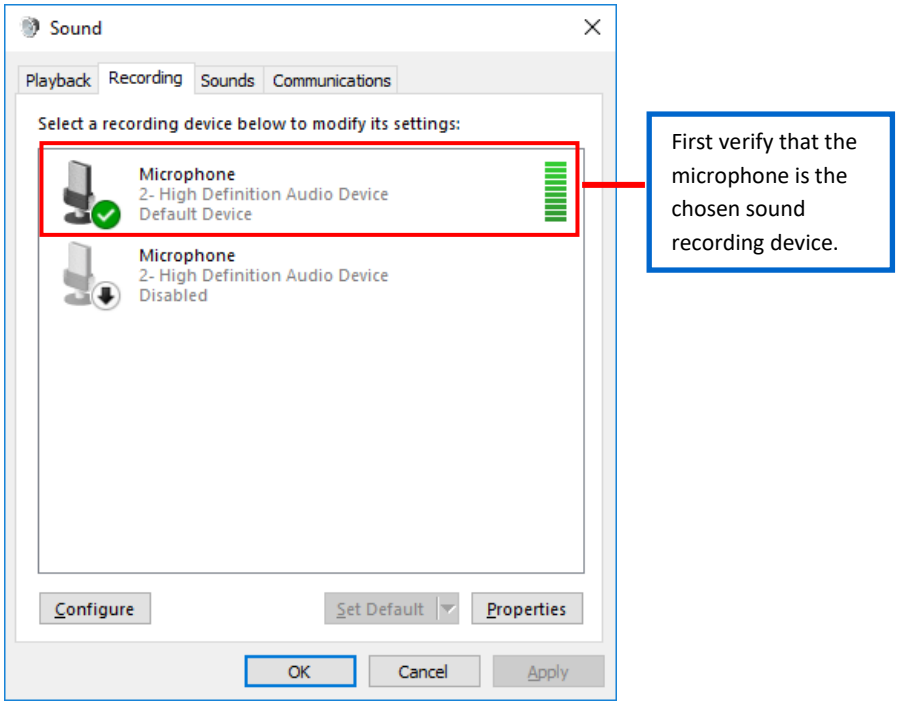
In order to use the synchronized audio capture feature on the TIMS MVP System, you should verify the audio settings on your TIMS MVP system to ensure that your recording and playback will work properly with TIMS MVP.

To verify your TIMS MVP system audio settings for microphones and speakers:

1. Open **Start** menu > **Control Panel** and select **Sound**.



When the **Sound Properties** dialog appears, click on the **Recording** tab. It is recommended that you keep the selected **Default devices** as your selection for Sound playback and recording.

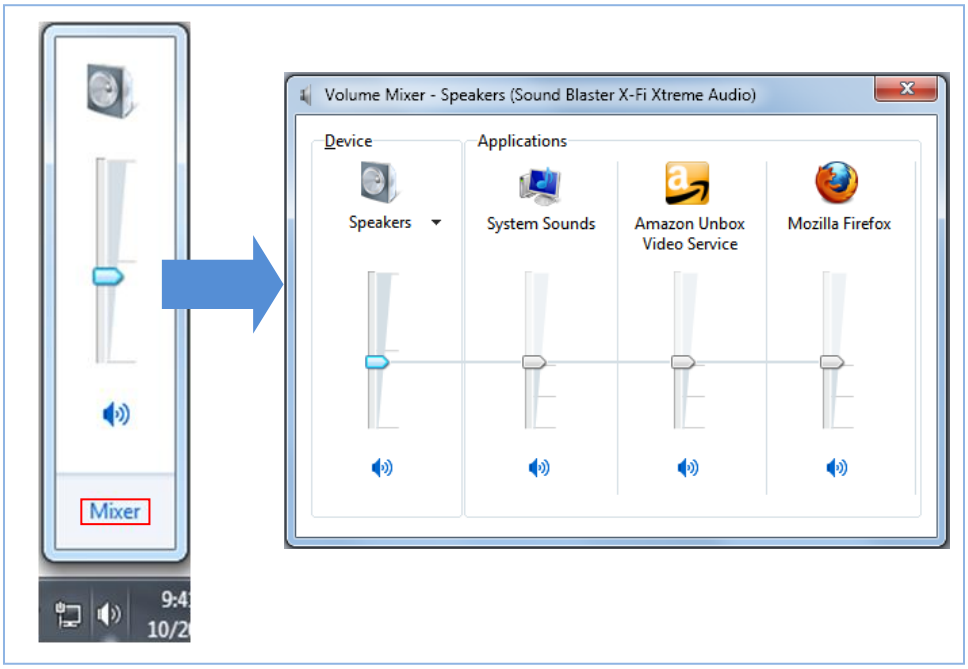


2. To verify that a microphone is selected as the recording device, make sure there is a green check on the microphone icon. If it is not, then select the microphone and click the **Set Default** button.

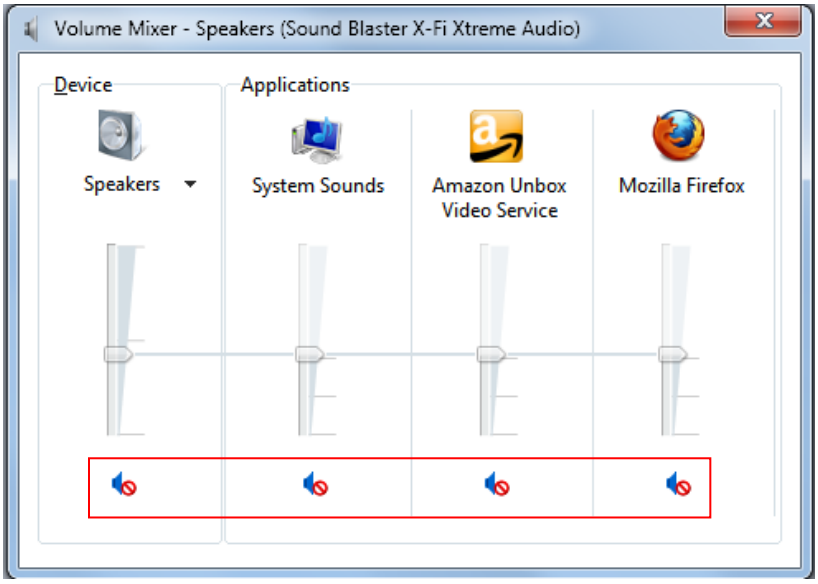
3. Click **OK.**

4. After you verify the microphone, right-click the sound icon  in the lower right-hand corner of the Windows toolbar.

5. Click **Open Volume mixer** and the **Volume Mixer** dialog appears.



6. Verify that all of the **Volume Control** selections are not set to **Mute**. If the volume is set to mute, the volume icon has a stop icon over it. Click on the icon to unmute.



7. After you verify the sound playback, click the X to close the **Volume Mixer** dialog.

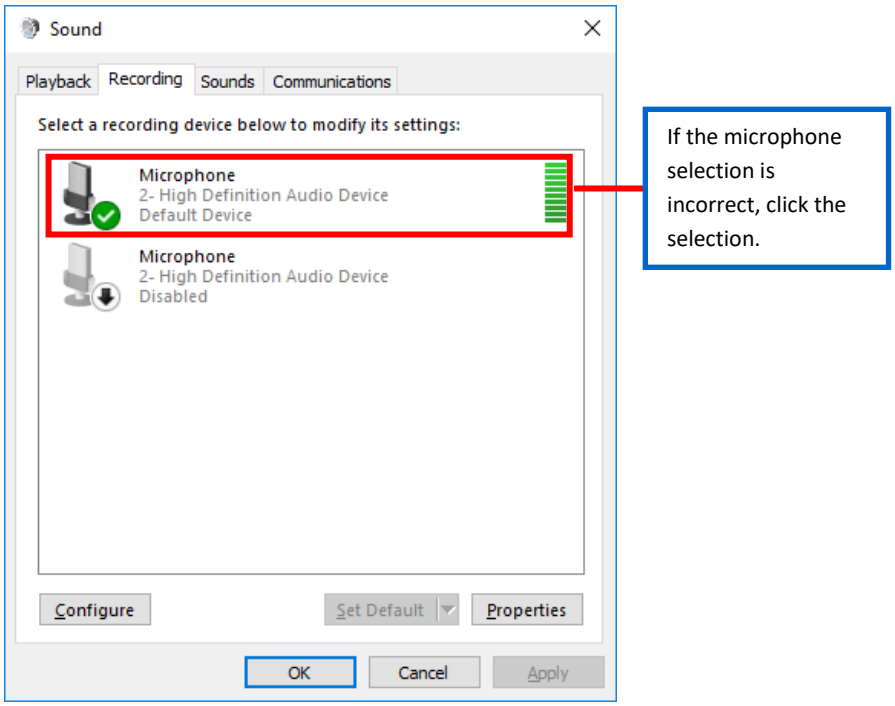
Verify the Speaker Setup

1. Open **Start** menu > **Control Panel** and select **Sound**.
2. When the **Sound Properties** dialog appears, click on the **Playback** tab.
3. Under **Playback**, click **Configure**.
4. Verify the speaker setup.
   - If the setup is correct, click **Cancel** to exit the **Speaker Setup** wizard and then click **OK**.
   - If the setup is incorrect, change the selections, click **Finish** and then click **OK** to exit the properties dialog.

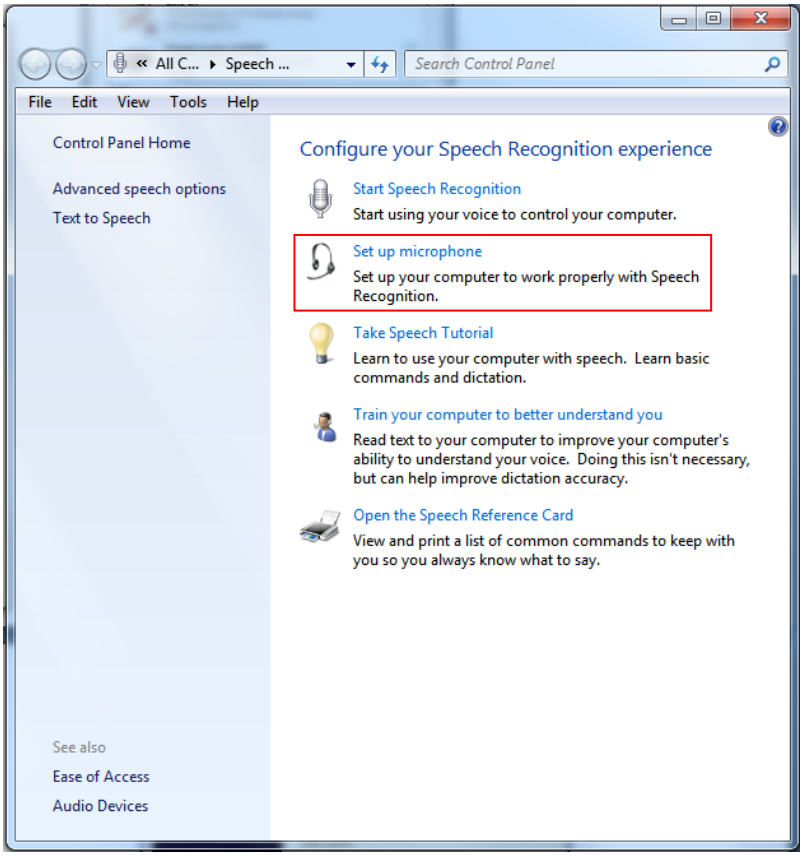
Test Your Microphone and Speakers for Use with TIMS MVP

To test your microphone and speakers for use with TIMS MVP:

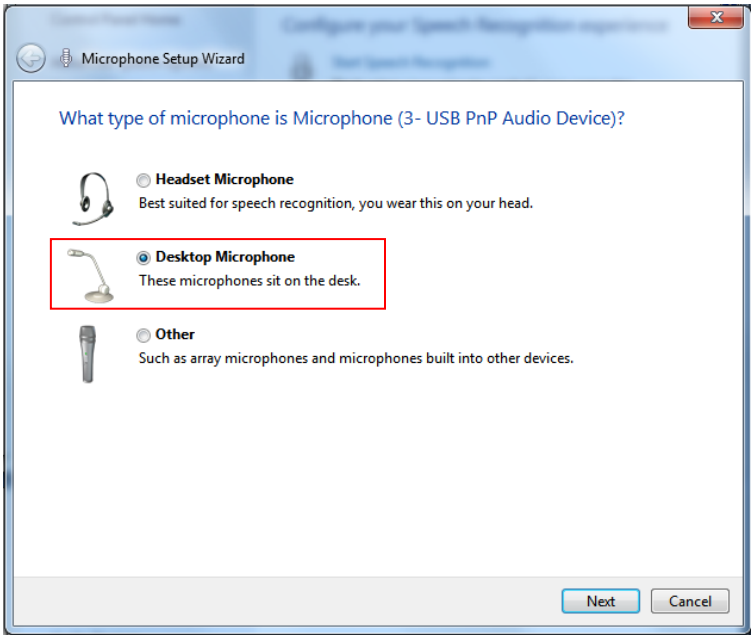
1. Open **Start** menu > **Control Panel** and select **Sound**.
2. When the **Sound Properties** dialog appears, click on the **Recording** tab.



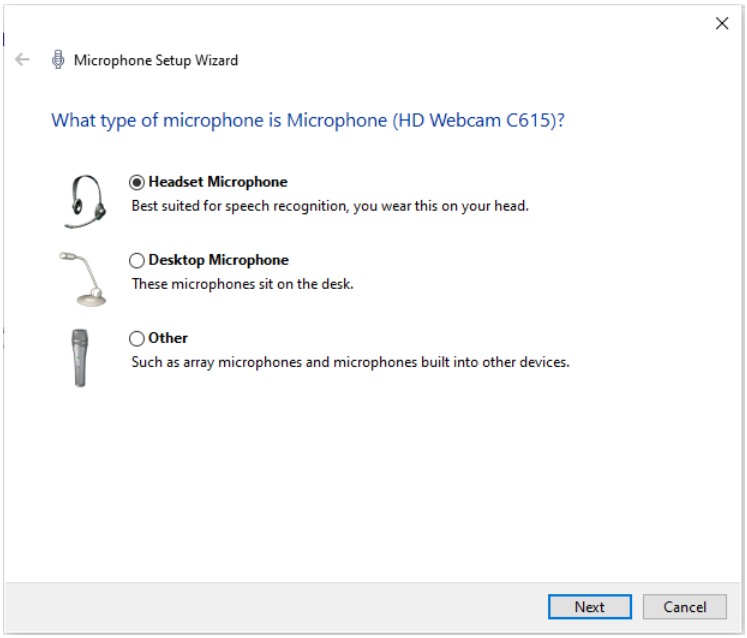
3. Click **Configure** to test the microphone connected to your TIMS MVP system. Click **Set up microphone** from the configuration settings.



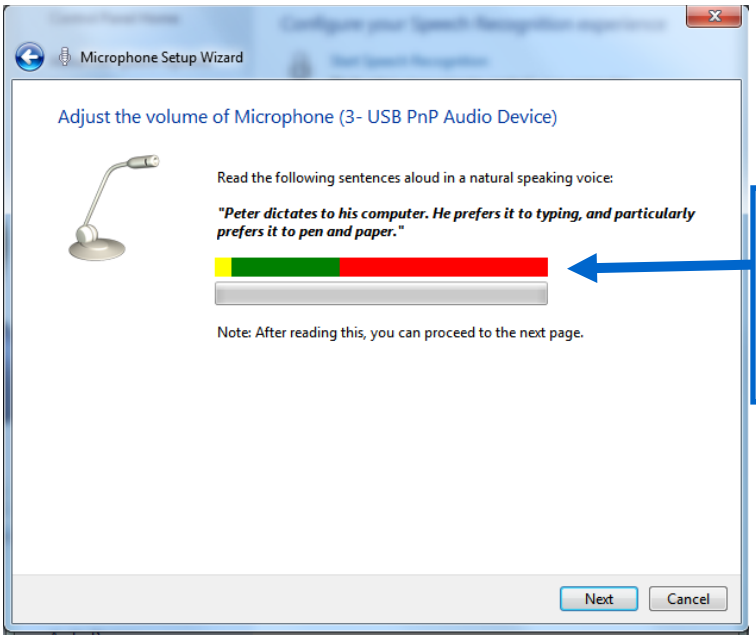
4. When the Microphone Setup Wizard starts, select the type of microphone you are using and click **Next**.



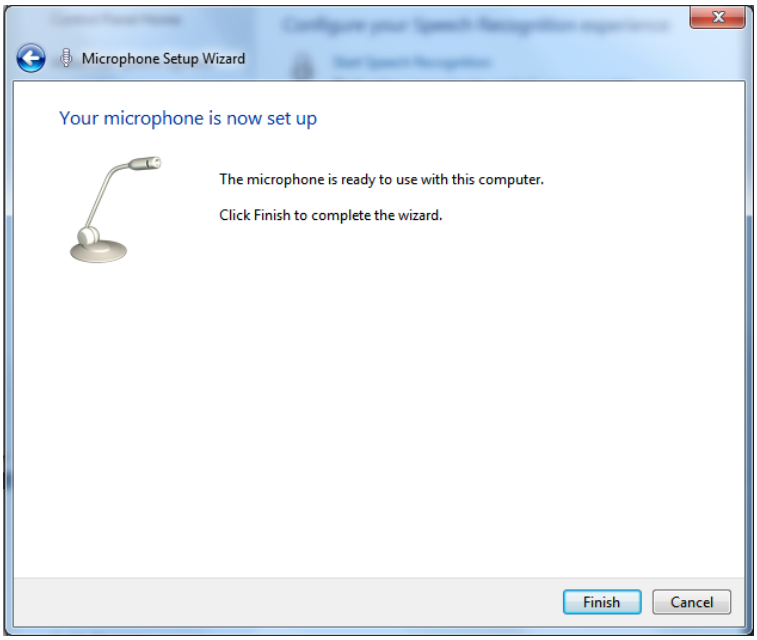
5. When the **Set up your microphone** dialog appears, follow the instructions to prepare to speak into the microphone.



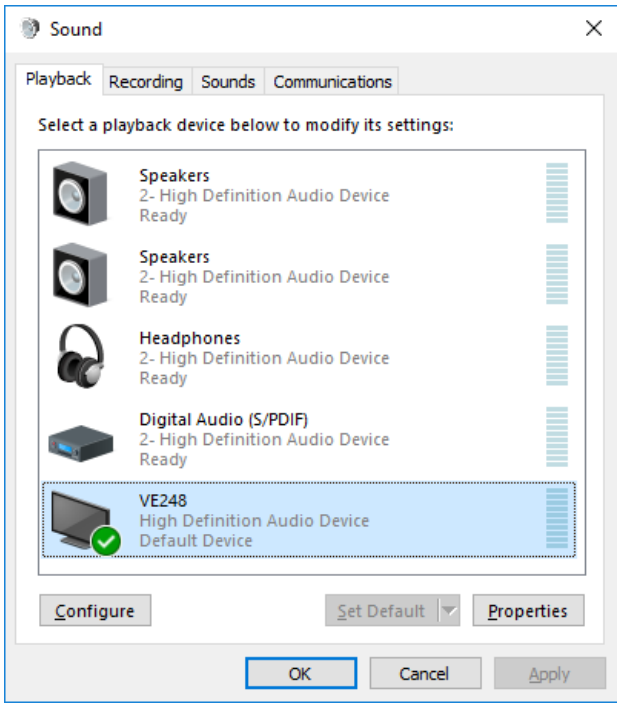
6. Test the microphone by speaking the phrase shown in the dialog.
   - If the meter is moving, then the microphone is working properly, click **Next**.
   - If the meter is not moving, click **Cancel** and go to the verification procedure on *page 18*.



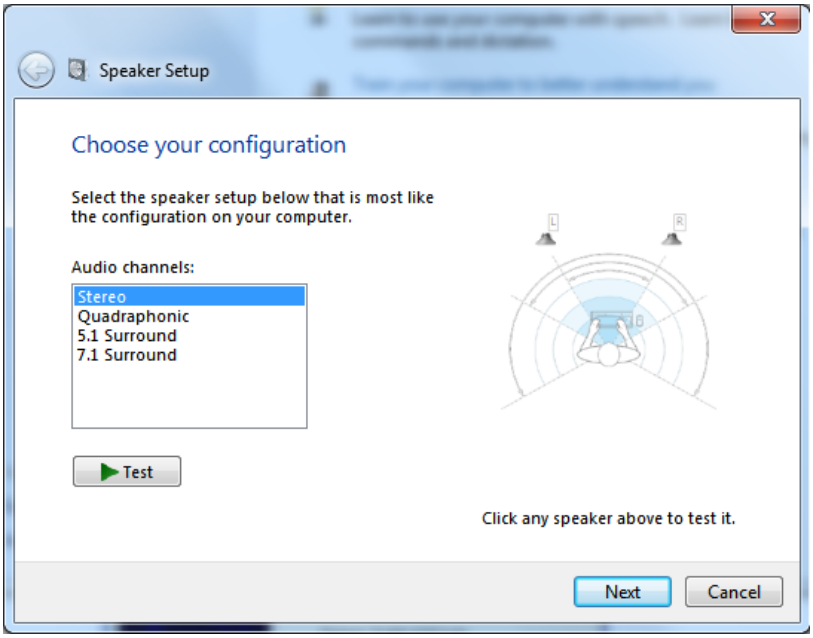
7. Click **Finish** and the click the **X** to close the configuration menu.



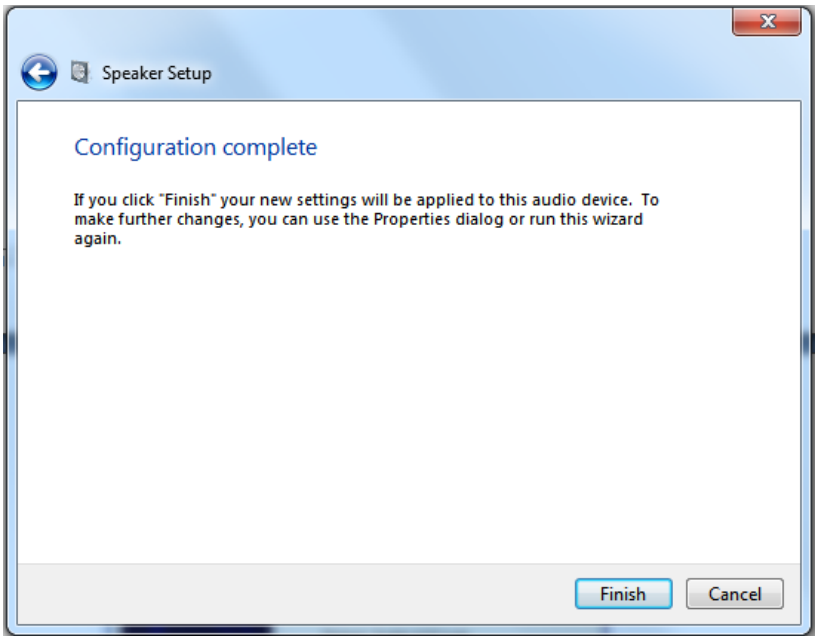
8. Select the **Playback** tab on the Control Panel **Sound** dialog. Click on the Playback speakers you are using and then click **Configure**.



9. Choose your playback configuration. In this example, the speakers are used for playback. Click **Test** to test the sound for the playback device. Click **Next**.



10. Click **Next** when the **Select Full Range Speakers** dialog appears and then click **Finish**.



11. Click **OK** to close the **Sound** dialog.

Getting Started

Configuring Channels

The chapter discusses configurable settings and features of the TIMS MVP software for image acquisition and medical video system settings:

- Selecting Image Acquisition Settings
- Selecting DICOM Class Settings
- Selecting Medical Video System File Compression Settings

Configuring Channels means you can set all the properties that determine image acquisition and medical video system data fields. You do this in the **TIMS MVP Channel Configuration** window.

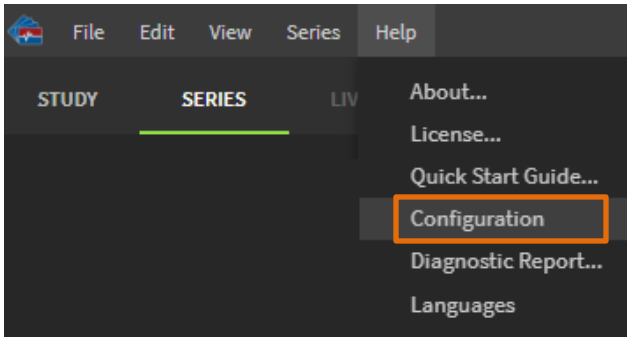
A channel comprises of image acquisition properties for a medical modality and the data acquisition properties that define the associated DICOM class.

Configuring Channel Settings

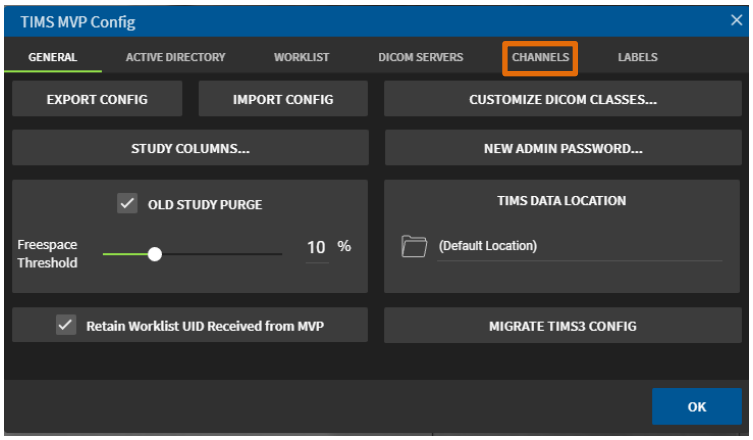
From the TIMS MVP **Channel Editor**, you can add, delete, edit or duplicate a channel.

To access the Channel Editor page:

1. Click the **Help** menu and select **Configuration**.



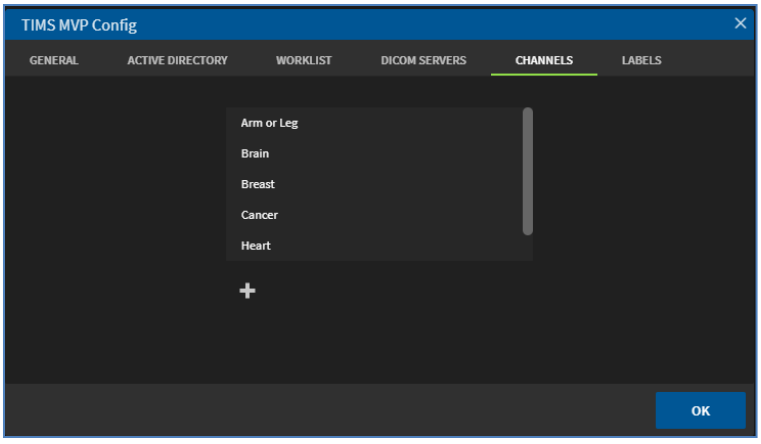
2. From the **TIMS MVP Config** page, click the **Channels** tab.



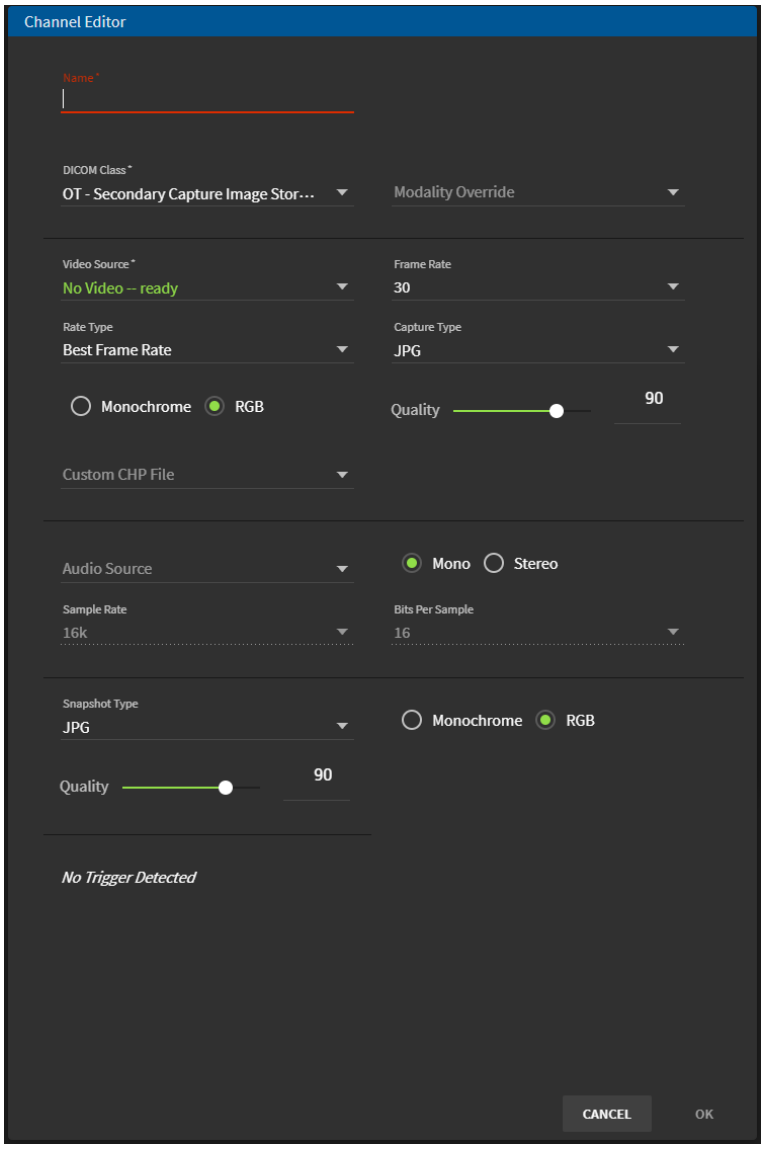
Result: The **Channel Editor** opens.

Add a New Channel

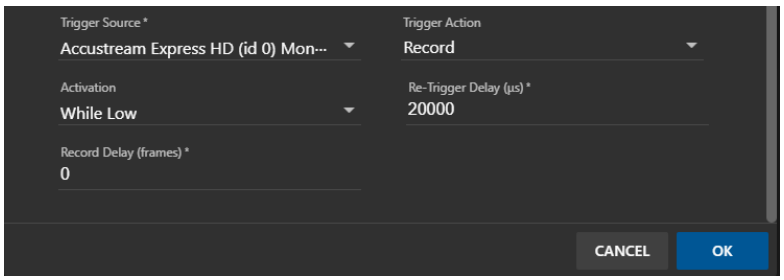
1. Click ➕ to add a channel.

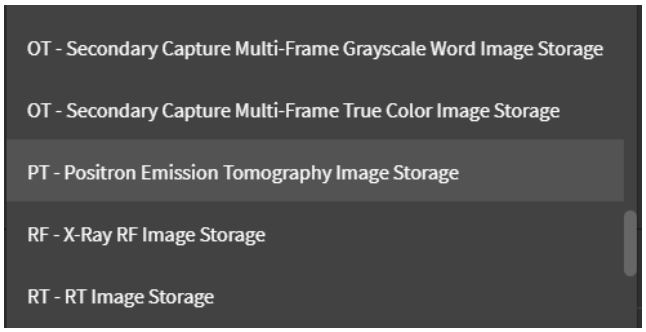
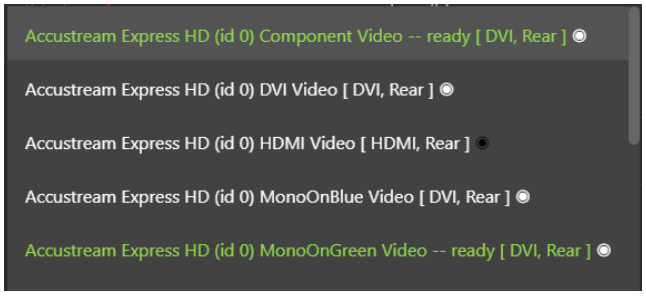


2. Complete the fields in the **Channel Editor** using the table on the next page.

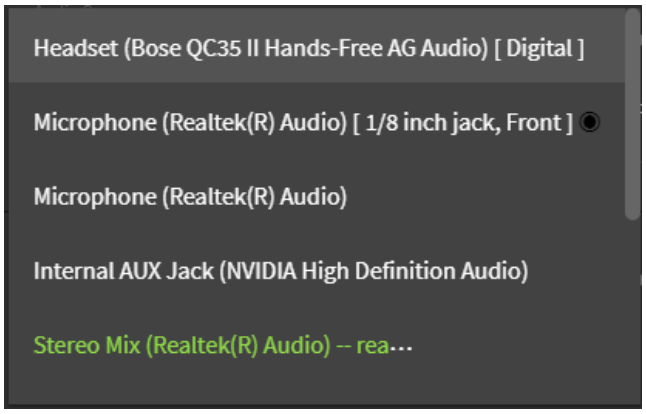


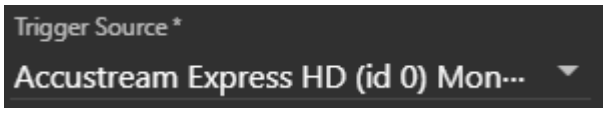
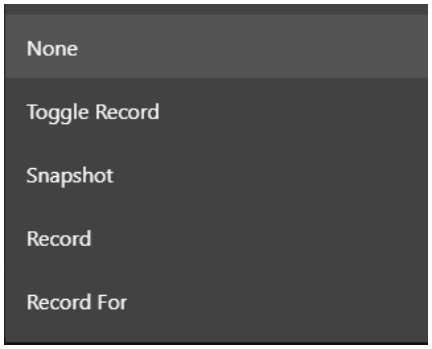
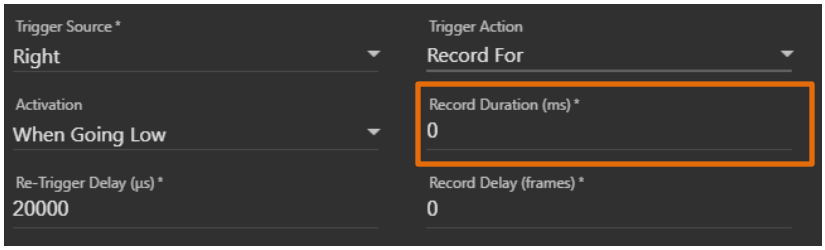
When a trigger is detected the following options appear at the bottom of the **Channel Editor**.



Option	Description
Name	Provide a name which helps you identify how the channel is used. For example, type the name Heart.
DICOM Class	From the drop-down menu, select the modality type. Scroll through the list to find the correct modality. For example, for the heart, select PT-Positron Emission Tomography Image Storage. 
Modality Override (Optional)	From the drop-down menu, select the shortened modality identifier name. Scroll through the list to find the correct modality. For example, you might want to use **PT** rather than PT-Positron Emission Tomography Image Storage. 
Video Source	Select the video source from the drop-down menu. Select the connection on the AccuStream board that is being used for the channel. 

Option	Description
Frame Rate	The playback speed is determined by the default animation speed of 30 frames per second or another value that you can set from the drop-down menu. It recommended you keep the default of 30, unless you need the lower animation speed. 
Rate type	Two options for choosing a frame rate type: • **Best Frame Rate** – This will use the actual frame rate as close as possible to the rate chosen in the **Frame Rate** field. • **Fixed Frame Rate** – This will always give you the frame rate specified in the **Frame Rate** field.
Capture Type	Select the capture type you will use with the modality. It is either a JPEG (**JPG**) image or an **MP4** video.
Video Monochrome or RGB	Click the video type that you will capture. It is either **Monochrome** (Black/White) or **RGB** color (Red, Green, Blue)
Quality	This option sets the compression for video. The **Quality** default is 90% for the best video size and quality. If you need to change this option, use the slider to select the compression percentage you want.
Custom CHP File	If you want to use a custom Common Hardware Profile, use the drop-down menu to make your selection. • **None** – The default selection – no custom CHP file chosen. • **Import Format…** - To import a CHP file, select this option and the **Import CHP File** dialog appears. Browse for the file and select it, click the **Import** button. • **Reveal formats folder**… - To import a CHP file from a TIMS MVP folder, select this option and the TIMS MVP folder opens. Select the CHP file and double-click the file to select.

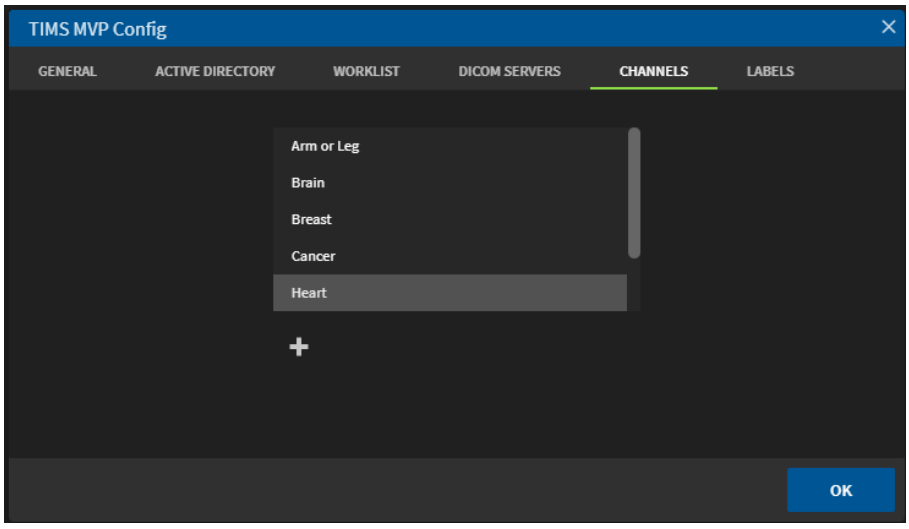
Option	Description
Audio Source	Use the drop-down menu to select the TIMS MVP audio sources available on your TIMS computer. All available audio sources appear in green. If the audio source is connected to the TIMS, the selection will indicate the connection type (such as USB) or the location of the connection on the TIMS unit. The selections also include TTS (Text to Speech) audio. 
Mono or Stereo	Select the audio type you are using with TIMS – Mono or Stereo.
Sample Rate	Select an audio sample rate from the drop-down menu. **Sample Rate** defines the number of samples per second taken from a continuous audio signal. 
Bits Per Sample	Select the bits per sample from the drop-down menu. The **Bits Per Sample** indicates the sample size for the audio file in bits per sample.
Snapshot Type	Select the image **Snapshot Type** from the drop-down menu. The default selection is a JPEG (JPG) file.
Image Monochrome or RGB	Click the image type that you will capture. It is either **Monochrome** (Black/White) or **RGB** color (Red, Green, Blue)

Option	Description
Quality	This option sets the compression for image. The **Quality** default is 90% for the best image size and quality. If you need to change this option, use the slider to select the compression percentage you want.
Trigger Source	Use the drop-down menu to select the **Trigger Source** available on your TIMS computer. 
Trigger Action	Select how you want to use the trigger for capturing video and images. There five options:  • **None** – Trigger is attached to the TIMS unit but is not going to be used • **Toggle Record** – Use the foot pedal to start and stop recording multiple times for a video so you can capture specific intervals • **Record** – Use the trigger to start recording and stop recording a video. • **Record For** – Use to set it to a certain duration for the capture length. Use **Record Length (ms)** to change the duration. 

Option	Description
Trigger Activation	This allows streaming capture of video to be started and stopped each time the pedal is depressed. Choose the selection that fits the pulse from the trigger when it is depressed. • **While Low** If the foot pedal creates a LOW going pulse, and stream capture is desired only while the pedal is depressed, use this option. • **While High** If the foot pedal creates a HIGH going pulse, and stream capture is desired only while the pedal is depressed, use this option.
Retrigger Delay (µs)	Enter the milliseconds that must elapse before another trigger event is recognized.
Record Delay (frames)	Enter the number of frames that must elapse before another trigger event is recognized.

3. Click **OK** to add the channel.

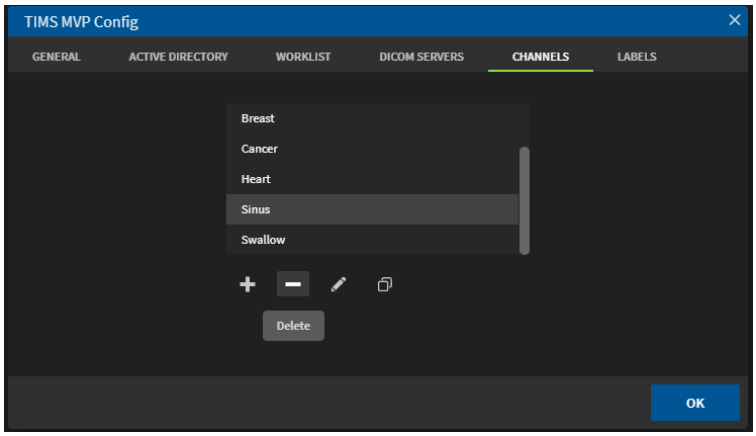
   Result: The channel is added to the list of channels.



Delete a Channel

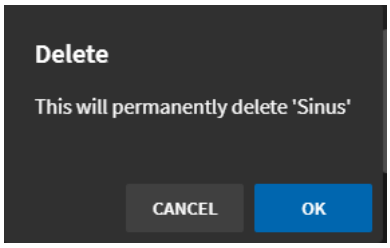
You delete a channel from the TIMS MVP Config **Channel** tab.

1. Select the channel you want to delete from the menu.



2. Click the **Delete** icon (minus sign) below the list of channels to delete the selected channel.

3. Click **OK** to confirm you want to permanently delete the channel when you receive the prompt.

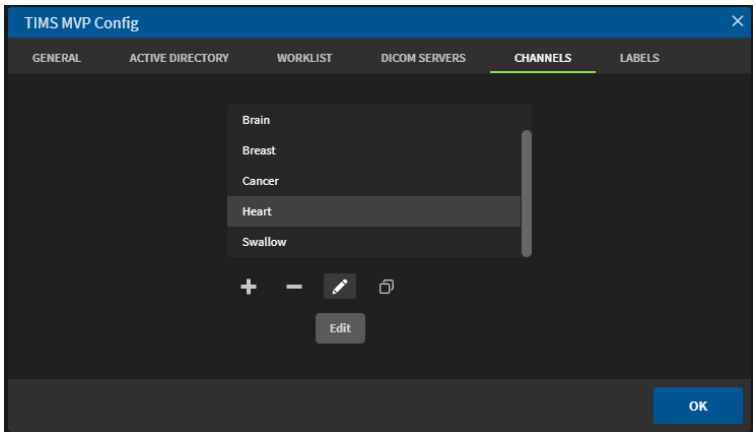


Result: The channel is removed from the list of channels.

Edit a Channel

You edit a channel from the TIMS MVP Config **Channel** tab.

1. Select the channel you want to edit from the channels menu.



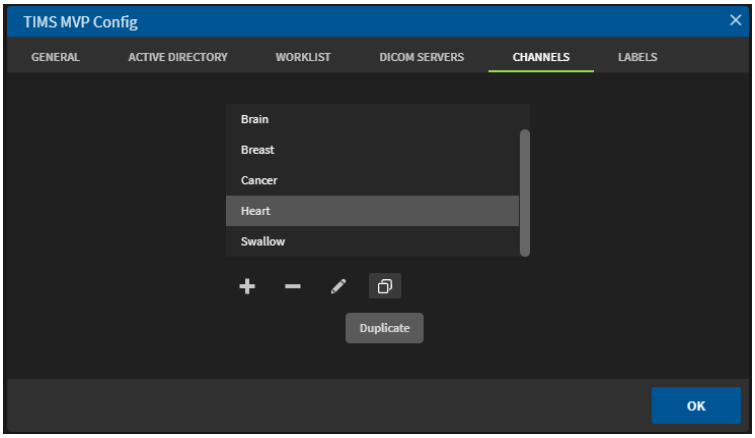
2. Click the **Edit** icon. The Channel Editor page opens.

3. Make any required edits and click **OK** when done.
   Note: Go to step 2 in ***Configuring Channel Settings*** on page 27.

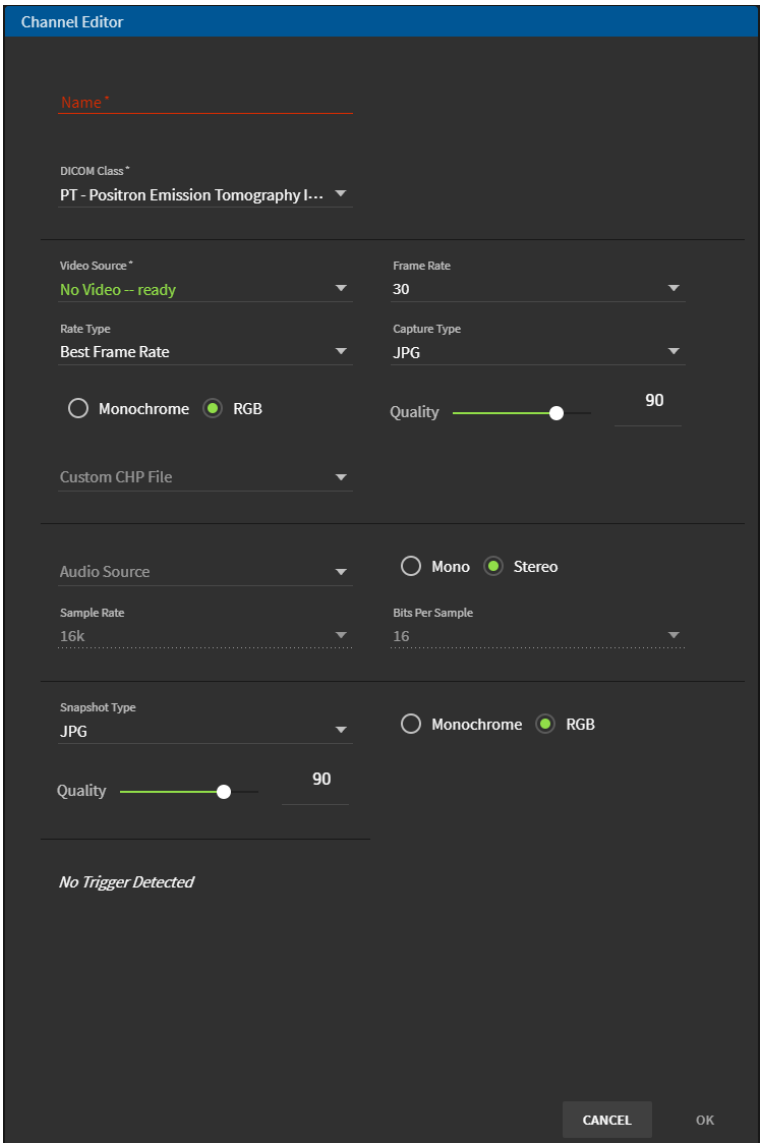
Duplicate a Channel to Create a New Channel

You duplicate a channel from the TIMS MVP Config **Channel** tab.

1. Select the channel you want to duplicate from the list of channels.



2. Click the **Duplicate** icon. The Channel Editor page opens.



3. Enter a new unique name in the **Name** field at the top of the page.

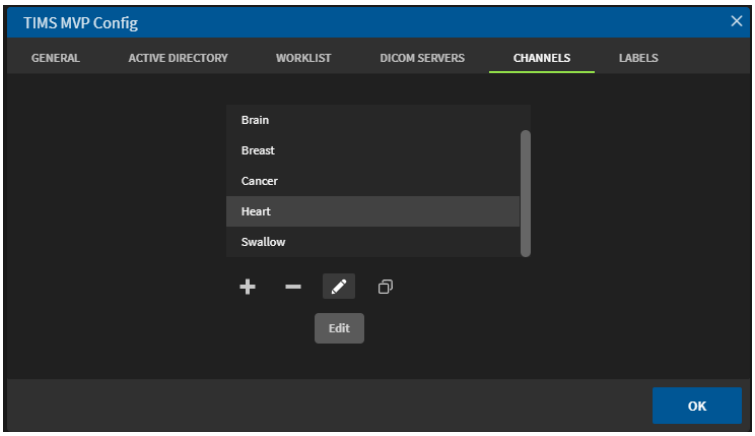
4. Make any required edits needed for the new channel.
   Note: Go to step 2 in ***Configuring Channel Settings*** on page 27.

5. Click **OK** when done. The new channel appears in the Channels list.

Rename a Channel

You rename a channel from the TIMS MVP Config **Channel** tab.

1. Select the channel for which you want to make a name change from the channels list.



2. Click the **Edit** icon. The Channel Editor page opens.

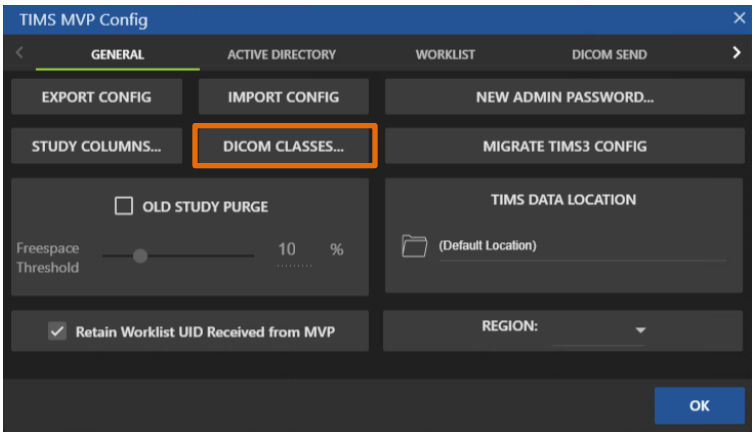
3. In the **Name** field, type in a new name for the channel and click **OK** when done. The channel appears in the channels list with the new name.

DICOM Class Customization

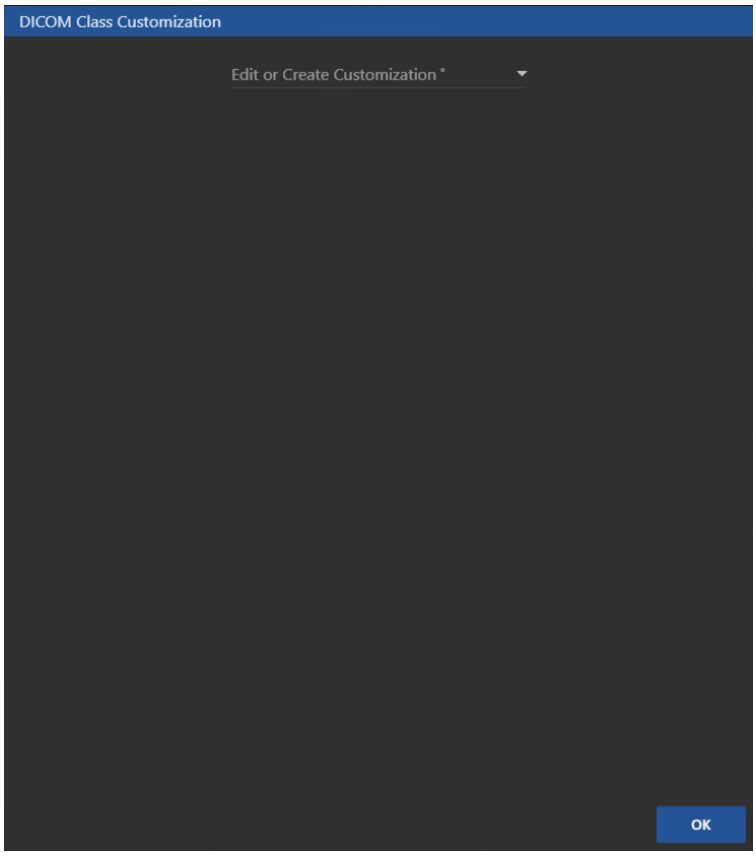
This configuration option lets you can edit an existing DICOM class or add a new DICOM class for your channel options. This option is accessed through the configuration **General** tab.

To add a new or edit a DICOM class customization:

1. Go to **Help** and select **Configuration**.
    - Log in to Configuration with your Admin password.
2. Select the General tab and click the **DICOM Classes** button.

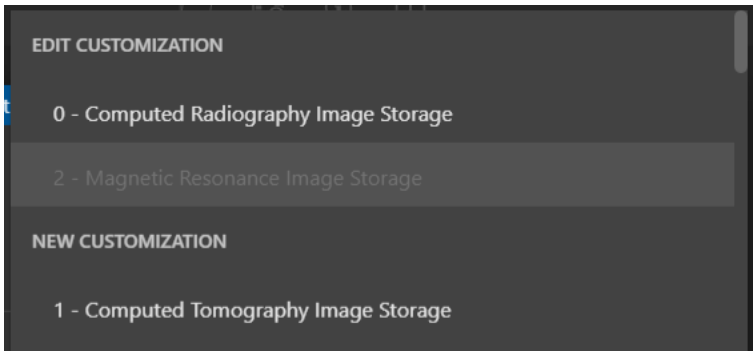


3. **Result:** The DICOM Class Customization dialog opens:

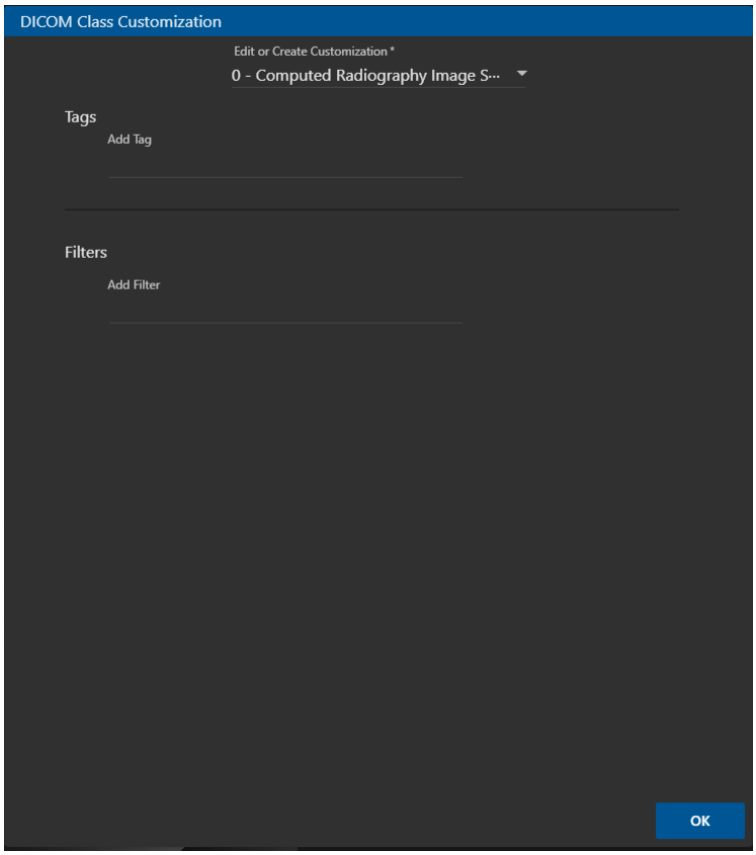


4. Click the down arrow to open the drop-down menu.

   NOTE: To add a **New Customization**, select a DICOM class from below the New Customization menu item. To **Edit Customization**, select a DICOM class from below the Edit Customization menu item.

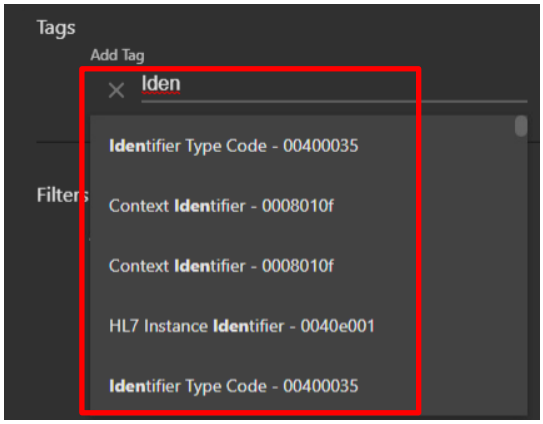


5. Select the DICOM Class from the drop-down menu. The following dialog appears:

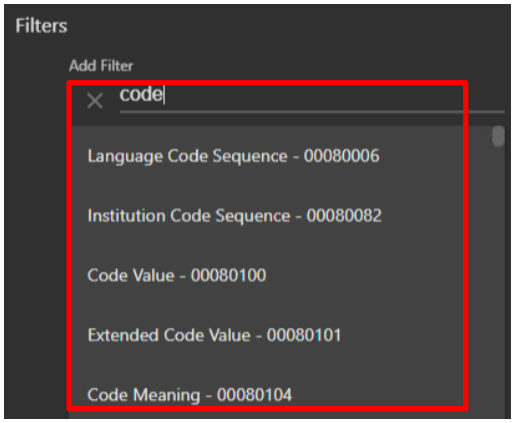


6. Enter any tag you want to add or you want to filter out for the DICOM Class. Press Enter.

   - **Tags:** Type in the first few letters or numbers of a tag you want to include for the DICOM Class. Select the tag from the drop-down menu, as shown below:



- **Filters:** Type in the letters or numbers of a tag you want to filter out for the DICOM Class. Select the tag from the drop-down menu as shown below:



7. Click **OK**. The new or edited DICOM class is saved.

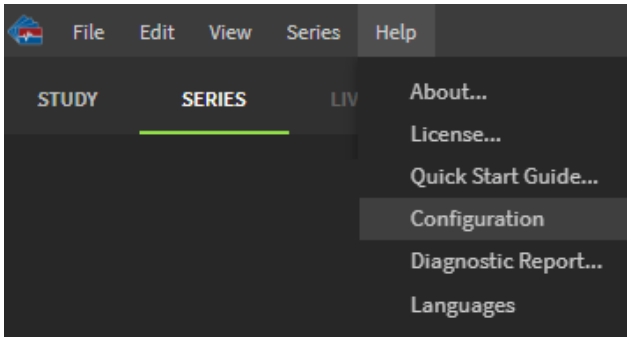
Configure the TIMS MVP Worklist

The Worklist is configured on the TIMS MVP Configuration page. This page allows you to:

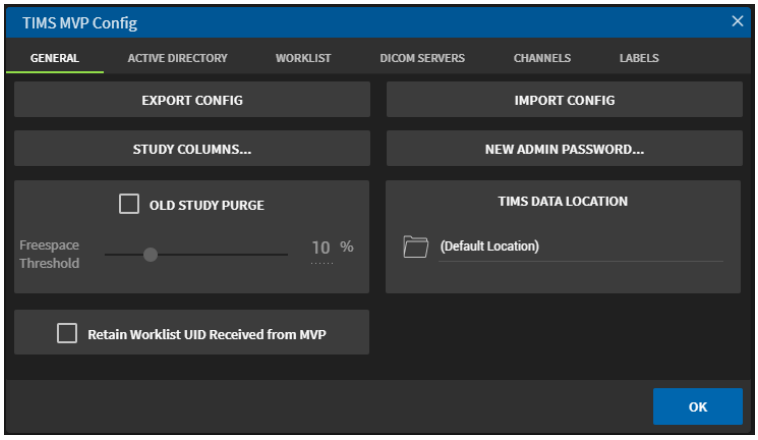
- Add a worklist to the TIMS MVP system
- Open the Worklist by default when you open TIMS MVP
- Override the Worklist Application Entity (AE) title
- Add local settings for the worklist
- Test the Worklist settings

To access the Worklist configuration page:

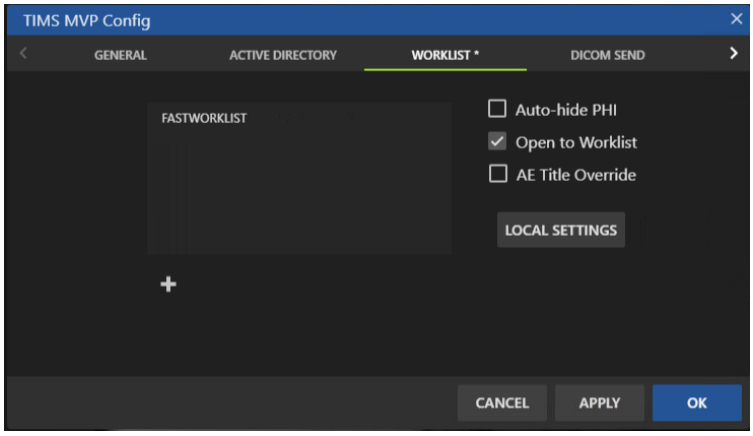
1. Click the **Help** menu and select **Configuration**.



2. From the **TIMS MVP Config** page, click the **Worklist** tab.



Result: The Worklist page opens.



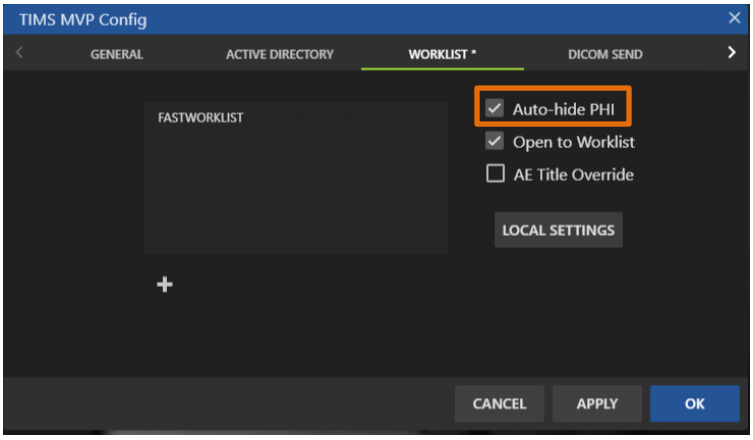
Configuring Worklist Settings

There are four options you configure on the Worklist home page:

- Auto-hide Protected Health Information (PHI) from the worklists.
- Set the default when you open TIMS MVP to display the worklists
- Override the Application Entity (AE) title
- Configure the Worklist local settings

Auto-hide PHI

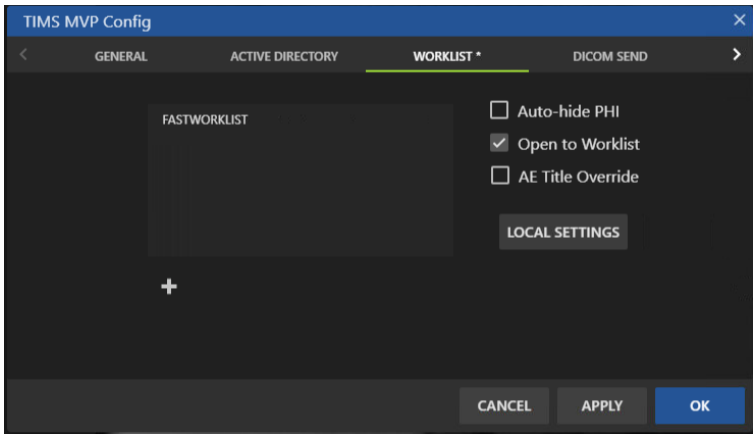
To automatically set up TIMS MVP to auto-hide PHI from a worklist, click the checkmark for the Auto-hide PHI option as shown below:



Open to Worklist

You can set up your TIMS MVP to automatically open the worklist when you first open the TIMS MVP application. To do this:

- Click the **Open to Worklist** checkbox on the Worklist page. If you decide you no longer want to open the Worklist when you start TIMS MVP, simply click to uncheck the checkbox.

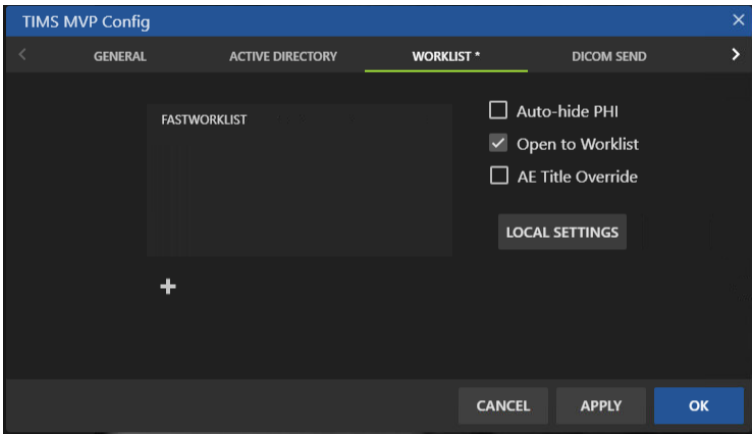


Override the Application Entity Title

IMPORTANT: This will override the system wide Application Entry (AE) Title used in all DICOM services.

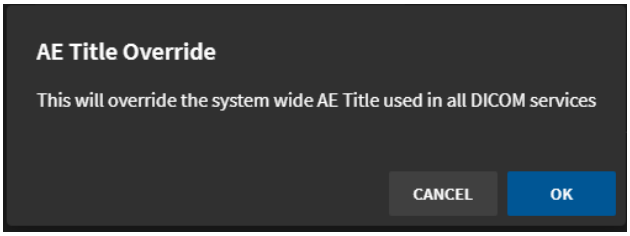
To override the AE Title:

1. Go to the **Worklist** tab on the TIMS MVP Config page.

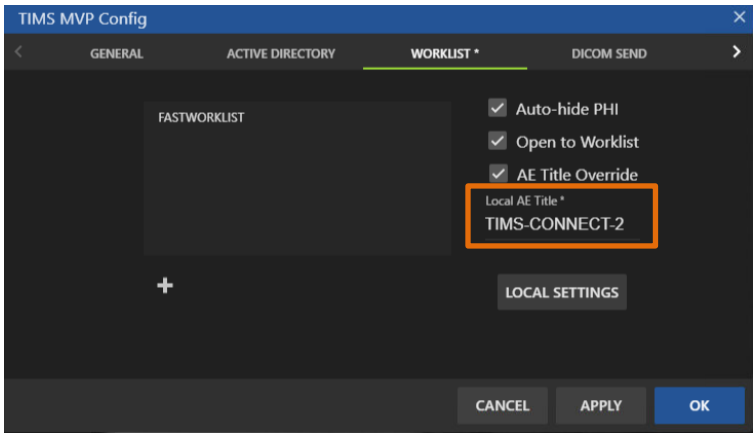


2. Click the **AE Title Override** checkbox to enable the override.

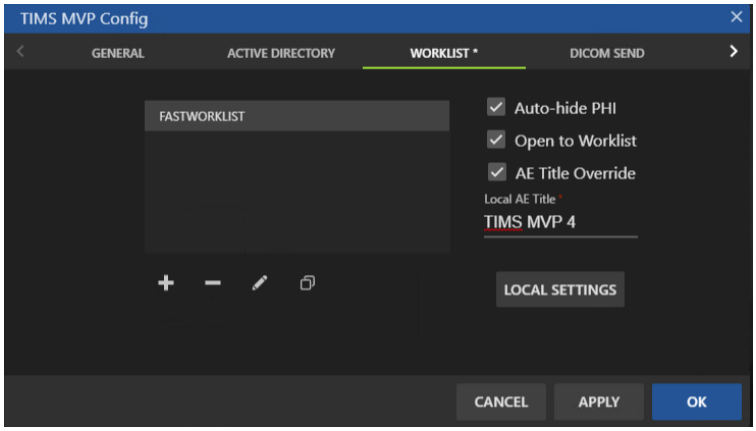
   Result: A message appears warning you about the change.



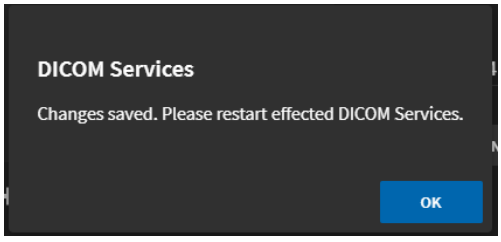
3. Click **OK** and the **AE Title Override** is selected and a **Local AE Title** name field opens where you can type in the name change.



4. Type in a new name below the **AE Title Override** checkbox.



5. Click **Apply**. You have saved your changes and you need to restart the effected DICOM services.



6. Click **OK**.

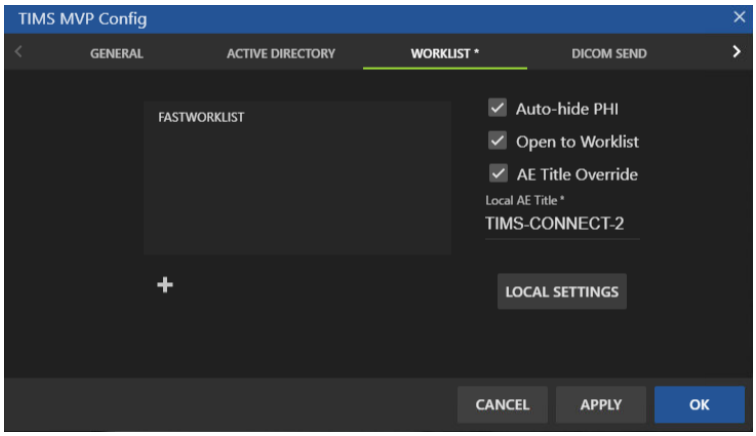
Remove the AE Title Override

To remove the **AE Title Override**, click to uncheck the checkbox. The override AE Title is deleted. The name is removed from the **DICOM Server**s page. You need to restart the effected DICOM services.

Add Worklist Local Settings

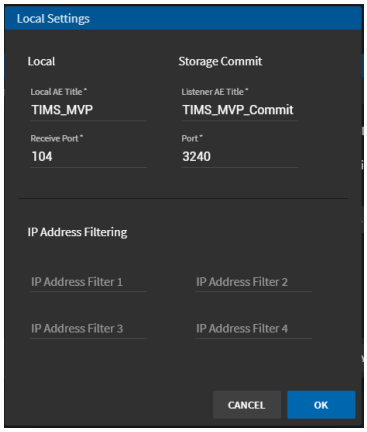
To add the worklist local settings:

1. Click the **Local Settings** button.



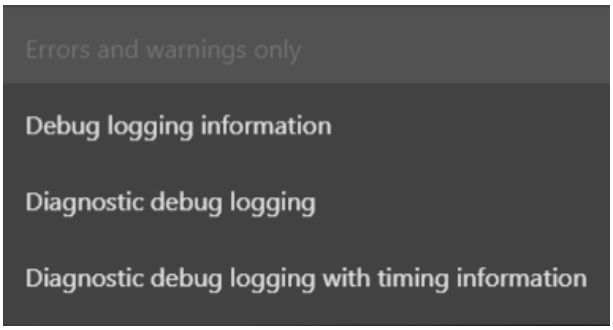
Result: The **Local Settings** page displays.

2. Complete the fields in the **Local Settings** page using the table below.



Use the table to enter the local settings.

Option	Description
Local	
Local AE Title	Provide a local Application Entity (AE) title. The default is **TIMS_MVP**.
Receive Port	Type in the port number for Service Class Provider of the remote system. The default port is **104**.
Storage Commit	
Listener AE Title	Type in the listener Application Entity (AE) title for the PACS.
Port Number	Type in the port number for the PACS.

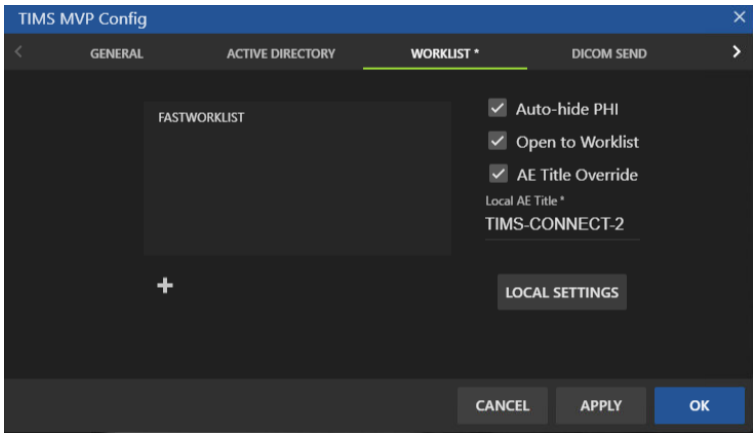
Option	Description
IP Address Filtering	
IP Address Filtering (4)	Enter any additional IP addresses or host names that DICOM Receive will respond to. This is helpful when you move a TIMS MVP system from one room to another which is connected to a different network segment.
DICOM Logging	Select the logging type you would like to view by clicking the down arrow to display the drop-down menu:  **Errors and warnings** only is the default selection.

3. Click **OK** to save the local settings.

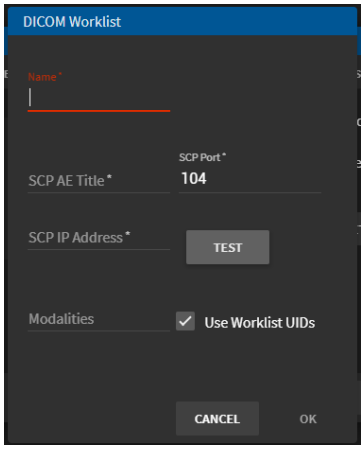
Add a Worklist

To add a worklist to the TIMS MVP system:

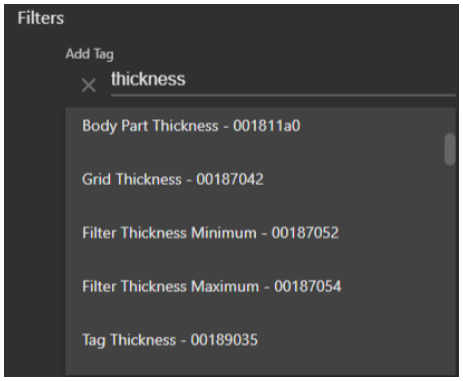
1. Click ➕ to add a Worklist.



2. Complete the fields in the **DICOM Worklist** page using the table below.



Option	Description
Name	Provide a name which helps you identify the worklist. For example, type the name Cardiology.
SCP AE Title	Type in a name for the Service Class Provider (SCP) Application Entity (AE) Title of the receiving system.
SCP Port	Type in the port number for Service Class Provider of the remote system. The default port is 104.
SCP IP Address	Type in the Service Class Provider IP address.
Modalities	Type in the name of the modality that this worklist will use.
Use Worklist UIDs	Click to select if the Worklist uses Unique Identifiers (UIDs),

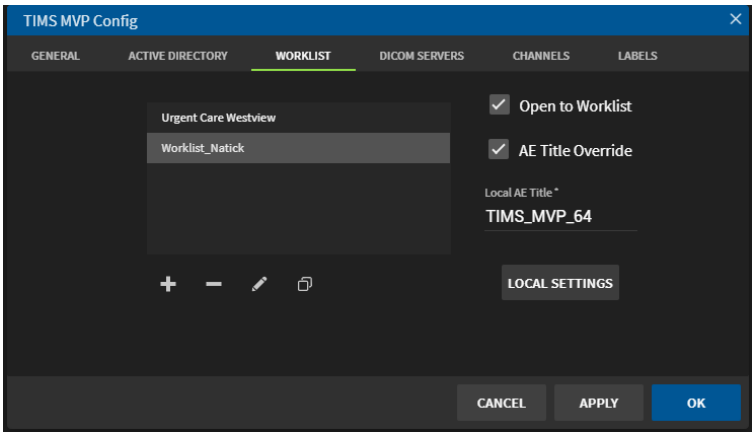
Option	Description
Allow Manual Reload	Let you enter a filter and then click the Reload button. This is necessary when the modality worklist is not updating immediately.
Ignore Study Dates	When selected, allows you to view everything on a modality worklist regardless of the date.
Filter File	The filter file lets you add tags for information you want to filter out from worklists. You can edit or add new filter files. 1. Click the text box below this **Filters** heading and start typing a filter you want to add. You are presented with a list of filter options. For example, if you typed the word thickness, you are presented with a variety of options that contain that word:  2. Select the description you want to use as a filter. • You can add as many filters as required. 3. Click **OK** when done. File filters out the specified information on a worklist related to the selected tag(s). **Remove Filters:** Click the circle  icon to the left of the filter to delete it. **Edit Filters:** Click the pencil  icon next to the filter name and then click the icon again to edit. Make your changes and click **OK** when done. **Delete Filters:** Click the trash can  icon and then click it again to delete a filter from the worklist.

3. Before you can click **OK** to save the new worklist, you must click the **Test** button.
4. If the test is successful, click **OK**. If the test was unsuccessful, edit your worklist options and click **Test** again.
5. Click **OK** to save the Worklist.

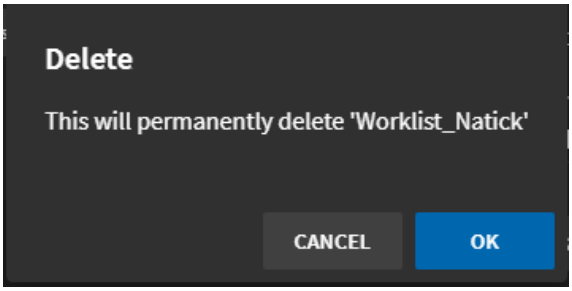
Delete a Worklist

To delete a worklist:

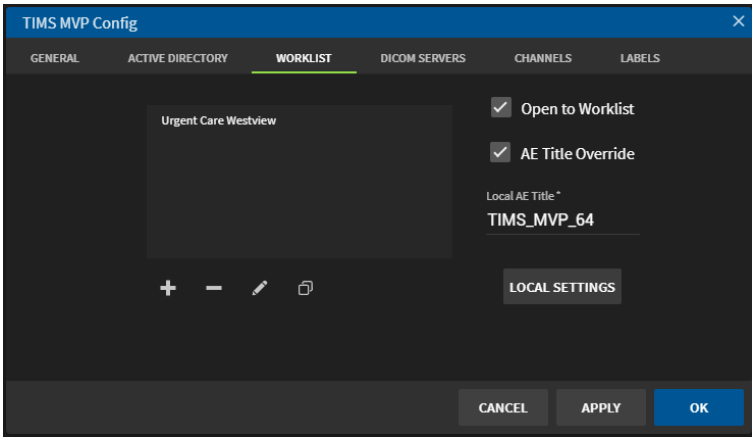
1. Select the Worklist you want to remove.



2. Click the minus sign below the list of Worklists. A confirmation asks if you want to permanently delete the selected worklist. Click **OK**.



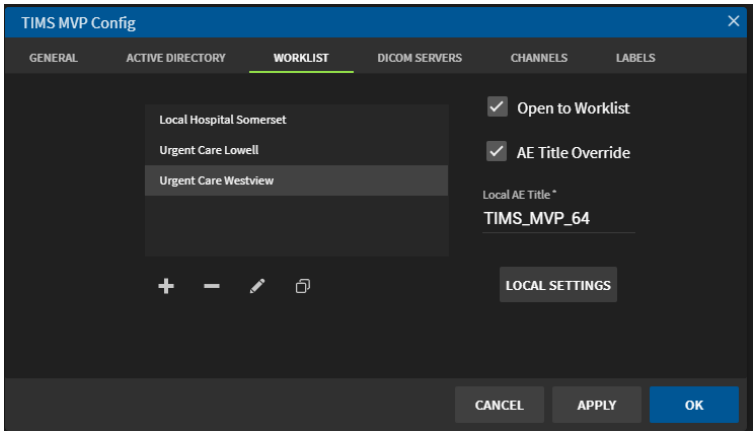
Result: The worklist is removed from the list.



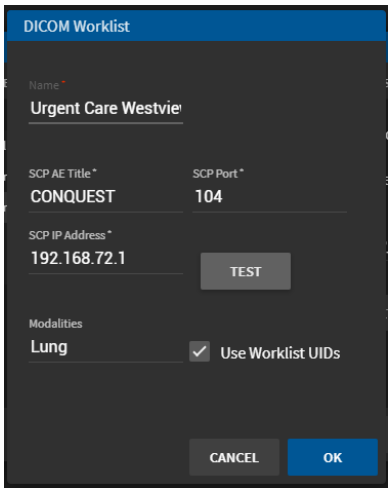
Edit a Worklist

To edit an existing worklist:

1. Select the Worklist you want to edit. In this example, Urgent Care Westview is selected.

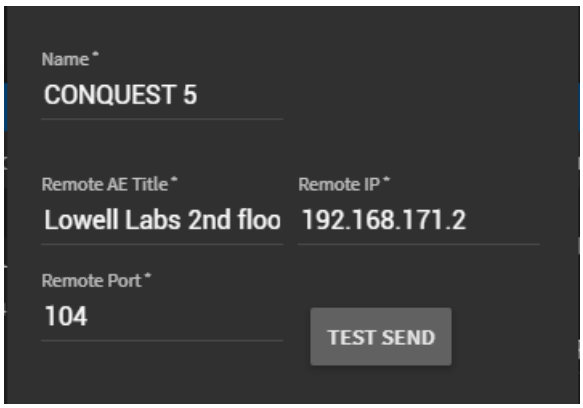


2. Click the Edit button and the Worklist configuration pages displays.



3. Make the edits you require on the Worklist configuration page.
   For details on each field, go to step 2 in **Add a Worklist**.

   IMPORTANT: If you make changes to the **Remote AE Title**, **Remote IP** or **Remote Port** fields, you must test the worklist before you can click **OK** to save.



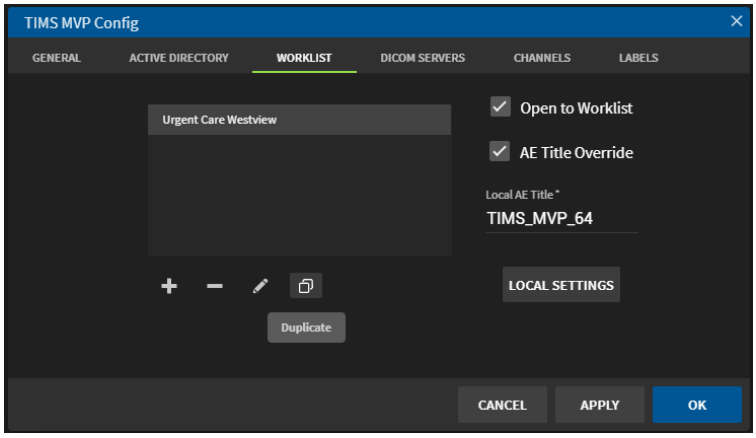
4. Clock **OK** to save.

    - If you are required to test your changes, click **TEST SEND** button and the click **OK**.
    - If the test fails, make changes to your entries and click the **TEST SEND** button again.

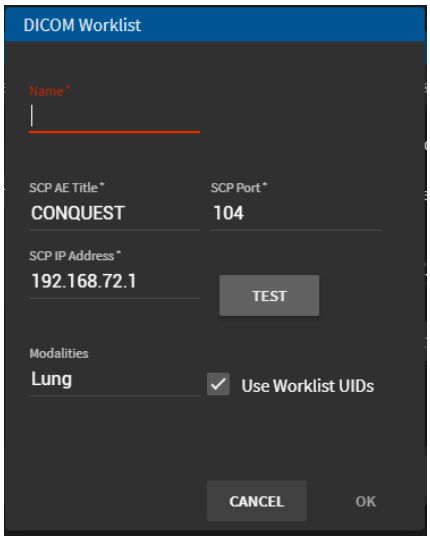
Duplicate a Worklist

To duplicate a worklist:

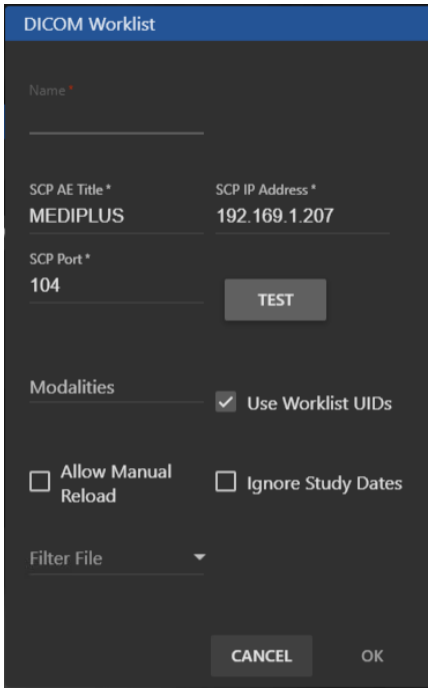
1. Select the Worklist.



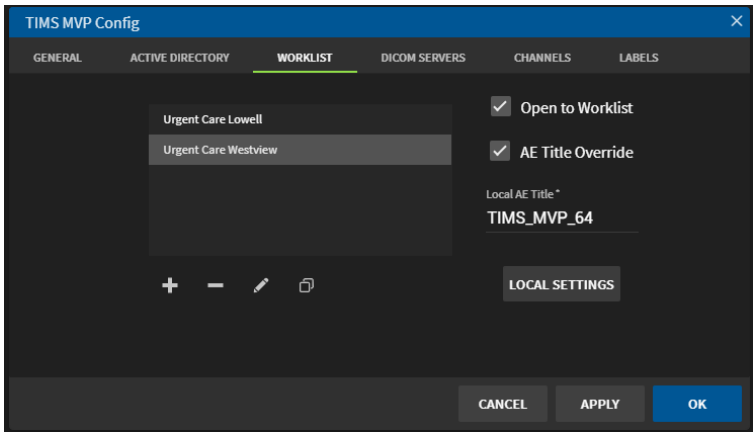
2. Click the **Duplicate** icon. The Worklist configuration page appears. The Name field will be blank.



3. Type a new unique name in the **Name** field.



4. Click **OK** and the new Worklist displays.



Configuring DICOM Destinations

The DICOM Server is configured on the TIMS MVP Configuration page. This page allows you to:

- Add a DICOM server to the TIMS MVP system
- Edit a DICOM server
- Delete a DICOM server
- Duplicate the configuration from an existing DICOM server
- Override the Worklist Application Entity (AE) title
- Add local settings for the worklist

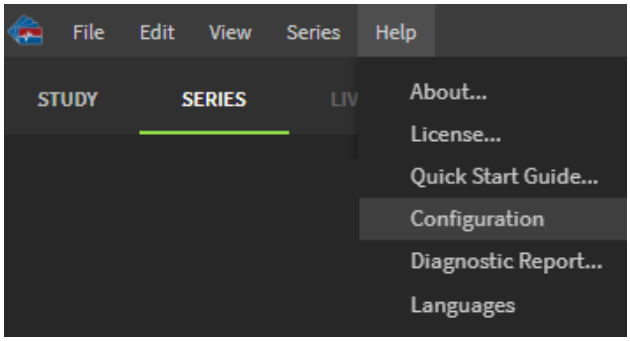
Configuring DICOM Server Settings

There are two options you configure on the DICOM Servers home page:

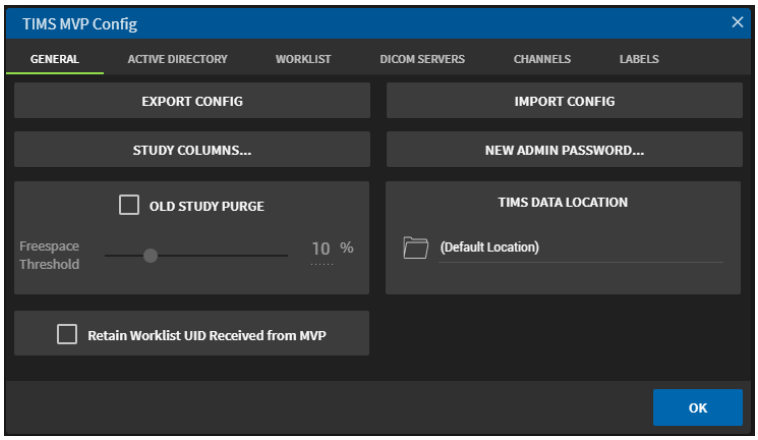
- Override the Application Entity (AE) title
- Configure the Worklist local settings

To configure the DICOM Server settings:

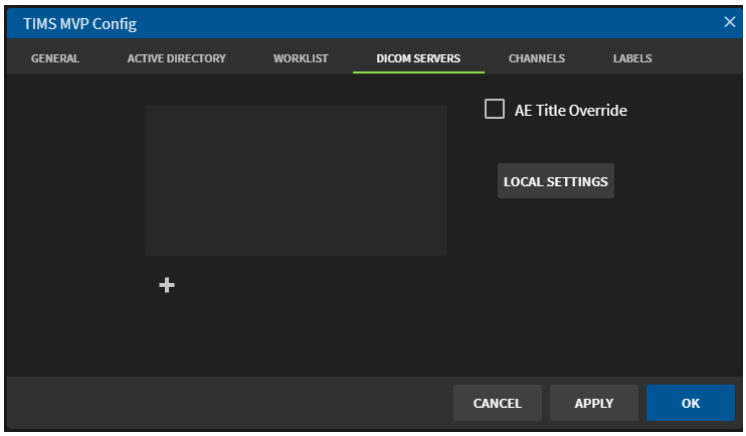
1. Click the **Help** menu and select **Configuration**.



2. From the **TIMS MVP Config** page, click the **DICOM SERVERS** tab.



Result: The DICOM Servers page opens.

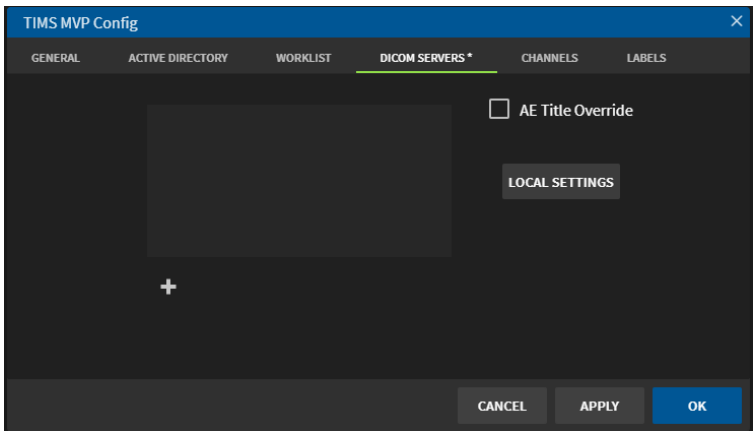


Override the Application Entity Title

IMPORTANT: This will override the system wide AE Title used in all DICOM services.

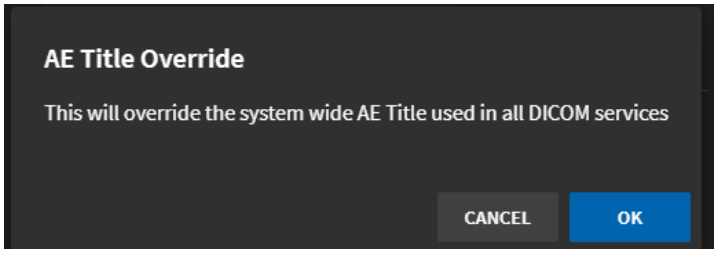
To override the AE Title:

1. Go to the **DICOM Servers** tab on the TIMS MVP Config page.

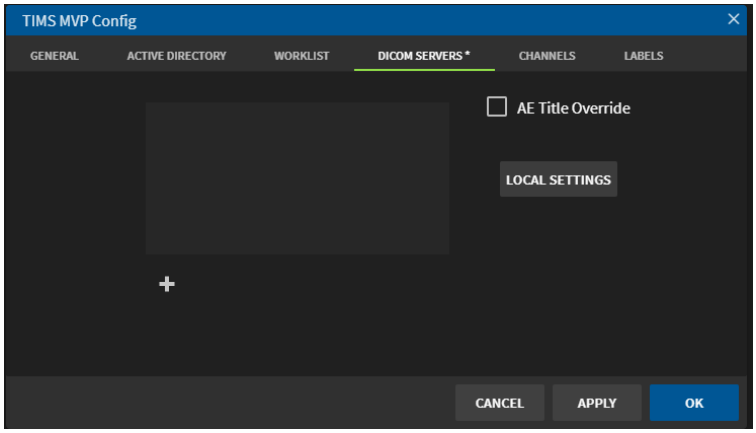


2. Click the **AE Title Override** checkbox to enable the override.

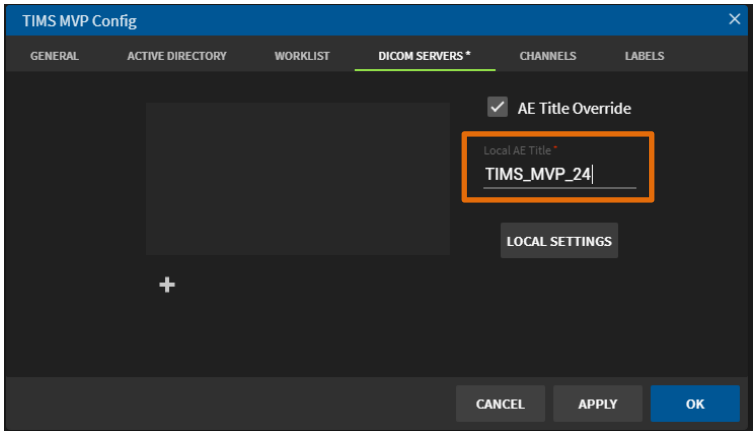
   Result: A message appears warning you about the change.



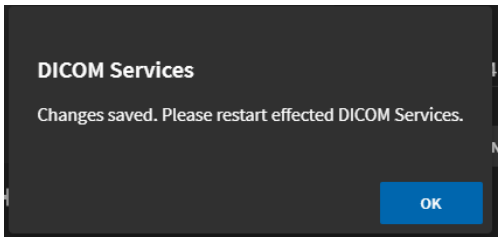
3. Click **OK** and the **AE Title Override** is selected and a **Local AE Title** name field opens where you can type in the name change.



4. Type in a new name below the **AE Title Override** checkbox.



5. Click **Apply**. You saved your changes and you need to restart the effected DICOM services.



6. Click **OK**.

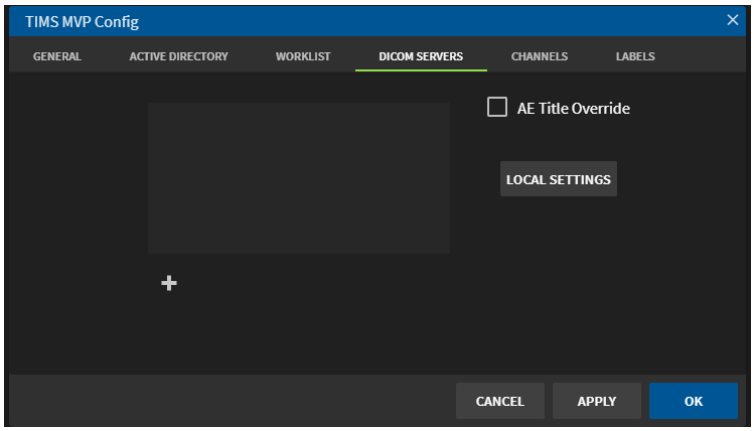
Remove the AE Title Override

To remove the **AE Title Override**, click to uncheck the checkbox. The override AE Title is deleted. The name is removed from the Worklist page. You need to restart the affected DICOM services.

Add DICOM Server Local Settings

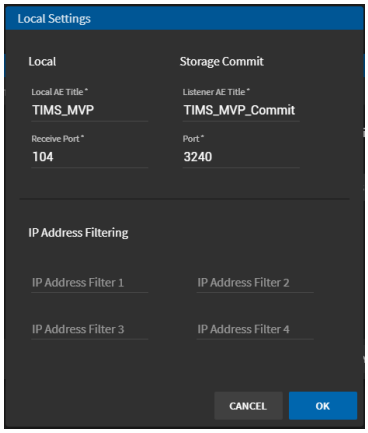
To add the DICOM Server local settings:

1. Click the **Local Settings** button.



Result: The **Local Settings** page displays.

2. Complete the fields in the **Local Settings** page using the table below.



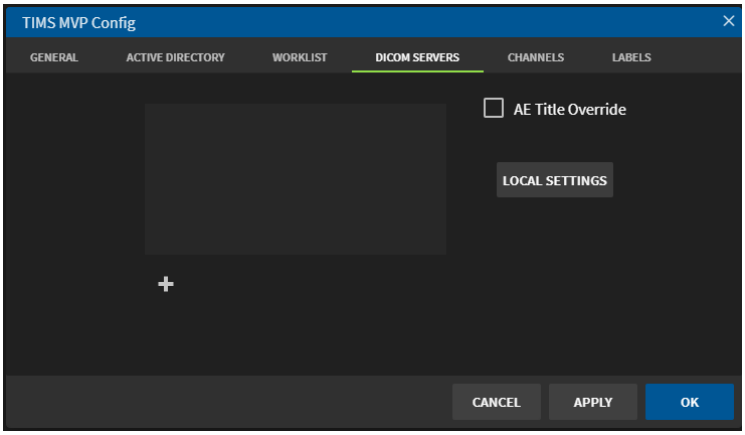
Option	Description
Local	
Name	Provide a local Application Entity (AE) title. The default is **TIMS_MVP**.
Receive Port	Type in the port number for Service Class Provider of the remote system. The default port is **104**.
Storage Commit	
Listener AE Title	Type in the listener Application Entity (AE) title for the PACS.
Port Number	Type in the port number for the PACS.
IP Address Filtering	
IP Address Filtering (4)	Enter additional IP addresses or host names that DICOM Receive will respond to. This is helpful when you move a TIMS MVP system from one room to another which is connected to a different network segment.

3. Click **OK** to save the local settings.

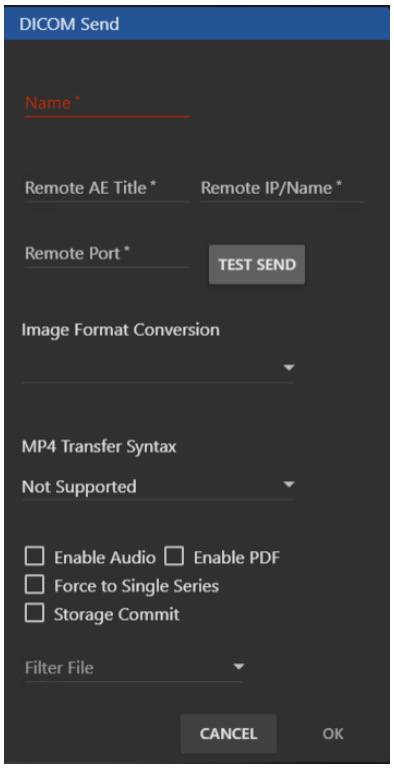
Add a DICOM Send Server

To add a DICOM Send Server to TIMS MVP:

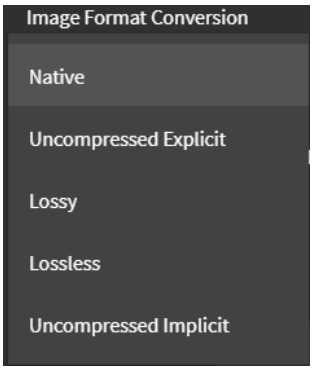
1. Click  to add a DICOM server.

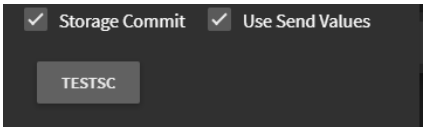
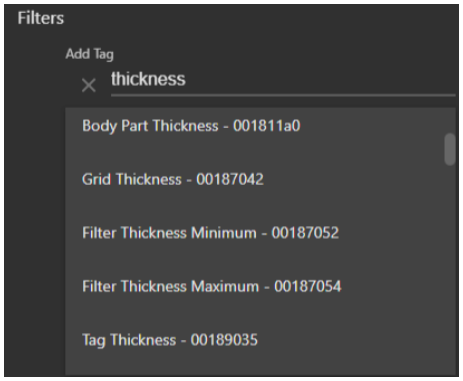


2. Complete the fields in the **DICOM Send** page using the table below.

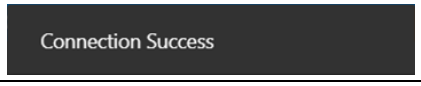


Option	Description
Name	Type in the name of the Service Class Provider (SCP).
Remote AE Title	Type in a name for the remote Application Entity (AE) Title of the DICOM send system.
Remote IP/Name	Enter the remote IP address or name for the DICOM send system.

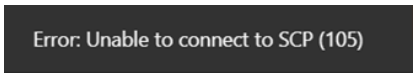
Option	Description
Image Format Conversion	From the drop-down menu, select the image compressions type you are using. • **Native** – Uses the current format of the image file. • **Uncompressed Explicit** – Means the DICOM transfer syntax is Explicit VR, Little Endian. The images are converted to uncompressed if this is not the native capture format. • **Lossy** - Uses some reduction in image quality. • **Lossless** - Uses no reduction in image quality. • **Uncompressed Implicit** – means the DICOM transfer syntax is Implicit VR, Little Endian. The images are converted to uncompressed if this is not the native capture format. 
MP4 Transfer Syntax	From the drop-down menu, select the MP$ transfer syntax: • Not Supported (default) • High profile level 4.1 • Blu-ray, high profile level 4.1 • High profile level 4.2
Enable Audio	If the destination server supports audio, click the checkbox to enable audio.
Enable PDF	If the destination server supports the PDF file format, click the checkbox to enable.
Force to Single Series	Click to take all the series residing in a study and send it as one large series. When the user sees it on the receiving end, it is one series.

Option	Description
Storage Commit	If the destination server supports storage commit, click the checkbox to enable it. The additional menu items display:  • **Use Send Values** – Duplicates the send to the server. Uncheck to create a unique video/image source. • **TESTSC** button – Tests the Storage Commit settings.
Filter File	4. Click the text box below this **Filters** heading and start typing a filter you want to add. You are presented with a list of filter options. For example, if you typed the word thickness, you are presented with a variety of options that contain that word:  5. Select the description you want to use as a filter. • You can add as many filters as required. 6. Click **OK** when done. **Remove Filters:** Click the circle  icon to the left of the filter to delete it. **Edit Filters:** Click the pencil  icon next to the filter name and then click the icon again to edit. Make your changes and click **OK** when done. **Delete Filters:** Click the trash can  icon and then click it again to delete a filter from the worklist.

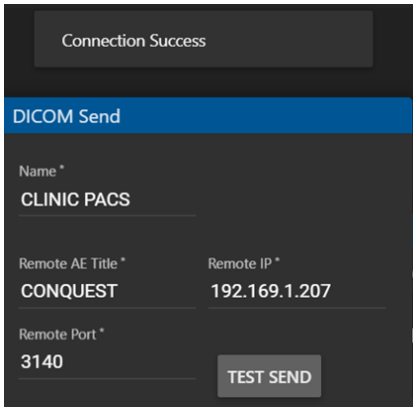
3. Before you save the settings, you must test your entries:
   - If you enabled Storage Commit, click the **TESTSC** button. If the test is successful, you receive a message that the test completed successfully at the top of the page.



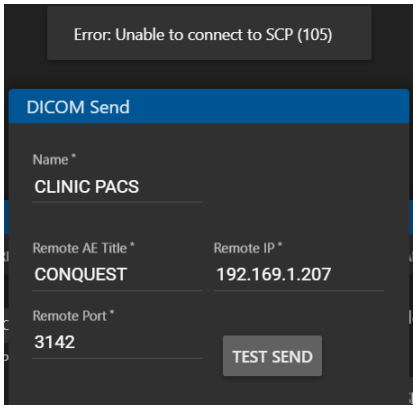
If the test is not successful, you receive an error message, check your settings and then click **TESTSC** again. An example message is shown below:



- For the DICOM Send settings, click the **TEST SEND** button. If the test is successful, you receive a message that the test completed successfully at the top of the page.



If the test is not successful, you receive an error message, check your settings and then click **TEST SEND** again. An example message is show below:

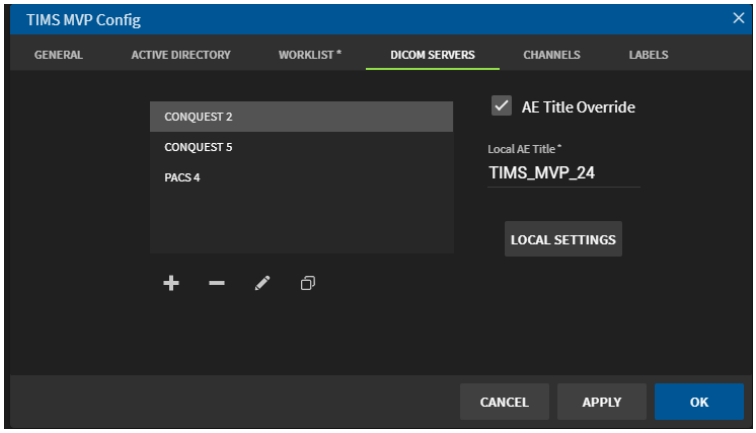


4. Click **OK** to save after the test(s) succeed.

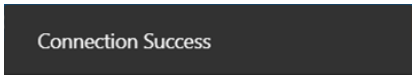
Edit a DICOM Server

To edit a DICOM Server on TIMS MVP:

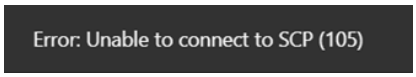
1. Select the DICOM server you want to edit.



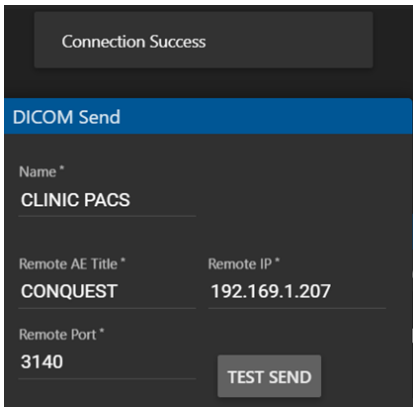
2. Click the **Edit** icon.
3. Edit the settings for the selected DICOM server. For details on each setting, go to step 2 in ***Add a DICOM Send*** Server on page 58**.**
4. When have completed making edits to the selected DICOM server settings, you must test your changes:
   - If you enabled Storage Commit, click the **TESTSC** button. If the test is successful, you receive a message that the test completed successfully at the top of the page.

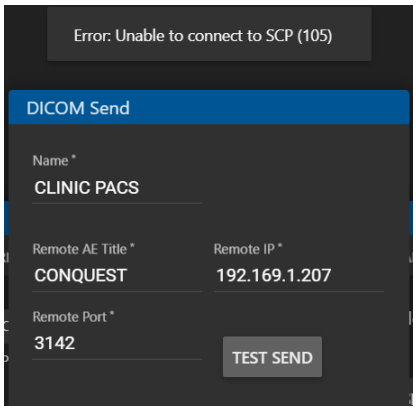
     If the test is not successful, you receive an error message, check your settings and then click **TESTSC** again. An example message is shown below:

   - For the DICOM Send settings, click the **TEST SEND** button. If the test is successful, you receive a message that the test completed successfully at the top of the page.



- If the test is not successful, you receive an error message, check your settings and then click **TEST SEND** again. An example message is show below:

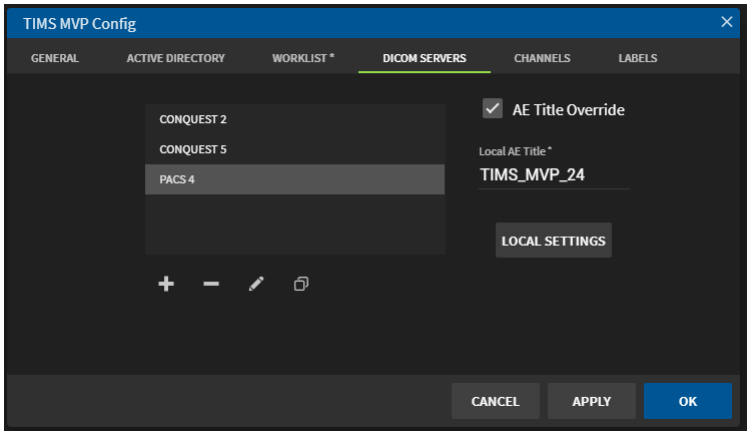


5. Click **OK** to save after the test(s) succeed.

Delete a DICOM Server

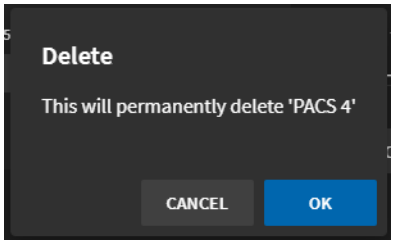
To delete a DICOM server:

1. Select the DICOM server you want to delete from the menu.

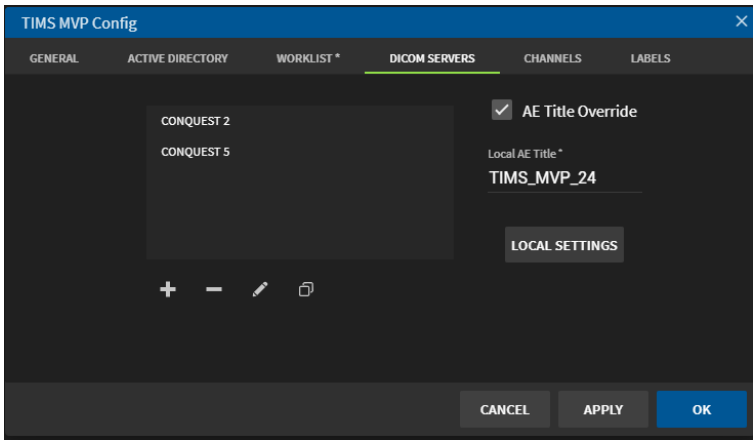


2. Click the **Delete** icon (minus sign) below the list of DICOM servers to delete the selected channel.

3. Click **OK** to confirm you want to permanently delete the DICOM server when you receive the prompt.



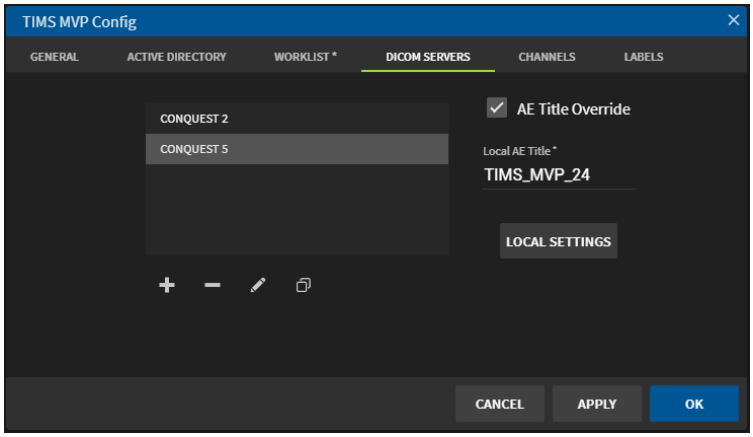
Result: The DICOM server is removed from the list of servers.



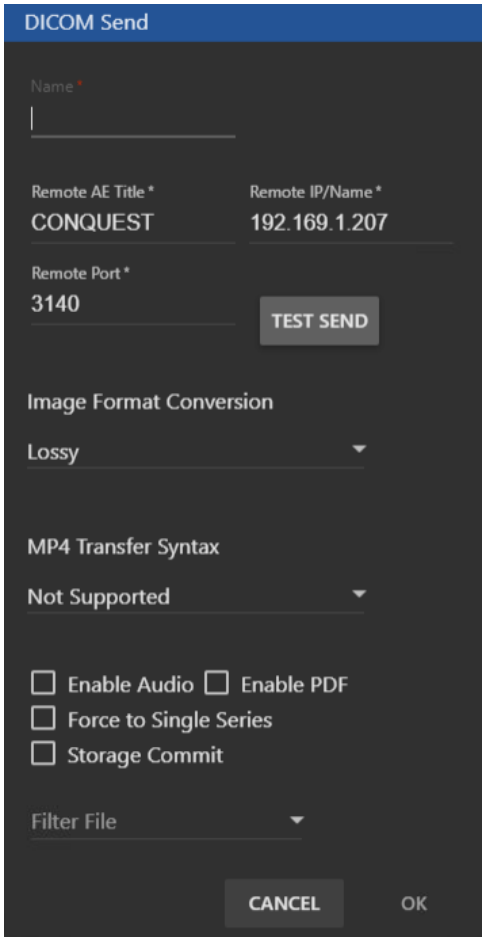
Duplicate the Settings for a DICOM Server

To duplicate the settings from an existing DICOM server on the menu:

1. Select the DICOM server you want to duplicate from the list of channels.



2. Click the **Duplicate** icon. The DICOM Send page opens.



3. Enter a new unique name in the **Name** field at the top of the page.

4. Make any required edits needed for the new DICOM server.
   Note: Go to step 2 in ***Add a DICOM Send*** Server on page 58 for a description of the DICOM Send fields

5. Click **OK** when done. The new DICOM server appears in the DICOM Servers list.

Configuring DICOM Query/Retrieve

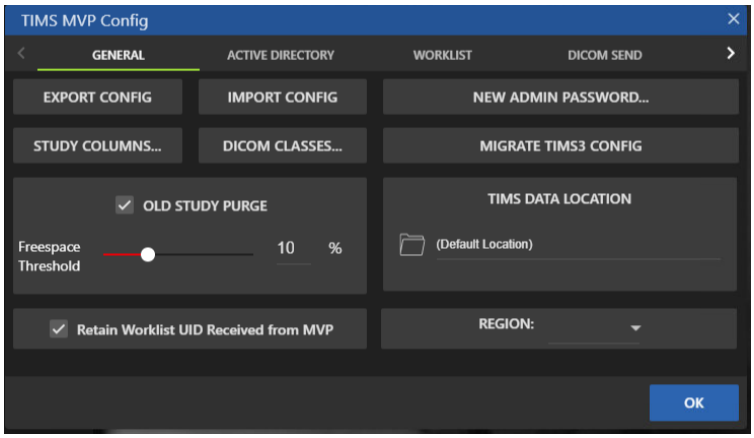
A **DICOM Query/Retrieve** operation retrieves images from remote DICOM servers in order to store them locally. After the images have been received, they can be loaded and processed independently of the remote server.

This configuration option lets you:

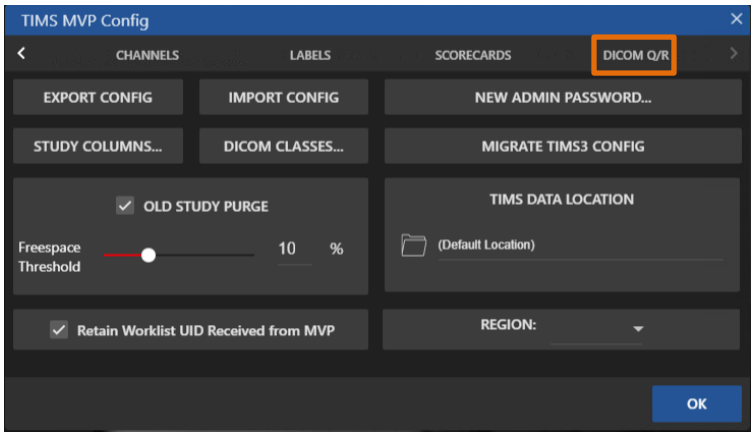
- Enable query/retrieve
- Add a query/retrieve server

To access these configuration options:

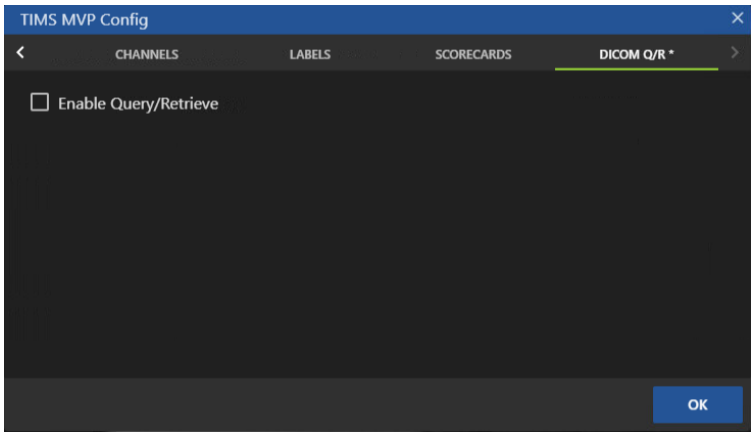
1. Go to **Help** and select **Configuration**. The TIMS MVP Config dialog opens.



2. Use the right arrow to move to display the **DICOM Q/R** tab.



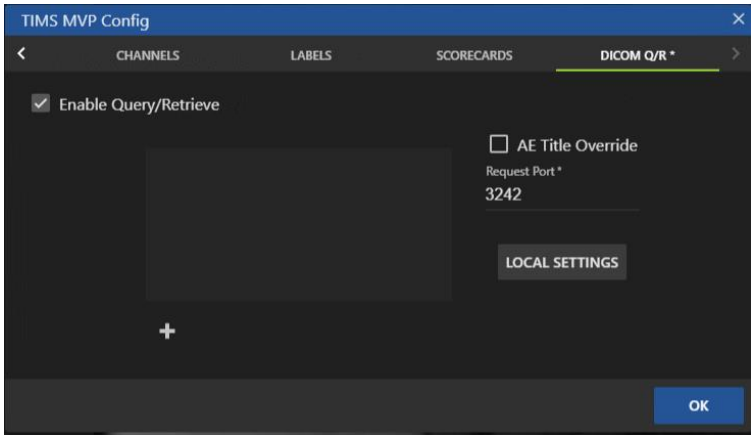
3. Click the DICOM Q/R to display the configuration options.



Enable Query/Retrieve

- Click the **Enable Query/Retrieve** checkbox to enable query and retrieve images from a server.

  Result: The configuration options for DICOM Query/Retrieve display.



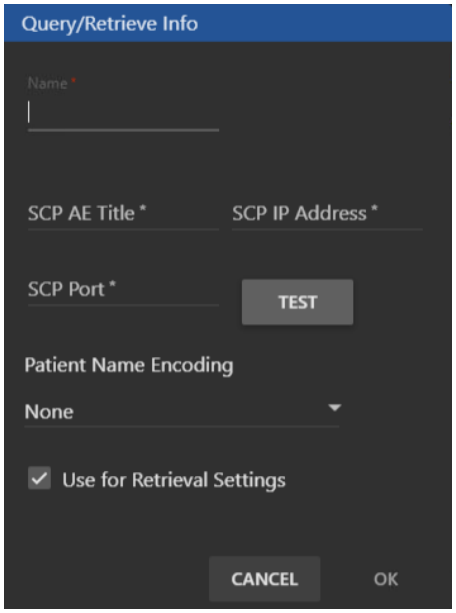
Add a DICOM Query/Retrieve Server

To add a query/retrieve server:

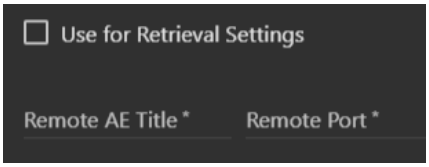
1. Click the **+** sign to add a query/retrieve server.

   Result: The Query/Retrieve Info dialog appears.

2. Complete the fields in the **DICOM Send** page using the table below.

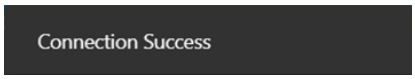


Option	Description
Name	Type in the name of the Service Class Provider (SCP).
SCP AE Title	Type in a name for the Service Class Provider (SCP Title of the DICOM query/retrieve system.
SCP IP Address	Enter the SCP IP address for the DICOM query/retrieve system.
SCP Port	Enter the SCP port for the DICOM query/retrieve system.
Patient Name Encoding	Select the patient name encoding you want to use for the query/receive server: • None (default) • Long First name • Long Middle Name • Long First Name End

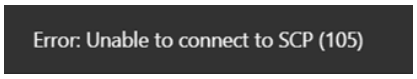
Option	Description
	• Long Middle Name End
Use for Retrieval Settings	• When unchecked, the query server options are used for retrieving images. • When checked, enter the options for the image retrieval server:  ○ **Remote AE Title**: Type in a name for the remote Application Entity (AE) Title of the DICOM retrieval system. ○ **Remote Port**: Enter the port number for the retrieval system.

3. Before you save the settings, you must test your entries:

   a. You need to test the query/retrieval settings or the query server settings if the **Use for Retrieval Settings** option is unchecked by clicking the **Test** button. If the test is successful, you receive a message that the test completed successfully at the top of the page.

   If the test is not successful, you receive an error message, check your settings and then click **TESTSC** again. An example message is shown below:

   b. If you did not check the **Use for Retrieval Settings** checkbox, click the second Send button below the separate retrieval options.

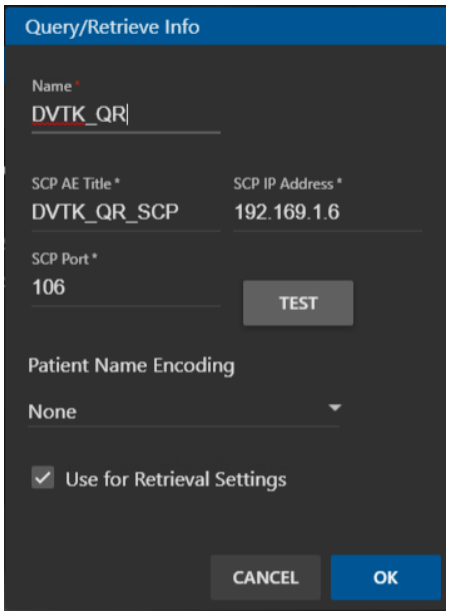
   If the test is not successful, you receive an error message, check your settings and then click **TEST SEND** again.

4. Click **OK** to save after the test(s) succeed.

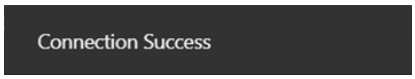
Edit a DICOM Query/Retrieve Server

To edit a DICOM Server on TIMS MVP:

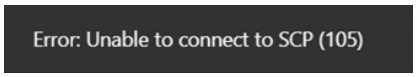
1. Select the DICOM query/retrieve server you want to edit.
2. Click the **Edit** icon.
3. Edit the settings for the selected DICOM server. For details on each setting, go to step 2 in **Add a DICOM Query/Retrieve Server** on page 69.



4. When have completed making edits to the selected DICOM query/retrieve server settings, you must test your changes:
   - You need to test the query/retrieval settings or the query server settings if the **Use for Retrieval Settings** option is checked by clicking the **Test** button. If the test is successful, you receive a message that the test completed successfully at the top of the page.

     If the test is not successful, you receive an error message, check your settings and then click **TEST** again. An example message is shown below:

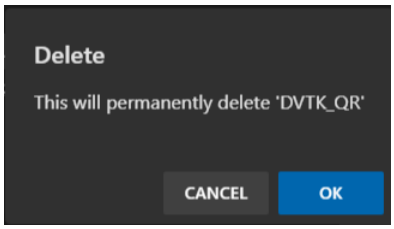
   - If you did not check the **Use for Retrieval Settings** checkbox, click the second Send button below the separate retrieval options. If the test is successful, you receive a message that the test completed successfully at the top of the page.
   - If the test is not successful, you receive an error message, check your settings and then click **TEST** again.

5. Click **OK** to save after the test(s) succeed.

Delete a DICOM Query/Retrieve Server

To delete a DICOM DICOM Query/Retrieve server:

1. Select the DICOM server you want to delete from the menu.
2. Click the **Delete** icon (minus sign) below the list of DICOM servers to delete the selected channel.
3. Click **OK** to confirm you want to permanently delete the DICOM server when you receive the prompt.

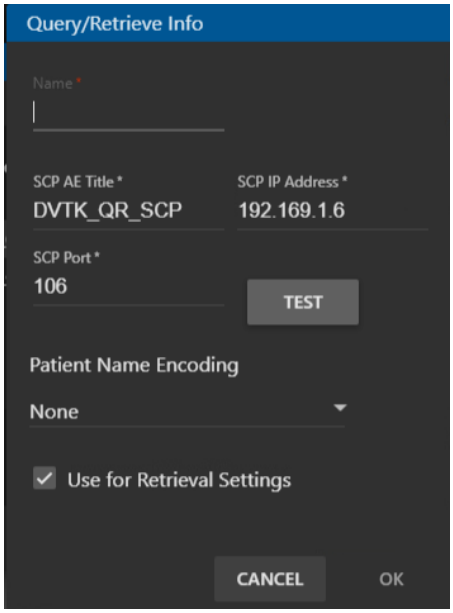


Result: The DICOM server is removed from the list of servers.

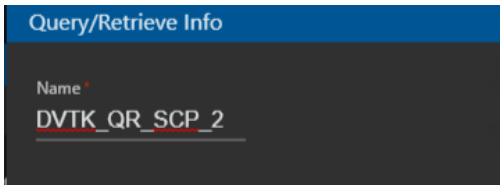
Duplicate the Settings for a DICOM Query/Retrieve Server

To duplicate the settings from an existing DICOM server on the menu:

1. Select the DICOM server you want to duplicate from the list of channels.
2. Click the **Duplicate** icon. The DICOM Send page opens.

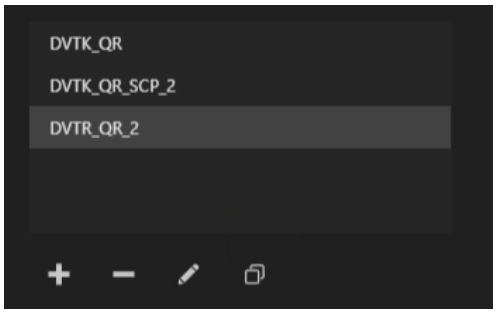


3. Enter a new unique name in the **Name** field at the top of the page.



4. Make any required edits needed for the new DICOM server.
   Note: Go to step 2 in Add a DICOM Query/Retrieve Server on page **69** for a description of the DICOM Send fields

5. Click **OK** when done. The new DICOM server appears in the DICOM Servers list.



Advanced Settings

Labels for Series Description Tags

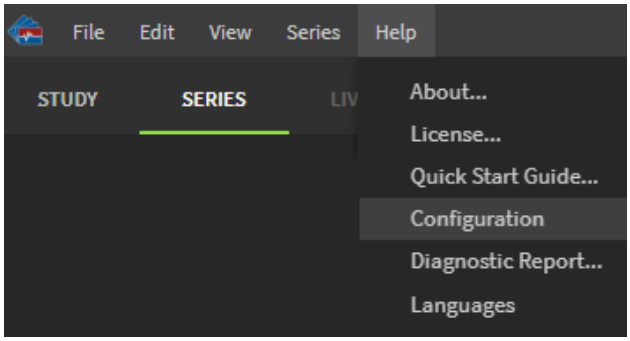
The Labels tab on the Configuration page lets you provide a series description name and a series description label.

You or an administrator (if you are not authorized to do so) can predefine series description labels that will be applied automatically for a particular channel. This is useful when you generally apply the same operational sequence with a particular modality.

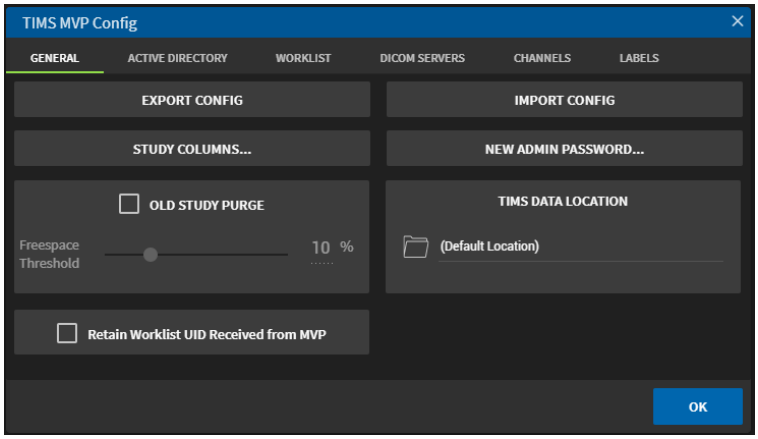
- A sample label list name is provided as MBSImp.
- A Defaults label is provided which contains a selection of predefined series description tags

To access the series description labels:

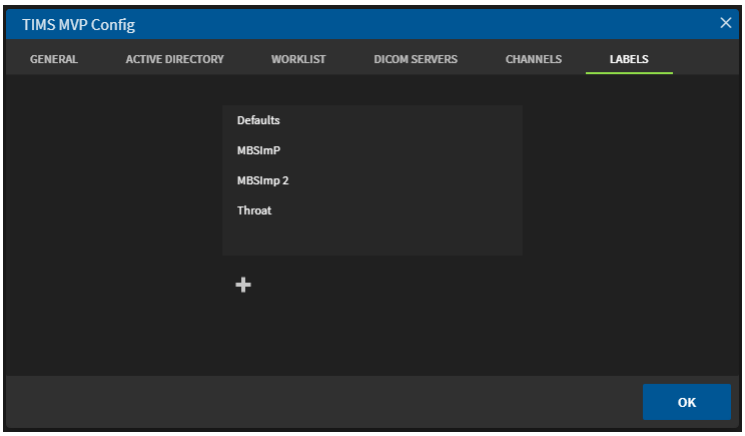
1. Click the **Help** menu and select **Configuration**.



2. From the **TIMS MVP Config** page, click the **Labels** tab.



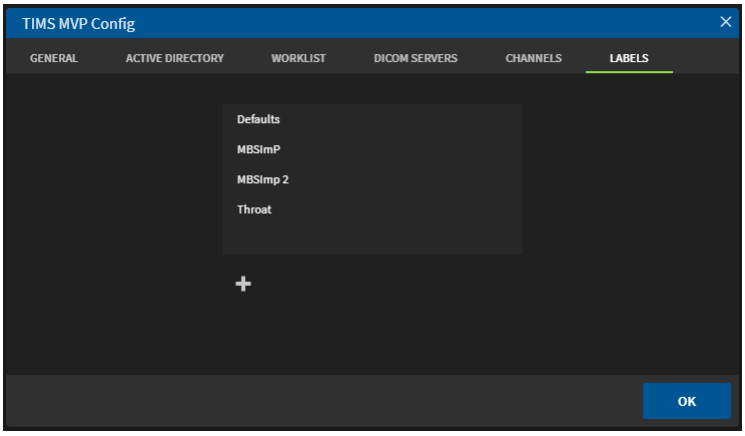
Result: The Labels page opens.



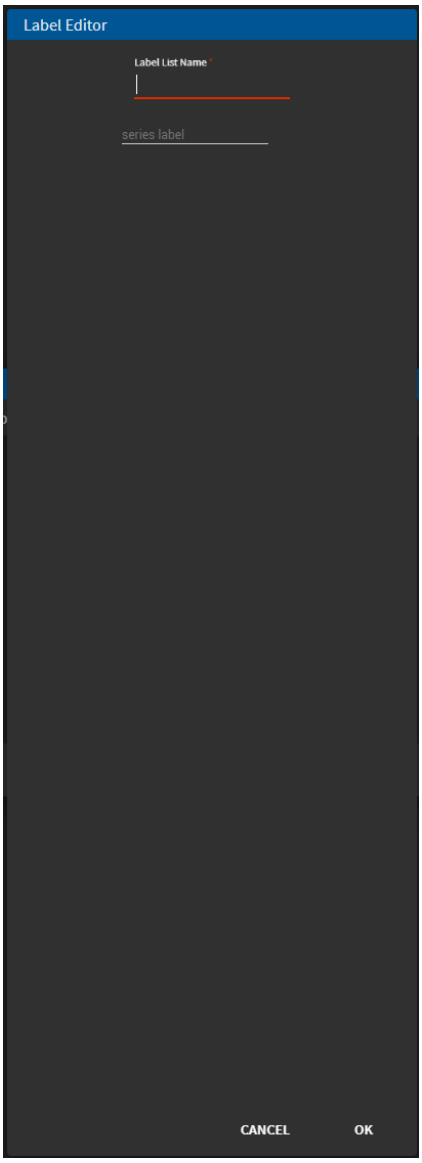
Add a Series Description Name and Label

To add a series description name and label:

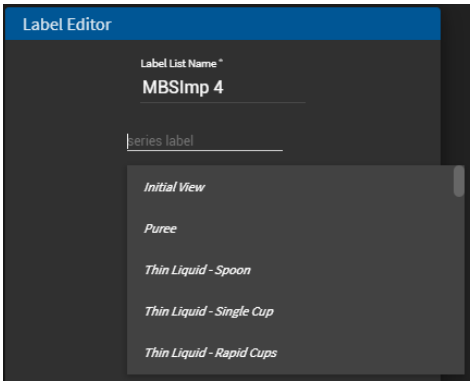
1. Click + to add a Label.



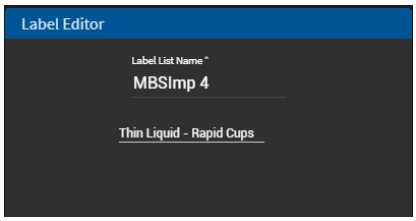
2. Type in a **Label List Name**.



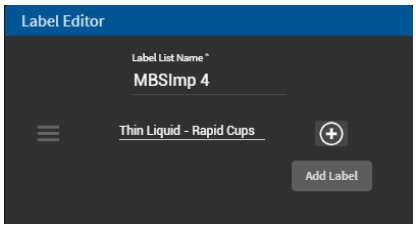
3. Select a series label from the drop-down menu. You can scroll through the list to find the label you need.



For example, select Thin Liquid – Rapid Cups. It appears underneath the label list name.

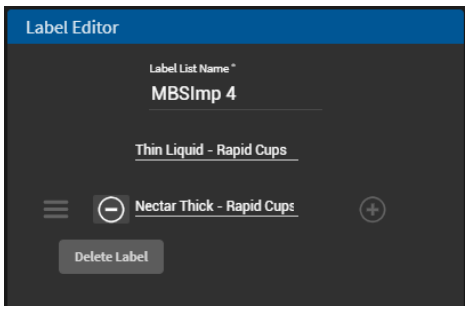


4. To add additional labels to your label list name, move the mouse over to the right of the label you just added and click the plus sign.

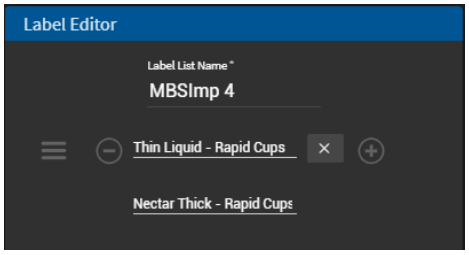


For example, select Nectar Thick – Rapid Cups. This selection displays underneath the first label you added.

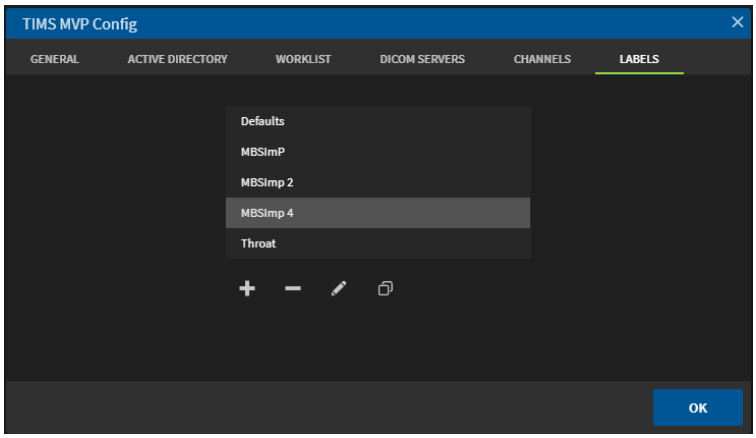
Remove a label: If you decide that you need to remove a label, move your mouse to the left of the label you want to delete. Click the minus sign to remove it.



Change the label: If you need to change your label selection, move your mouse to the right of the label you want to change. Click the **X** to display the drop-down menu of labels and make a new selection.



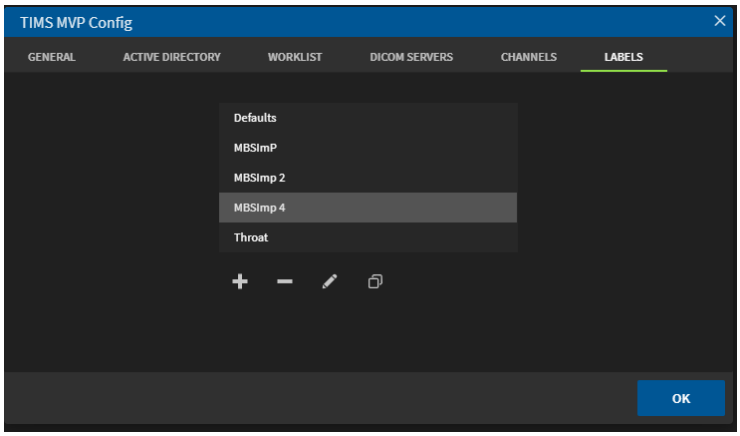
5. Add additional labels, as needed. When you have made all your selections, click **OK**. The new list name displays on the Labels home page.



Edit a Label

To edit a label:

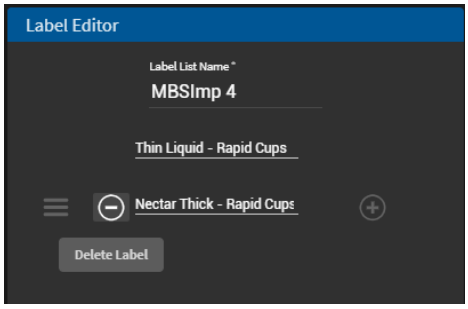
1. Select the Label you want to edit.



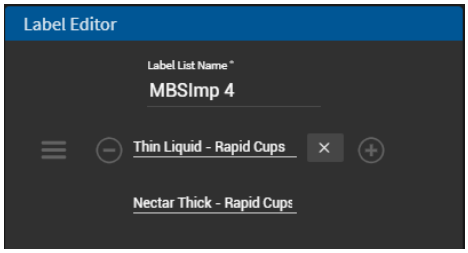
2. Click the **Edit** icon. The **Label Editor** displays.

3. Edit the label by:

   - **Add a label:** To add a label, move your mouse to the right of an existing label. click the plus sign. Use the drop-down menu to select a label.
   - **Remove a label:** To remove a label, move your mouse to the left of the label you want to delete. Click the minus sign to remove it.



   - **Change the label:** To change your label selection, move your mouse to the right of the label you want to change. Click the **X** to display the drop-down menu of labels and make a new selection.

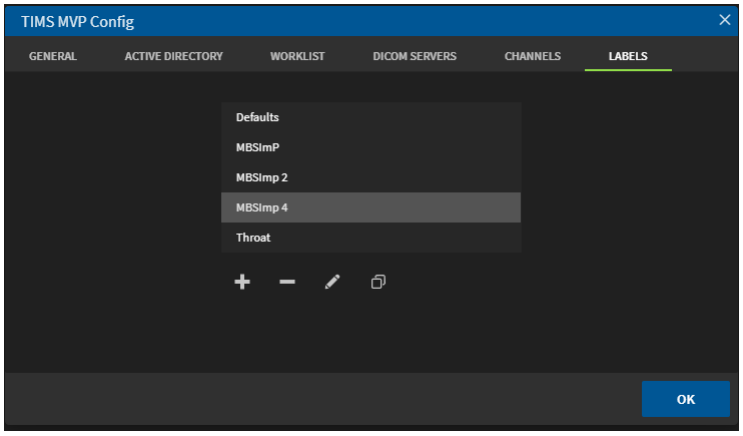


4. Click **OK** to save your edits.

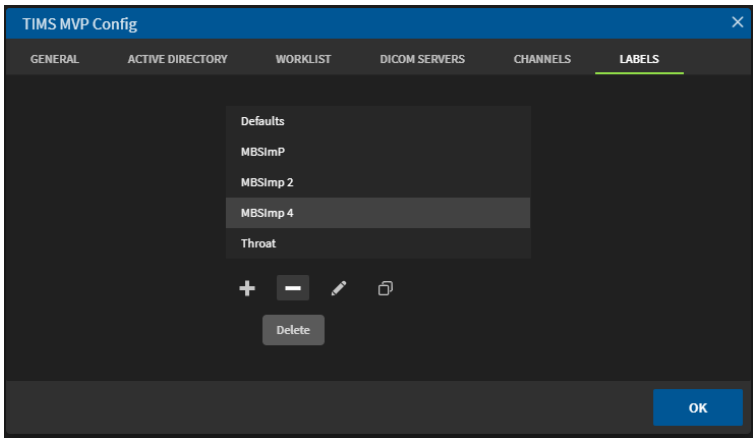
Delete a Label

To delete a label:

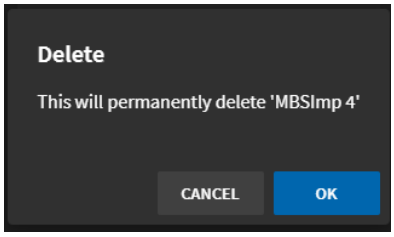
1. Select the label you want to delete from the menu.



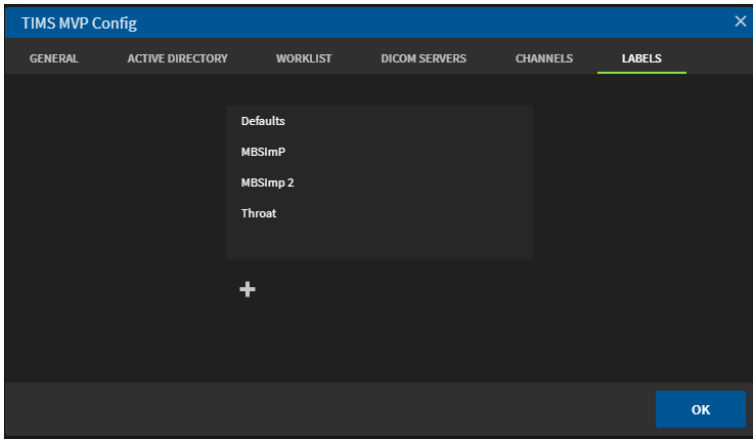
2. Click the **Delete** icon (minus sign) below the list of Labels to delete the selected label.



3. Click **OK** to confirm you want to permanently delete the label when you receive the prompt.



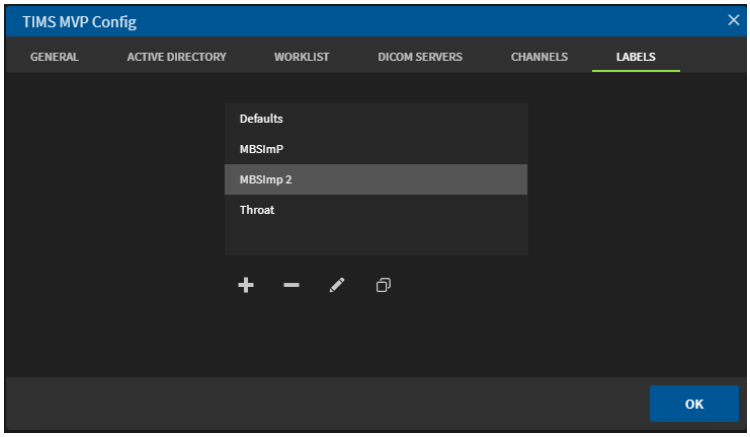
Result: The label is removed from the list of labels.



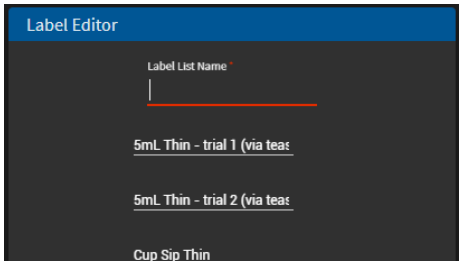
Duplicate a Label

To duplicate a label:

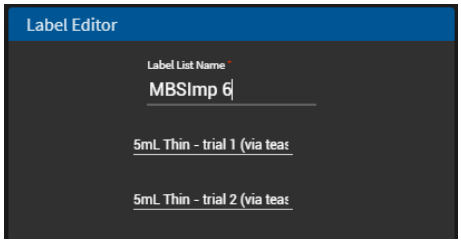
1. Select the label you want to duplicate from the list of labels.



2. Click the **Duplicate** icon. The **Label Editor** opens.

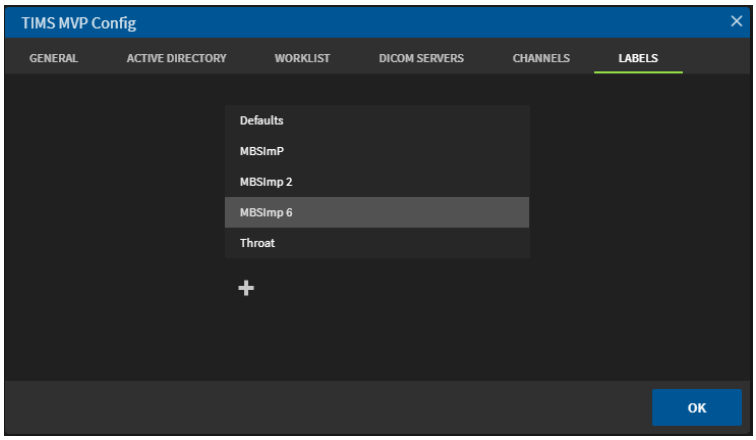


3. Enter a new unique label name in the **Name** field at the top of the page.



- Make any required changes needed for the new label.
  Add a label: To add a label, move your mouse to the right of an existing label. click the plus sign. Use the drop-down menu to select a label.
- **Remove a label:** To remove a label, move your mouse to the left of the label you want to delete. Click the minus sign to remove it.
- **Change the label:** To change your label selection, move your mouse to the right of the label you want to change. Click the **X** to display the drop-down menu of labels and make a new selection.

4. Click **OK** when done. The new label appears in the Labels list.



Windows Active Directory

This feature allows the site administrator to enable or disable the ability of users to access the TIMS MVP and TIMS Review application.

System Requirements for TIMS Review

- A domain client for the TIMS MVP system.
- A domain client for Windows 10 TIMS Review computer.
- Administrative rights to the TIMS MVP system and/or TIMS Review workstation.

Configuring the Active Directory Server

On the Active Directory Server:

1. Create a group for TIMS MVP application access:
   (Example group: TIMS_PERMISSION_RUN)
2. Add the desired TIMS MVP individual domain users to the group.

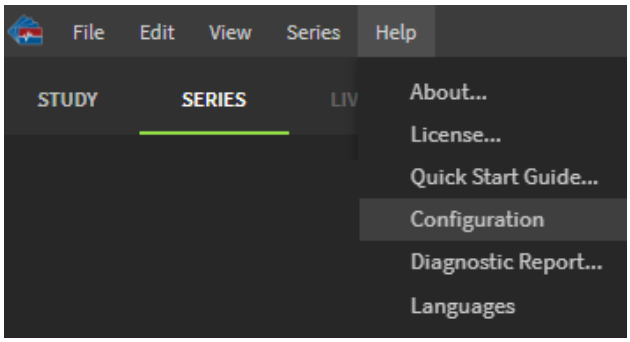
   NOTE: Be sure to add the Domain Administrator to the Group as well.

Access Active Directory TIMS MVP configuration page

Use Active Directory to encrypt calls that contain user and password information. The encryption services included in Windows NTLM are used for this purpose. The encryption of authentication information is enabled by default.

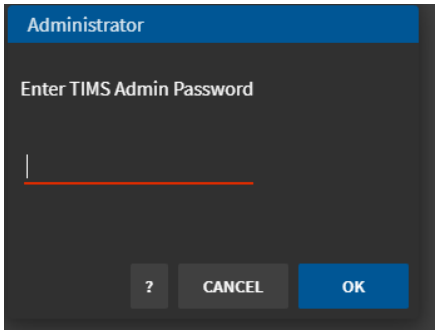
To access the TIMS MVP Active Directory configuration page:

1. Start TIMS MVP.
2. From the **Help** menu, select **Configuration**.

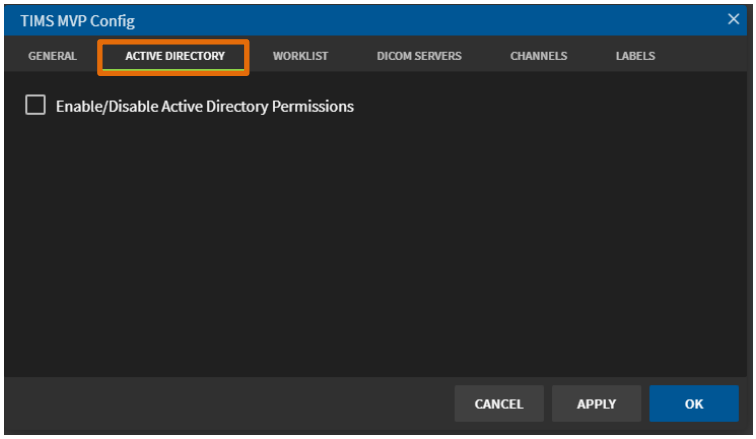


:

3. Login into the Configuration page as administrator and click **OK**.



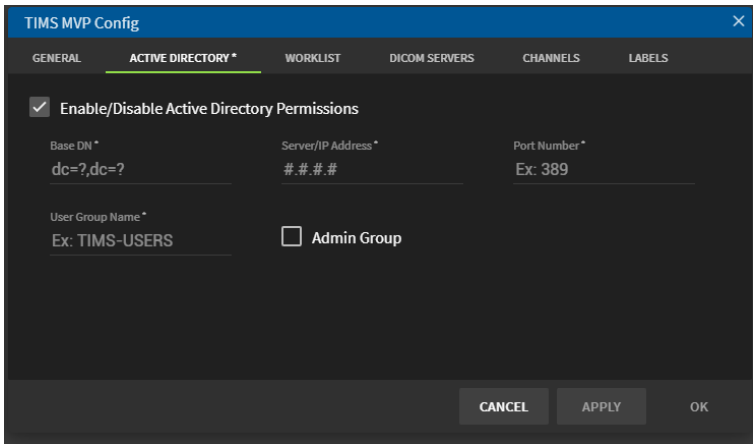
4. On the Configuration page, select the **Active Directory** tab. The **Active Directory** page appears.



Configuring Active Directory

To configure Active Directory:

1. To enable **Active Directory Permissions**, click the checkbox. The Active Directory options appear.



2. On the Active Directory page:

   - Enter the Base DN (Domain Name). Enter the DC (Domain Controller & Extension) in the following format: `dc=DomainController,dc=Extension` (comma separator and no space)

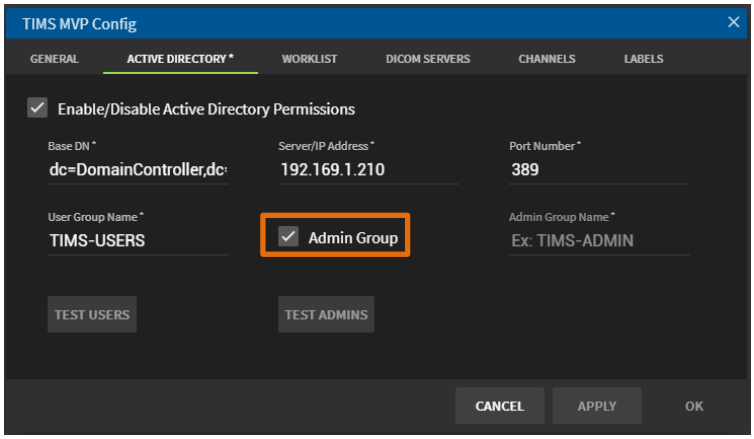
   - Enter the Server/IP Address

   - Enter the (LDAP) Port Number for access.

     Note: Ensure the port is open on the local firewall and server.

3. Enter the **User Group Name**, for example: TIMS-USERS.

4. Click the checkbox if you want to create an **Admin Group**.



5. Enter the **Admin Group Name**, for example: **TIMS-ADMIN**.

6. Before you can save the settings, you must validate your entries. ***See Active Directory Tests for Admin and User Groups*** on page 85.

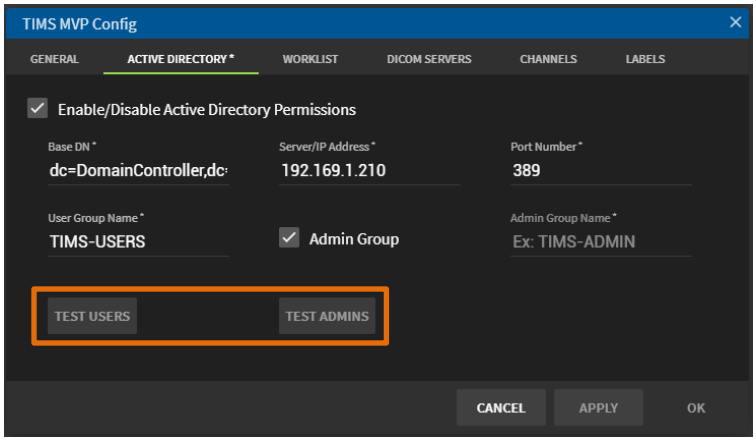
Active Directory Tests for Admin and User Groups

You can validate the TIMS MVP users or the administrator group from the **Active Directory** home tab. You will press the test button to conduct the validation.

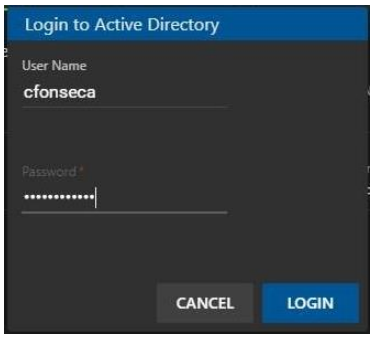
IMPORTANT: You must conduct a test before you can click **Apply** or **OK** to save your settings.

To conduct a test:

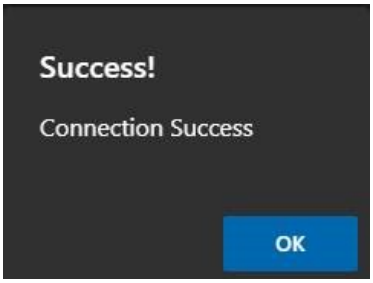
1. Click the test you want to perform – **TEST USERS** or **TEST ADMINS.**



2. Login in to Active Directory.



3. Click **Login**. The test begins.
    - If the test is successful, you receive a success message.



    - If the test is not successful, you receive an error message above the Active Directory home page. You must edit your settings and test again.
4. Once the test is successful, click **Apply** or **OK** to save the settings.

Configuring Security

Change the Administrator Password

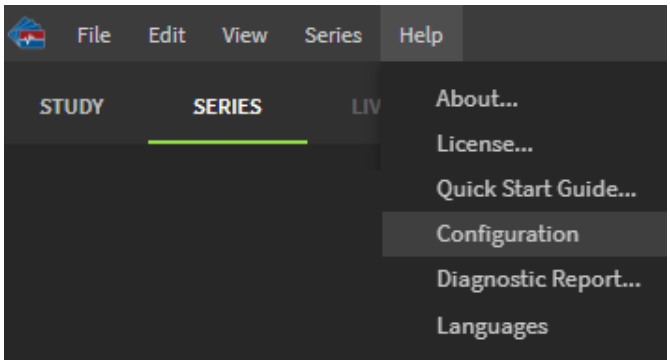
The TIMS MVP Administrator (Admin) password is the master password for the TIMS MVP software. (It is not related to the Windows Administrator password.)

The default password is: **admin**

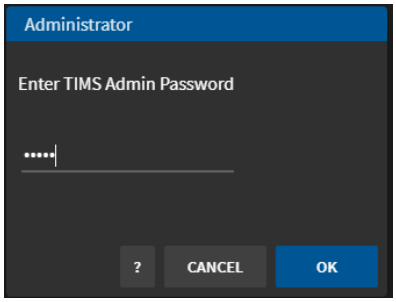
Set the Admin Password

To set the Admin password:

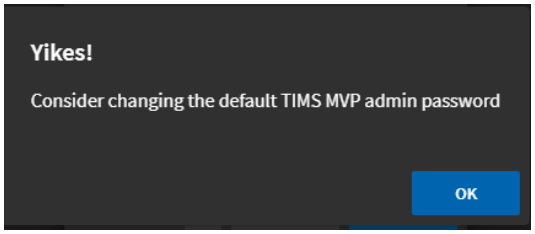
1. From the **Help** menu, select **Configuration**.



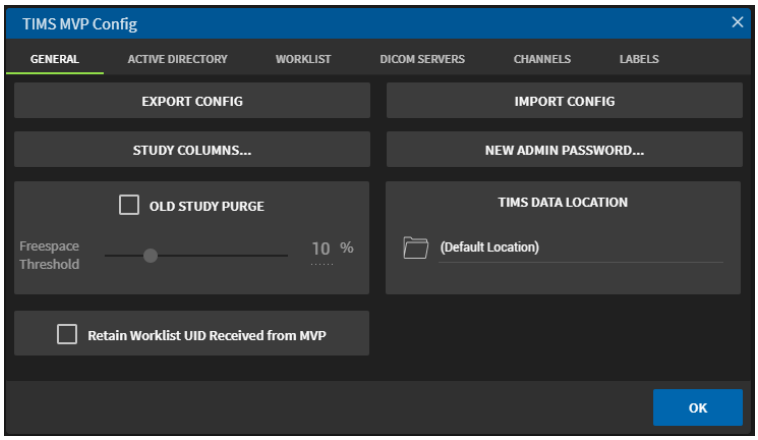
2. Enter the Administrator **Password** and click **OK**.
   Make sure you do not have **Caps Lock** on when typing the password.



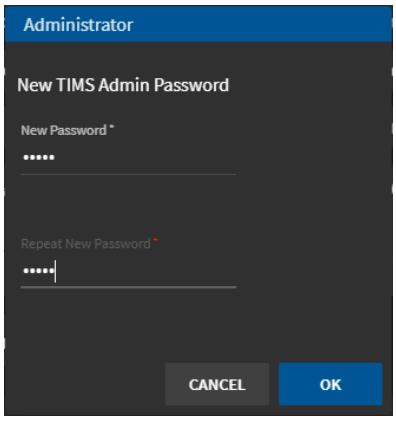
   If you are using the default password **admin**, a message appears recommending you change the password. Click **OK**.



3. Select the **General** tab on the TIMS MVP Config page.



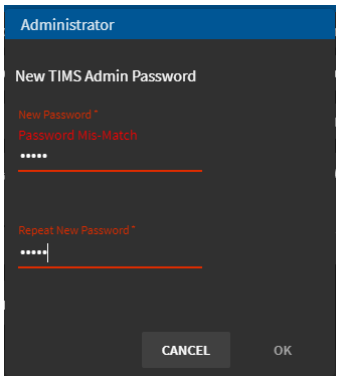
4. Click **NEW ADMIN PASSWORD…**. The **Administrator** dialog appears.



5. Type in the **New Password** and then type it in again in **Repeat New Password**. Click **OK**.

   Result: You have changed the admin password.

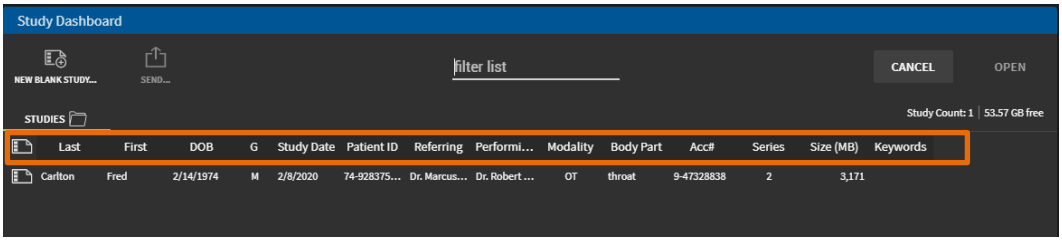
   NOTE: If you do not type the same password in the **Repeat New Password** field, you receive a message that there is a password mis-match. Retype the password and click **OK**.



Configuring the Study Lists

The study lists are lists which provide patient information details in a list from which you can choose a patient.

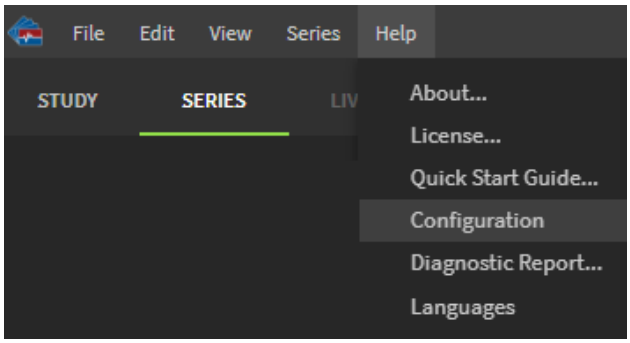
When you access the TIMS MVP study worklist, it has a list of study information columns where you can either use TIMS MVP defaults or select your own fields.



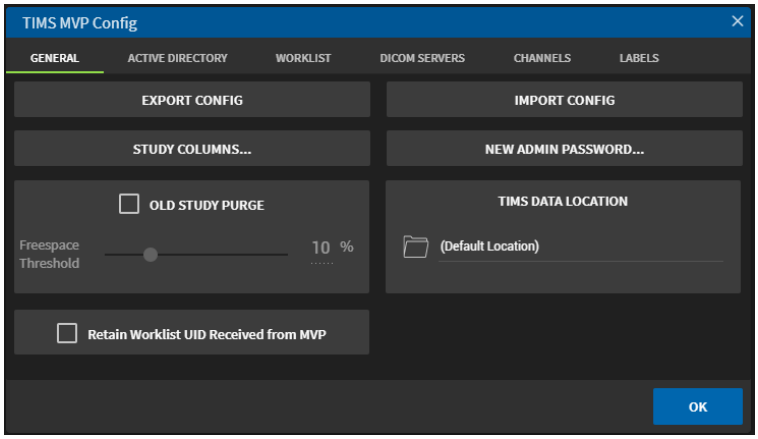
Select Fields for the Study Dashboard

Use the Study Columns button on the **TIMS MVP Config General page** to select columns that are used on the Study Dashboard.

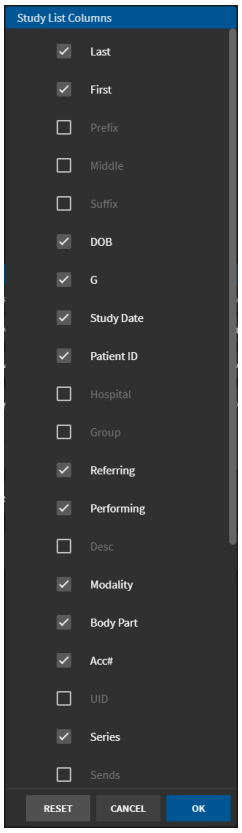
1. Click the **Help** menu and select **Configuration**.



2. From the **TIMS MVP Config** page, if not selected, click the **General** tab.



3. Click **STUDY COLUMNS…** button. The **Study List Columns** dialog appears.

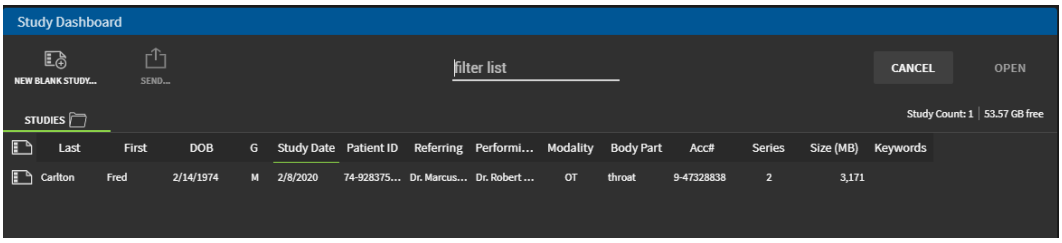


By default, the following headings are selected:

Use the Study List columns dialog to: Last (Name), First, DOB, G (Gender), Study Date. Patient ID, Referring (Physician), Performing, Modality, Body Part, Acc# (Account number), Series, Size (Mb) and Keywords.

- Click the checkbox to add any additional column headings you want to appear in the Study Dashboard.
- Uncheck a checkbox if you want to remove a column heading.
- Click **Reset** to reset the Study List Columns to the original defaults listed above.
- Click **OK** to save changes.
- Click **Cancel** to cancel changes.

When you open a study in TIMS MVP, the Study Dashboard appears with the study columns you selected.

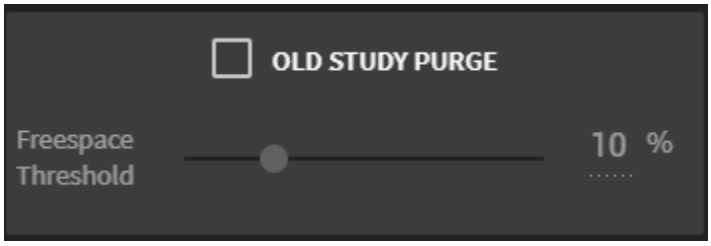


Purging Old Studies

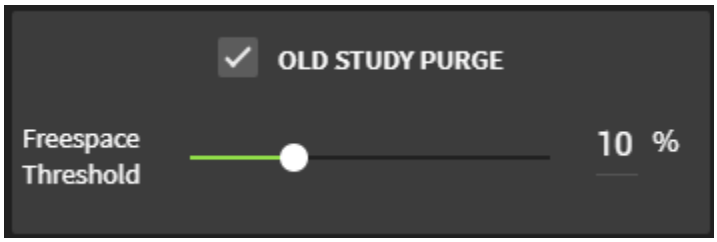
By selecting a percentage, you indicate when new studies are saved, the oldest studies are deleted to maintain disk usage below the specified percentage. You can select a percentage from 5 to 25 percent from the drop-down menu. Use the slider to select the percentage you want. Use the **TIMS MVP Config General** page to set the free space threshold for studies.

To select a percentage:

1. Click the checkbox **OLD STUDY PURGE** to set a free space threshold.



2. Move the slide bar to select the percentage, the default is 10%.



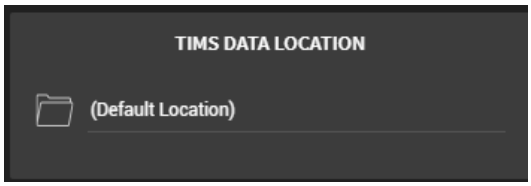
3. Click **OK** if you are finished with General settings.

Changing the TIMS MVP Studies Directory

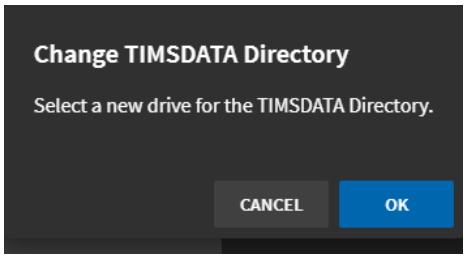
The default studies data folder for TIMS MVP is **C:\ProgramData\TIMS MVP\TIMSDATA**. Use the **TIMS MVP Config General** page to change the location of the data folder.

To change the location of the data folder:

1. Click the folder icon next to the **(Default Location)**.

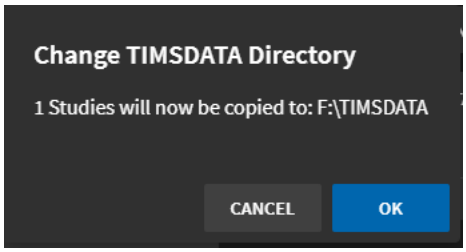


2. When the message to select a new drive appears, click **OK**.



3. Browse for the new folder location, click the **Select Folder** button to change the directory location.

4. Click **OK** to confirm the new study data location.



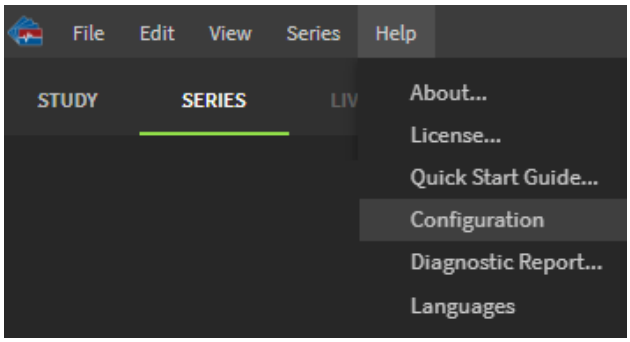
Result: A white circle will display temporarily as the studies are moved to the new location. Once the circle stops, all existing and future studies will be saved to the new default study location.

Import and Export TIMS MVP Configuration File

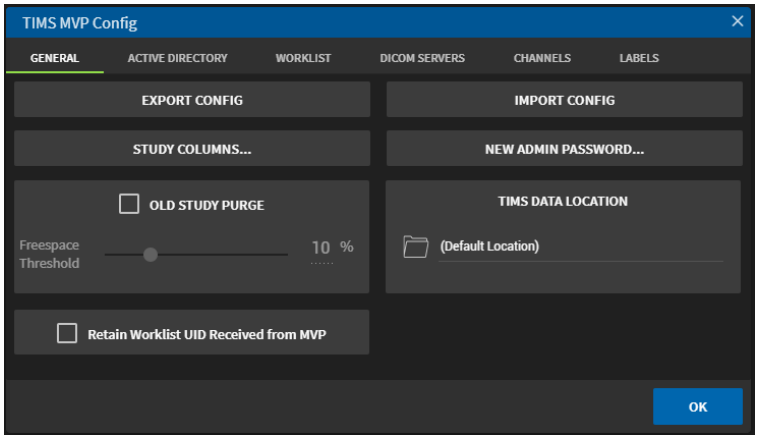
- Export your configuration to a file as a backup or to use with another TIMS MVP system.
- Import a configuration file to use with your TIMS MVP.

Export Configuration

1. Click the **Help** menu and select **Configuration**.



2. From the **TIMS MVP Config** page, if not selected, click the **General** tab.



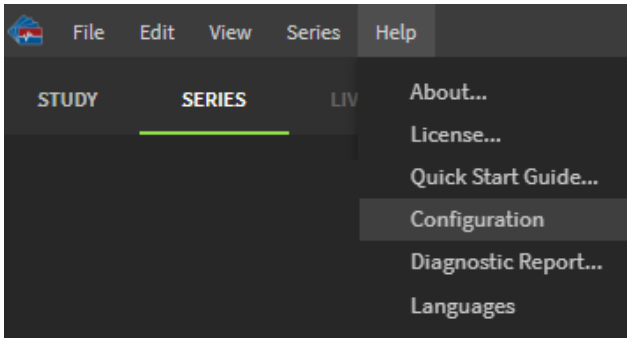
3. Click the **EXPORT CONFIG** button. A Windows dialog opens.
4. Accept the default file name (**settings-archive.mvp_settings**), or, if you have multiple configuration files saved, type in a unique name for the file which makes it easy to identify.

   Note: You can also browse for a new folder location to place your file.

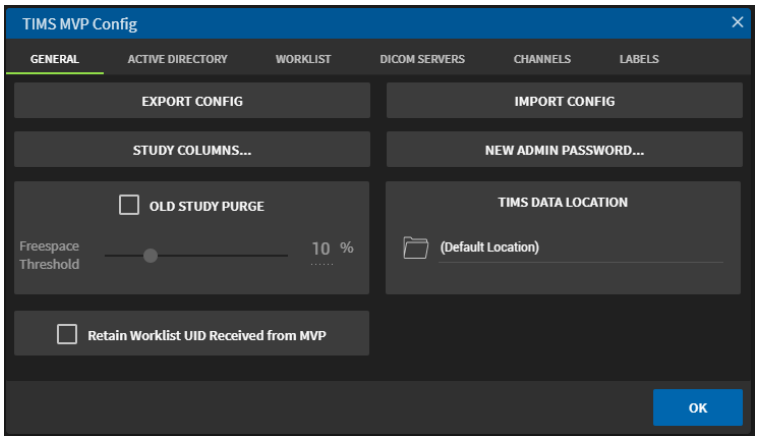
5. Click **Export Config** and the file is saved to the TIMS MVP computer.

Import Configuration

1. Click the **Help** menu and select **Configuration**.



2. From the **TIMS MVP Config** page, if not selected, click the **General** tab.



3. Click **IMPORT CONFIG** button. A Windows dialog opens.
4. Browse to locate the file you want to import. When you locate the file, click to select it.

   Note: You can only import files to TIMS MVP with a ***.mvp_settings** extension.
5. Click **Import Config** and the configuration is placed on the TIMS MVP system.

   It is recommended you check the settings imported to ensure the file imported correctly.

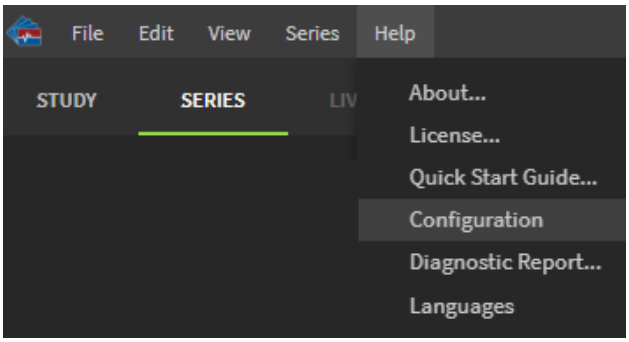
Retain Worklist UID Received from MVP

You can retain a worklist Unique Identifier (UID) so that you can carry the hospital worklist UID into the study. This means when a Worklist UID is transferred to a PACS or TIMS Review, it will still maintain the original UID from the worklist.

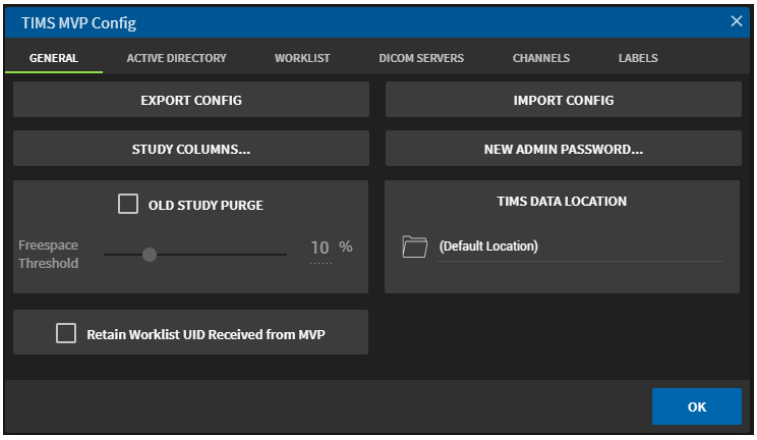
Otherwise, a UID is generated when the study is pulled from the worklist.

To retain a Worklist UID received from TIMS MVP:

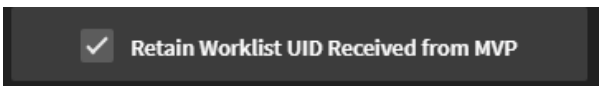
1. Click the **Help** menu and select **Configuration**.



2. From the **TIMS MVP Config** page, if not selected, click the **General** tab.



3. Click the checkbox to select **Retain Worklist UID Received from MVP**.



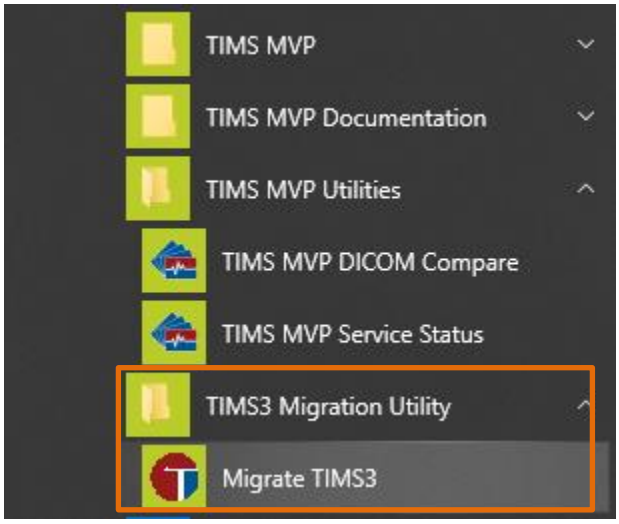
Migrate TIMS3 Config

Migration will replace the current settings of TIMS MVP with settings exported from the TIMS3 Migration Utility. You should export your current TIMS MVP settings using **Export Config** if you would like to be able to restore them.

Export TIMS MVP Current Settings

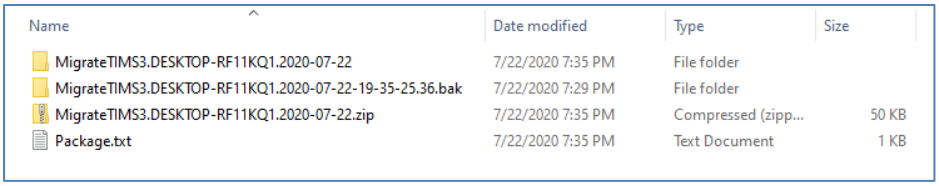
To export the TIMS MVP current settings:

- Go Windows **Start** > **TIMS3 Migration Utility** > **Migrate TIMS3**.



- The **TIMS3 Migration Utility** saves the current TIMS MVP settings.

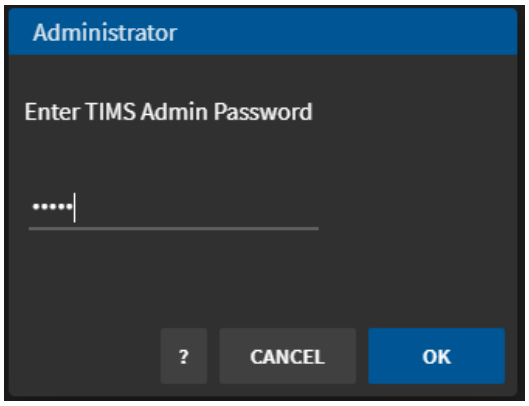
- The folder where the TIMS MVP settings migration was saved displays.



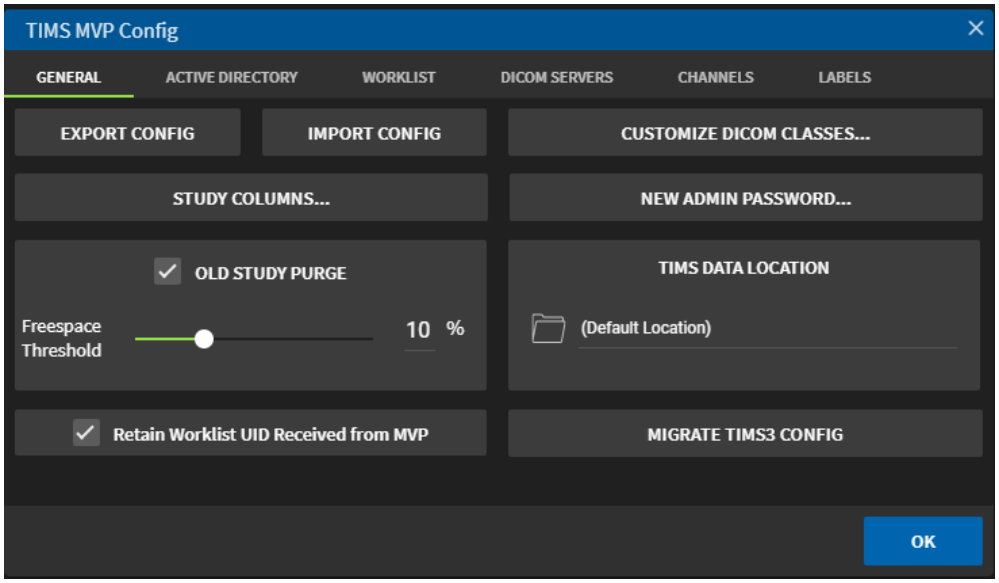
Migrate TIMS3 Settings

To migrate the TIMS3 settings:

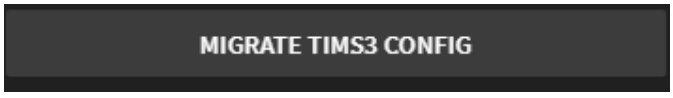
1. Open TIMS MVP and go to **Help** > **Configuration**.
2. Type in the administrator password when the Administrator login screen appears.



3. Click **OK**.
   Result: The TIMS MVP Config page appears.

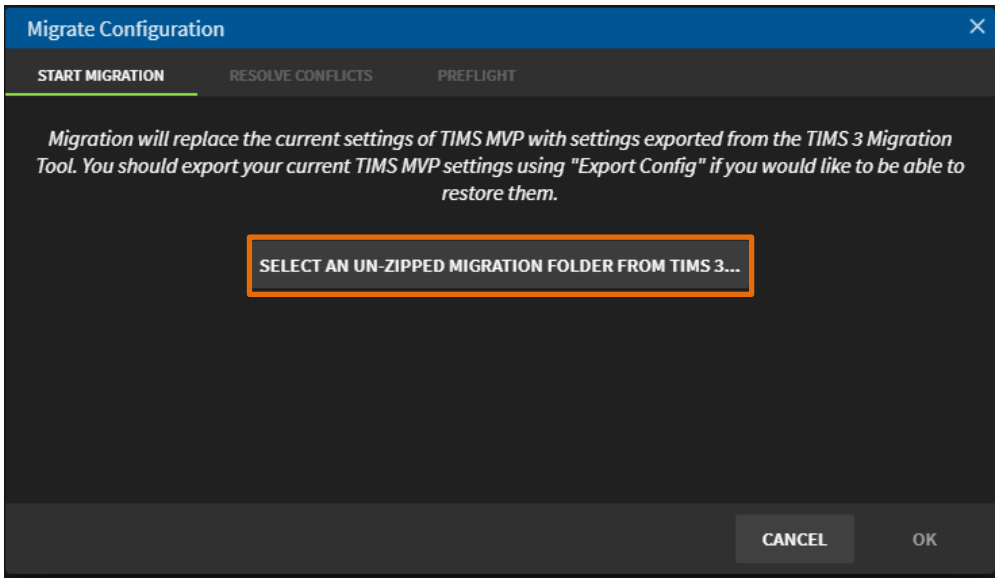


4. Click the **Migrate TIMS3 Config** button in the lower left-hand corner.



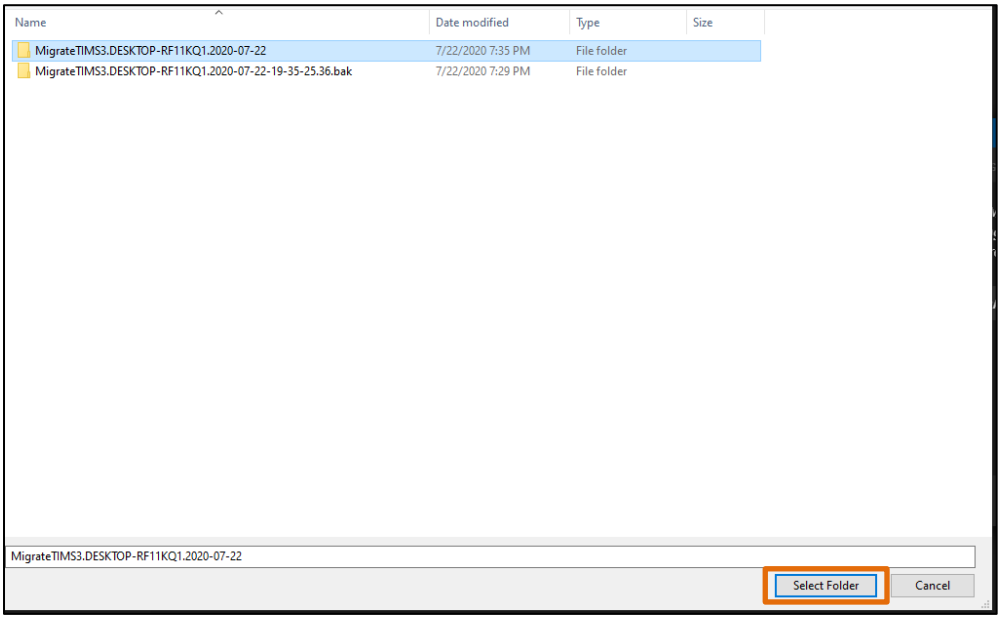
Result: The **Migrate Configuration** dialog appears.

5. Click the **Select An Un-Zipped Migration Folder From TIMS 3 Migration** button.



Result: The folder which contains the TIMS3 migration files open.

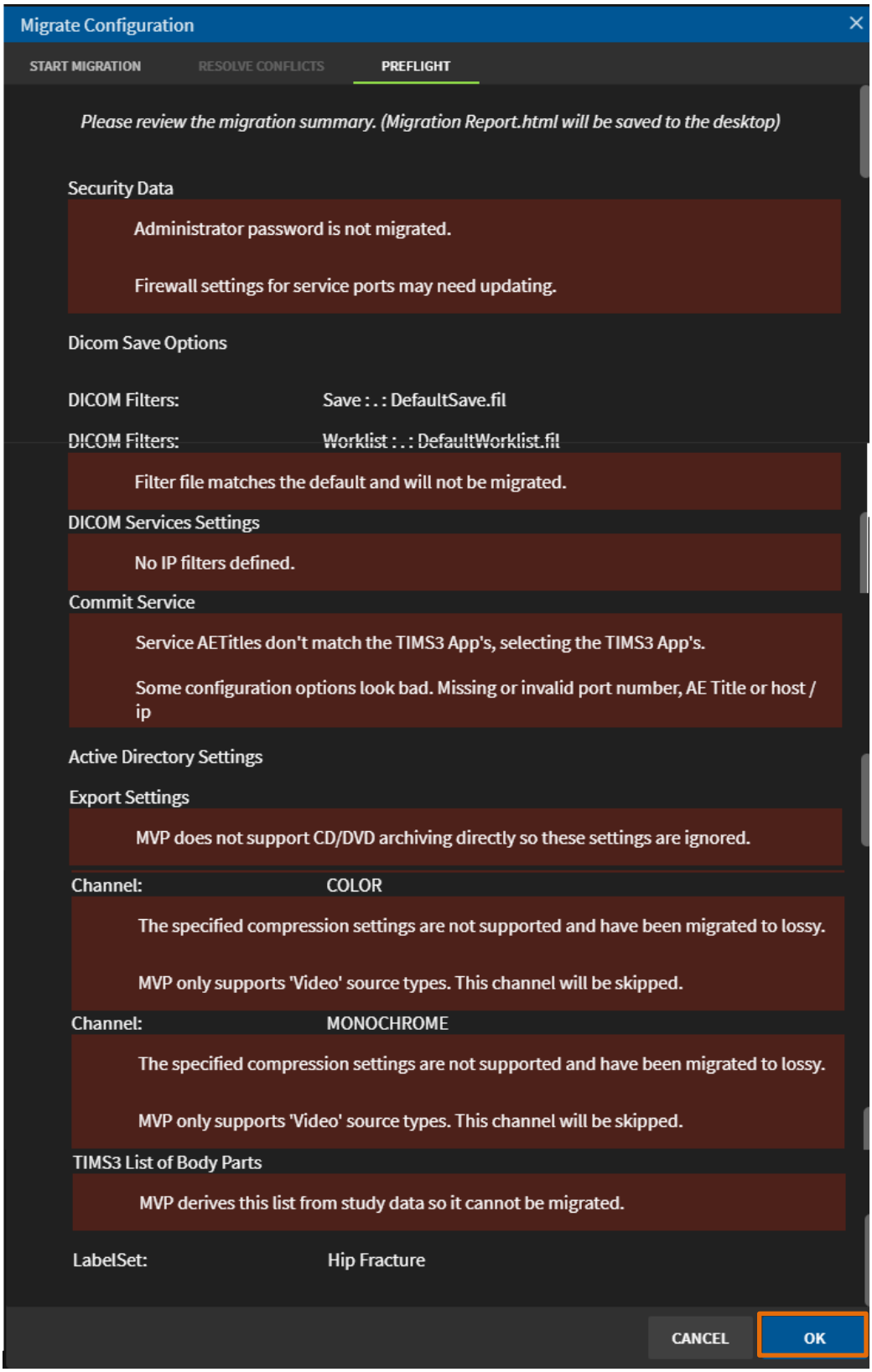
6. Select the unzipped migration file and click **Select Folder**.



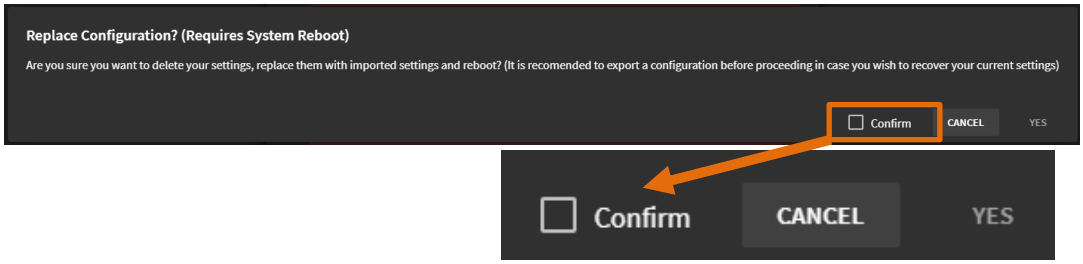
Result: The **Migrate Configuration** page displays with the **Preflight** tab selected. This tab contains the migration summary.

IMPORTANT: If the **Migrate Configuration** page opens to the **Resolve Conflicts** tab, then review the conflicts and make any necessary changes.

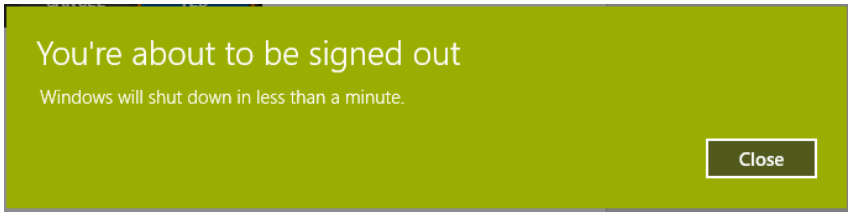
7. Review the migration summary and click **OK**.



8. When the Replace Configuration? (Requires System Reboot) message appears, click the Confirm checkbox.



9. Click **Yes** to start the migration.
   Result: A message appears telling you that the system will reboot in less than one minute. Click **Close**.



10. Once the reboot is completed, you can reopen TIMS MVP with the migrated settings.

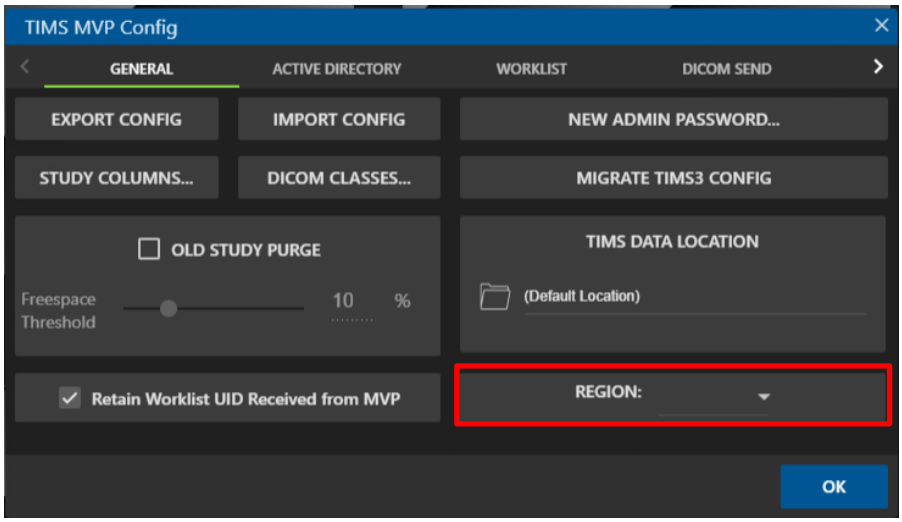
Select Region for Date and Time Settings

The Generable tab in the TIMS MVP Config page lets you choose the country or region for your location. This allows the date and time to appear in the proper format for your part of the world.

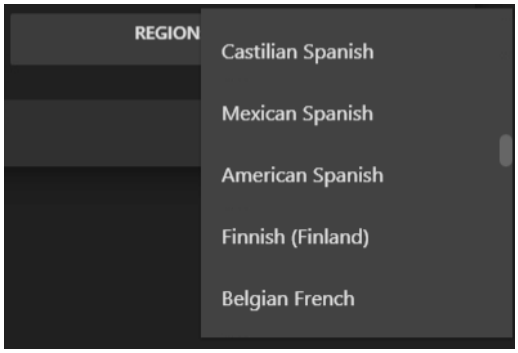
To select a region:

1. Select the **General** tab on the TIMS MVP Config page..

2. Click on **Region** in the lower right-hand corner.



3. From the drop-down menu, scroll through and select the region that is most appropriate for your location. The date and time format will match the format used for your region.



Creating a Custom Hardware Profile

The remainder of this Setup and Configuration Guide provides step-by-step instructions for creating a custom hardware profile for the modality you will be using with TIMS MVP. Although TIMS MVP provides predefined common hardware profiles (CHP) files for its AccuStream capture boards, you are recommended always to create your own customized profile. This profile will ensure you obtain an optimized video stream.

Using IDEA Auto-SYNC

The IDEA Auto-SYNC application generates a preliminary set of video settings and allows you to customize these settings. You may return to IDEA Auto-SYNC at any time to manipulate your custom hardware profile further. Included with IDEA Auto-Sync are example programs that use the profile you create with IDEA Auto-SYNC and allow you to perform image captures and other functions to test the profile.

Image Requirements

When generating a new CHP file with IDEA Auto-SYNC, best results are obtained if the colored pixels of the image to be measured fill the entire width and height, or at least parts of it extend to the boundaries of the active video region. Medium to bright pixels at the edges are best. The signal should also contain the maximum amount of contrast between black and white. The image should remain stable during the entire operation of IDEA Auto-SYNC.

Limitations

IDEA Auto-SYNC looks at both sync and video signal data. The video portion of the signals must contain an image that meets certain criteria. If those criteria are not met, the CHP file generated by Auto-SYNC will not be correct and the image captured with it will be inferior. The image criteria along with a description of the effect of captured image, if the criteria are not met, are listed here:

1. At least 1% of the image must be the brightest white.

   Or else: IDEA Auto-SYNC will underestimate brightest white. Images will be too bright and have too much contrast.

2. At least 1% of the image must be the darkest black.

   Or else: IDEA Auto-SYNC will overestimate darkest black. Images will be too dark and have too much contrast.

3. Light (50% gray or whiter) portions of the image must touch all four sides of the image.

   Or else: IDEA Auto-SYNC may fail to recognize image boundaries. Images will be clipped or there may be no image capture at all.

4. Wide solid black (3% gray or blacker) bars stretching across the entire image in any direction should be avoided.

   Or else: If composite video is not being used, the stripes may mimic composite sync information. IDEA Auto-SYNC is very resistant to this type of mistake but not completely immune to it. Images will appear scrambled.

5. Include many edges (as with text, fine stripes or a checker pattern).

In addition to the criteria listed above, future enhancements to IDEA Auto-SYNC may be able to take advantage of other image characteristics. If you are developing a standard test pattern for IDEA Auto-SYNC for long-term use, the pattern should include sharp pixel transitions from light to dark and dark to light. A pixel transition is considered "sharp" if the change in gray-scale from one pixel to the next (to the left or right) exceeds 50% of the full black to white range. Including test or vertical or near-vertical fine grill patterns in the image would suit the purpose.

Using IDEA Auto-SYNC

Using Auto-SYNC provides the following capabilities:

- Allows you to configure to any modality/video source.
- Creates video configuration files for use in TIMS MVP or with the IDEA SDK applications.
- Automatically measures and defines video parameters.
- Provides Auto-SYNC procedures for SDTV and Analog RGB/Monochrome.

The following is a brief description of each toolbar icon in Auto-SYNC:

Create a new CHP file

Open CHP file

Save CHP file

Open video settings

Open Auto-SYNC Wizard

Refresh images

Continuously capture (full-size view)

Multi-view window

Full window

Previous window

Next window

Show combined RGB view

Automatic phase

White balance

Reset board

The following toolbar icons are used for combined RGB views:

Edit Red, Green, Blue channel

Link RGB CHP changes

Reset RGB HTotal and porch settings

Reset RGB image size

The following table lists the hot keys available while using IDEA Auto-SYNC:

Hot Key	Description
<Alt> + <F10>	Continuous capture in full-size view
<Ctrl> + <A>	Open video settings
<Ctrl> + <N>	New CHP file
<Ctrl> + <O>	Open CHP file
<Ctrl> + <S>	Save CHP file
<Ctrl> + <W>	Open Auto-SYNC Wizard
<F4>	Automated image refresh
<F5>	Refresh images now
<F7>	Always verify video settings
<F8>	Step
<F9>	Multi-view window
<F10>	New full-size image window
CTRL+HOME	Show upper left corner of Auto-SYNC
CTRL+END	Show lower left corner of Auto-SYNC
CTRL+PGUP	Show upper right corner of Auto-SYNC
CTRL+PGDOWN	Show lower right corner of Auto-SYNC
SHIFT+Left Arrow	Show left edge of Auto-SYNC
SHIFT+Right Arrow	Show right edge of Auto-SYNC
SHIFT+Up Arrow	Show top edge of Auto-SYNC
SHIFT+Down Arrow	Show bottom edge of Auto-SYNC
CTRL+Left Arrow	Move Auto-SYNC window left (small)
SHIFT+Left Arrow	Move Auto-SYNC window left (large)
CTRL+Right Arrow	Move Auto-SYNC window right (small)
SHIFT+Right Arrow	Move Auto-SYNC window right (large)
CTRL+Up Arrow	Move Auto-SYNC window up (small)
SHIFT+Up Arrow	Move Auto-SYNC window up (large)
CTRL+Down Arrow	Move Auto-SYNC window down (small)
SHIFT+Down Arrow	Move Auto-SYNC window down (large)
CTRL+HOME	Show upper left corner of Auto-SYNC

Hot Key	Description
CTRL+END	Show lower left corner of Auto-SYNC
CTRL+PGUP	Show upper right corner of Auto-SYNC
CTRL+PGDOWN	Show lower right corner of Auto-SYNC

Starting IDEA Auto-SYNC

To start **IDEA Auto-SYNC**, select **Start** > **Foresight Imaging** > **Auto-SYNC** icon from the Start menu.

The application opens and is ready to begin the IDEA Auto-SYNC process. The **Getting Started With Auto-SYNC** dialog opens.

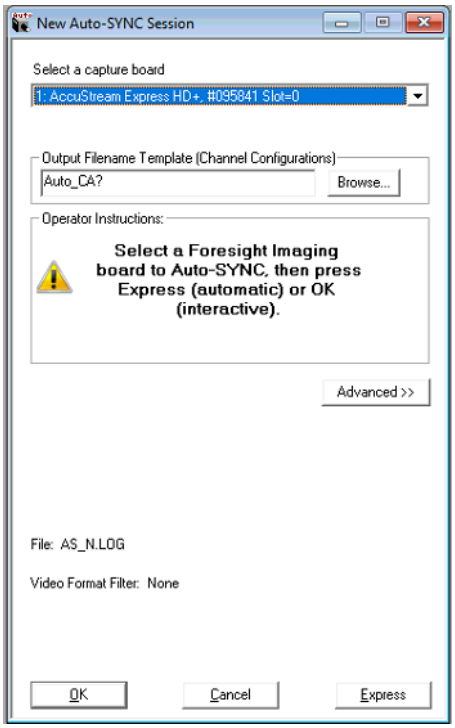


Figure 1: IDEA Auto-SYNC opening screen.

Recommended Calibration Images

When the **Getting Started With Auto-SYNC** dialog appears, click the **Recommended Settings** button in order to learn about the Auto-SYNC operations to perform with specific calibration images. You can choose from four operations:

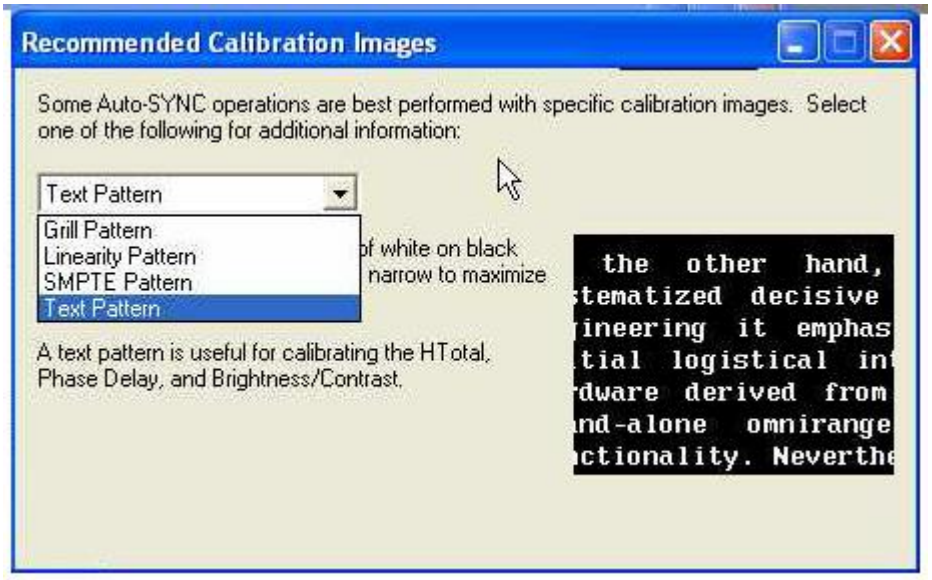
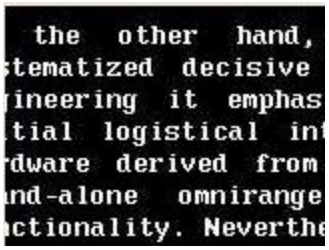
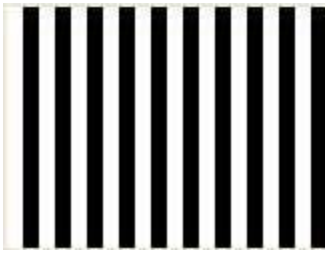


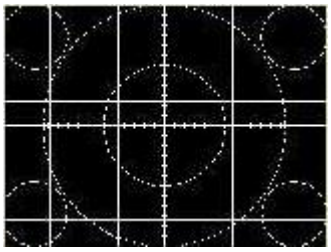
Figure 2: Recommended Calibration Images dialog.



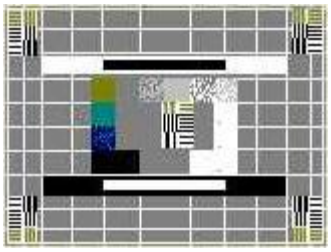
Text Pattern – The text pattern is usually a page of white on black text. The font should be small and narrow to maximize the dark-to-light transitions. A text pattern is useful for calibrating the HTotal, Phase Delay, and Brightness/Contrast. See calibration example in the above dialog.



Grill Pattern – The grill pattern is a series of alternating black and white vertical bars (down to one or two pixels in width) are the most useful for calibration. The grill pattern provides a high contrast image with its sharp dark-to-light transitions and is most useful for adjusting the Phase Delay.



Linearity Pattern – The linearity pattern is an image with white vertical and horizontal lines plus concentric circles against a black background. The pattern's circles are ideal for calibrating the HTotal and setting the Field Polarity. Its high contrast and range are useful for setting Phase Delay and Brightness/Contrast.



SMPTE Pattern - The SMPTE pattern is a standard video calibration image with a variety of gray levels, shapes, and lines. It has a full-screen background. This is a good pattern for a new Auto-SYNC session. The pattern's shapes and grayscale boxes are not useful for calibrating HTotal and the Brightness/Contrast. Its full-screen gray background makes it ideal for setting the image framing and the Vertical Sync Type. Its diagonal lines and text are useful for setting the Field Polarity.

To close the **Recommended Calibration Images** dialog, click the red **X** in the top right hand corner.

Note: For the best Auto-SYNC accuracy and since In the real world a video generator is not always available, it is best to display an image that will be representative of what you are trying to capture with the frame grabber.

Creating CHP Files

IDEA Auto-SYNC allows users to create new Common Hardware Profile (CHP) files or tailor existing CHP files for your computer system. For AccuStream boards, Auto-SYNC generates a new CHP file based on the particular signal characteristics.

Location of CHP Files

The location of the CHP file will vary depending on your installation.

Windows 10 (64-bit) Installation

If you are doing a Windows 10 installation, the CHP files are saved to the **\Users\Public\Public Documents\Foresight\Video Formats** folder.

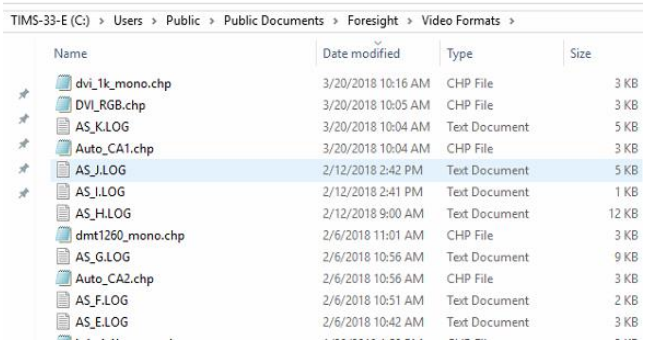


Figure 3: Location of CHP files on Windows 10

Using Auto-SYNC Advanced Options

Click **Advanced** on the **New Auto-SYNC Session** dialog and the following screen options appear.

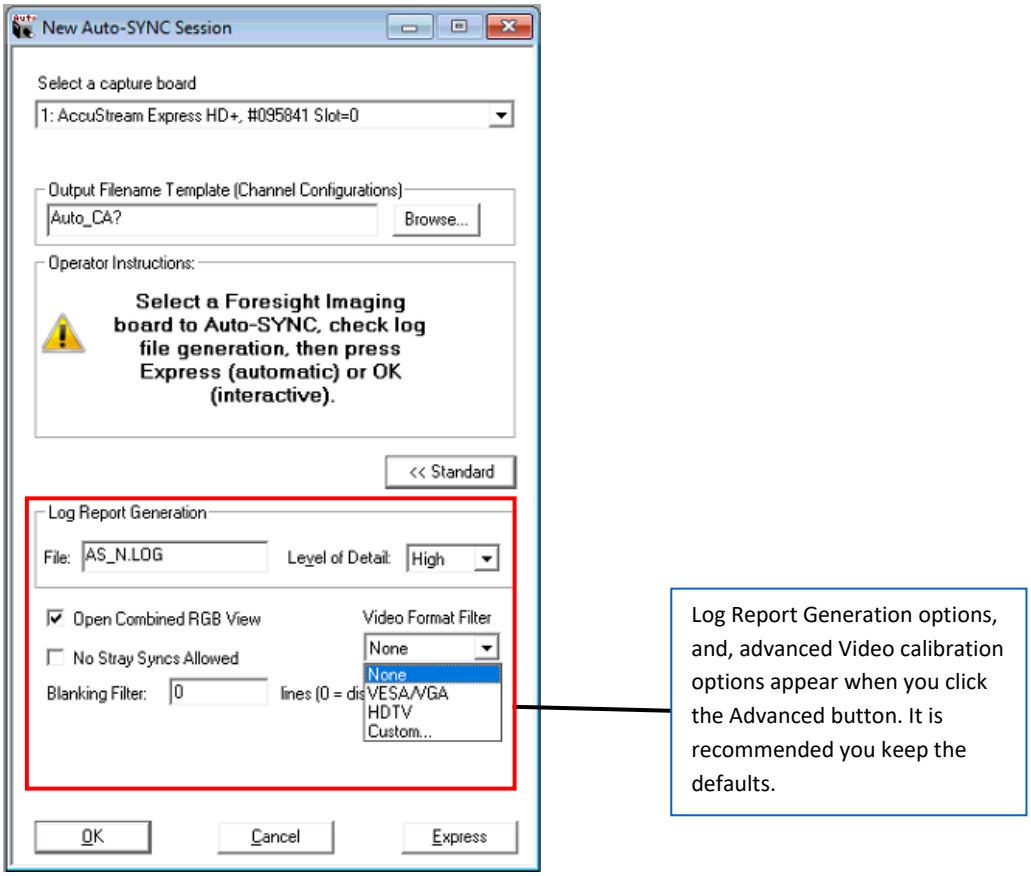


Figure 4: Advanced Button

Click **Advanced** to set the following options:

Log Report Generation: Sets the base filename for output log file. The file is created in the CHP file folder using incremental filenames.

Open Combined RGB Output View: If three monochrome video channels are detected, Auto-SYNC will attempt to open them as a combined RGB image. *No longer supported. Originally used with the Hi-Def Series frame grabbers.*

No Stray Syncs Allowed: Auto-SYNC allows a small number of stray syncs to be processed without causing an error, but the presence of any stray sync pulses can be rejected by enabling this feature.

Blanking Filter: The blanking filter specifies the number of lines at the top and bottom of the image to 'ignore' during the calculations of an Auto-SYNC session.

This is used when the source has some 'video aberrations' at the top and bottom of the signal.

- **Video Format Filter:** Video format filters define the preferred aspect ratios for video. The selections include:
    - None (Default)
    - VESA/VGA
    - HDTV
    - Custom

    After an initial Auto-SYNC session, if the Aspect Ratio of the image is distorted (for example, circles in the image are extremely elliptical -- horizontally or vertically), a custom aspect ratio value can be used to provide better Auto-SYNC results.

    When Auto-SYNCing to medical modalities such as 512 x 512 or 1K x 1K video, Auto-SYNC yields better results when the aspect ratio of 1:1 is entered as a custom format filter.

Example: To set a preferred 1:1 aspect ratio session:

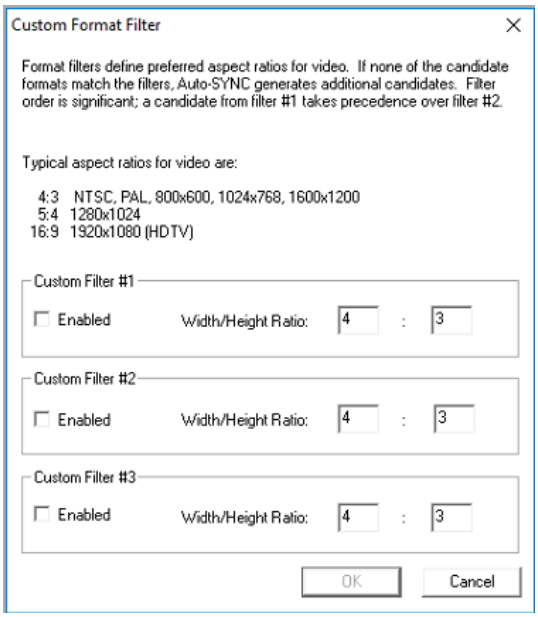


Figure 5: Custom format filter

Note: It is recommended that you do not change these settings unless you have the experience and knowledge to do so.

Two Methods for Creating CHP File

IDEA Auto-SYNC provides two methods for creating a new CHP file: **Automatic** (**Express**) and **Interactive** (**OK**). Both methods create an initial CHP with video settings appropriate for your computer system. Once this initial file is created, you then have the option to make additional changes or exit the program. The “Interactive” method allows additional editing of the video settings during the creation of the initial CHP file.

Note: If you are interested in specific information concerning the IDEA Auto-SYNC settings, please refer to the appropriate CHP settings in Chapter 5, Understanding the CHP File.

Automatic

Click **Express**. This automatically adjusts all of the settings for you. You can make modifications once the initial settings are defined.

Interactive

Click **OK**. As IDEA Auto-SYNC checks or verifies some of the settings, you are given the option to examine and possibly modify the settings.

Next Step: Run Auto-SYNC for the Input Connection

Go to the chapter which covers the type of input connection you will be using with your AccuStream Board:

For digital input connections. Go to page 177.

For SDTV input connection. Go to page 208

IDEA Auto-SYNC with RGB/VGA/DVI Analog Video

Select the Connection Type

Video Input Selection

DVI-I Connector:	Monochrome/RGB/VGA/DVI Analog non standard high resolution video connected to the DVI input connection.
DVI-D Connector:	DVI-Digital or HDMI Digital video source connected to the frame grabber HDMI connector.
S-Video or Composite BNC:	Standard NTSC/Pal Svideo or Composite video.

IDEA Auto-SYNC will first prompt you to identify the AccuStream board mode. Select the connection you have to the AccuStream board and then click OK. If you want to keep the selection as your default, click the checkbox below the connection selection so that this dialog does not appear again.

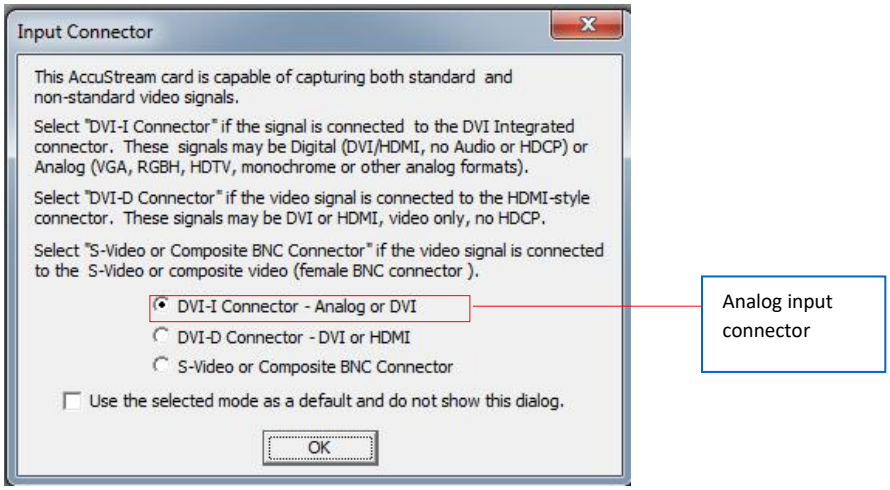


Figure 6: AccuStream Input Connector

Note: In this example the AccuStream Express HD+C is used.
Video input selection option varies depending on the model frame grabber used.

After you make your selection and click OK, the Hints dialog appears. It is recommended that you read the dialog and click OK. If you do not want this dialog to appear each time you start an Auto-SYNC session, uncheck the **Always display hints before an Auto-SYNC session** box.

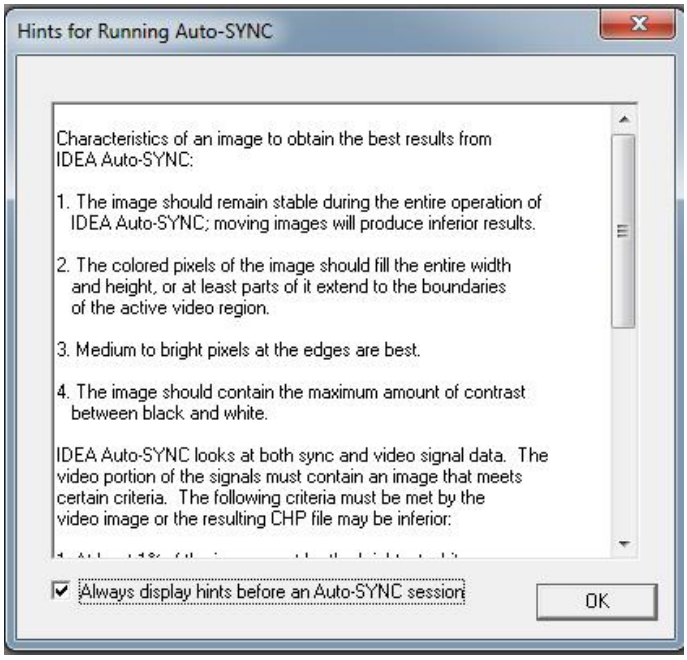


Figure 7: Hints dialog

Next select the color space of the video source from the dropdown menu, standard RGB or YPbPr video or Monochrome.

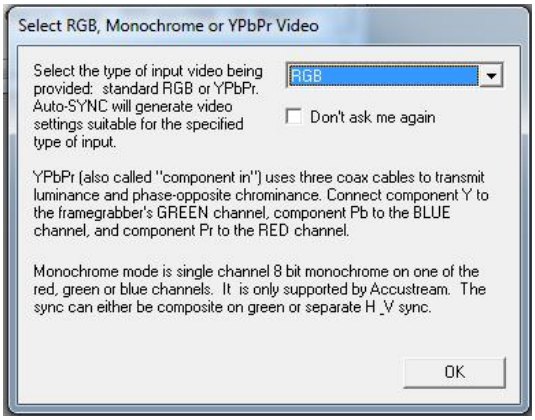


Figure 8: Select RGB, Monochrome or YPbPr video

Auto-SYNC detects and determines the video source timing and measures the video source White and Black levels and phasing.

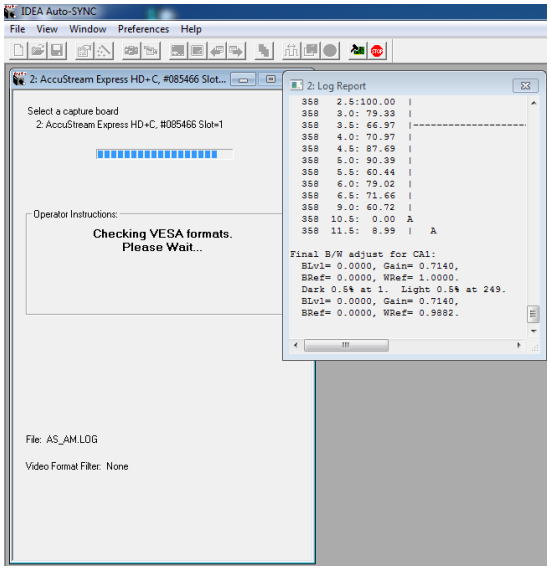


Figure 9 Auto-Sync measuring the video source timings.

At the completion of the Auto-SYNC calibration process Auto-SYNC may prompt for text comments for the CHP file. (Useful for including notes about the video source)

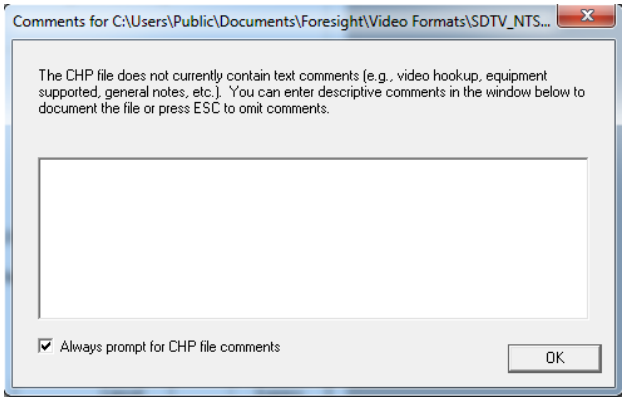


Figure 10: Comments on the CHP file

Auto-SYNC finishes calibration and creates the CHP file Auto_CA1.chp.
If the CHP file already exists you will be prompted to overwrite the file.
When you click **YES**, Auto-SYNC will increment the default Auto-CA1.chp filename.

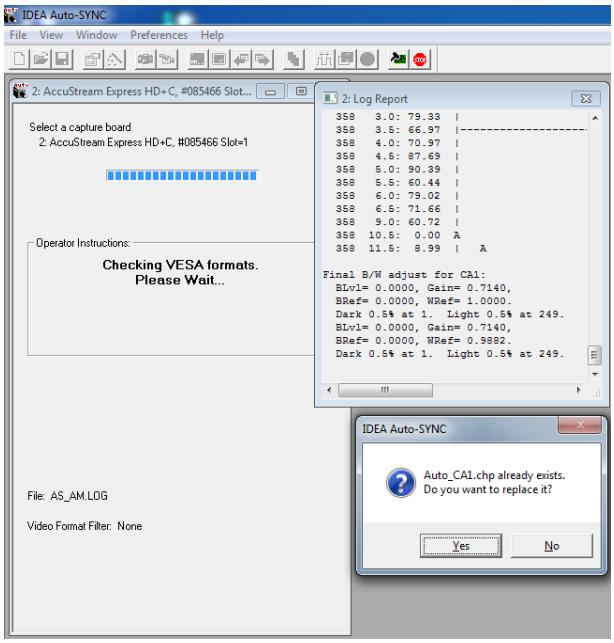


Figure 11: Saving the CHP file

Important:
When saving the CHP file, provide a filename that you will easily recognize for your video source.

Auto-SYNC Wizard

The main Auto-SYNC screen appears after entering the chp file comments.

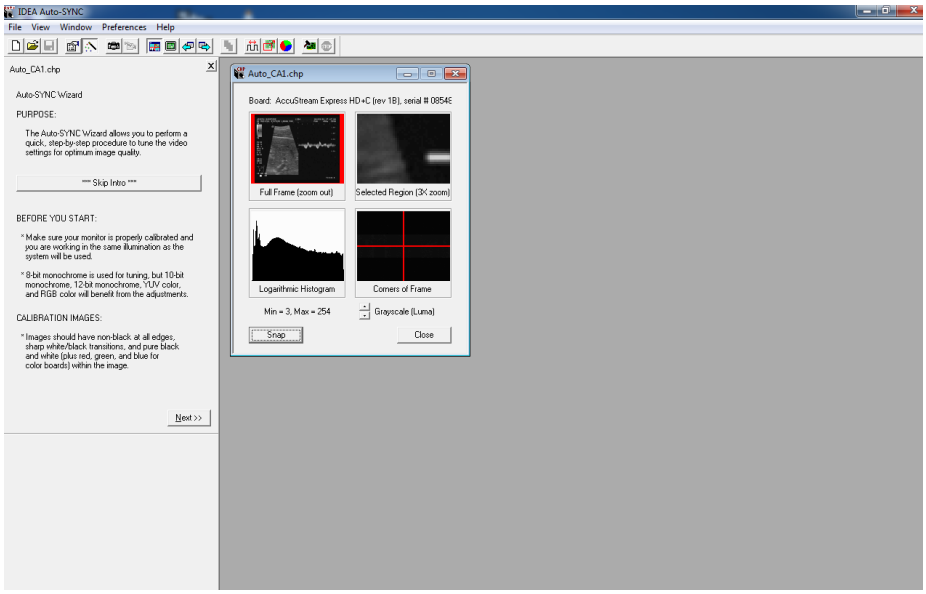


Figure 12: Start screen for the Auto-SYNC wizard

When the Auto-SYNC wizard start page appears,

1. Ensure that your PC monitor is properly calibrated and you are working in the same illumination as the system you will use.
2. Use the Wizard calibration dialogs to help you determine what changes you need to make, if any.

   Use the **Full Screen Capture icon** and the **Snap** (F5) button to refresh the Auto-SYNC windows.

The **Multi-View Window** is used to aid in making the following adjustments: Image aspect ratio, Image Centering/Framing, Image Width, White and Black levels and frame grabber phasing adjustments.

Full Frame is a scaled down image captured by the frame grabber. It is used to aid in adjusting overall image centering, image width and aspect ratio.

A Select Region is zoomed in section of that image. It is used for checking image quality in selected areas of the image captured.

The **Logarithmic Histogram** displays the images White and Black levels. R,G,B, Grayscale selectable.

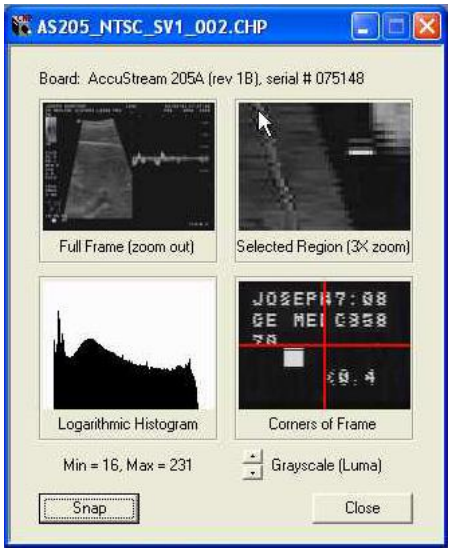


Figure 13: Auto-SYNC Multi-View Window

Note: Analog Images used in this example are captured from:

Standard computer using DVI Analog 1280x124-60Hz secondary output, Quantum Data 802R DVI Analog and 802BT HDMI video generators set to either 640x480, 1024x768 or 1280x1024 and also Toshiba S-video–1080P up scaling DVD player.

Running the Auto-SYNC Wizard (Analog)

Once the IDEA Auto-SYNC process has completed, the Auto-SYNC Wizard is automatically started to facilitate fine tuning of the video settings. The Auto-SYNC Wizard can be started manually at any time.

To start the Auto-SYNC wizard, you can do one of the following:

- Click the **Skip Intro** to skip the video calibration images information. The 3 page introduction provides basic information about image calibration and introduces the standard image types that are most useful when using the Auto-SYNC Wizard. To view details on the video calibration images, *see* ***Recommended Calibration Images*** *on page* 106.
- To view the video calibration images information as part of the Auto-SYNC wizard, click **Next**.

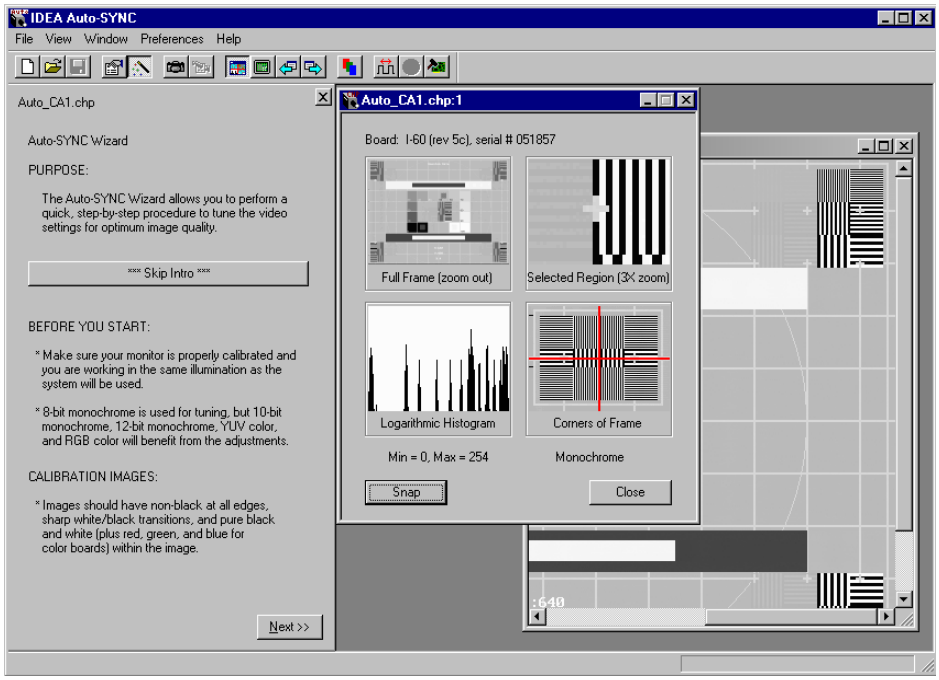


Figure 14: IDEA Auto-SYNC Wizard introductory screen once the CHP file is created

Note: Quantum 802R set to DMT1260G format.

The Multi-view window displays multiple monochrome views of the image (zoom, histogram, etc.) and also displays the board type (and its serial number) that is being used. When using an AccuStream board, the Multi-view window can display either Y-only (luma) grayscale or one of the three RGB color planes. The figure also shows a full-size window that displays the entire image (with scroll bars, if needed). Both windows are useful when running the Auto-SYNC Wizard.

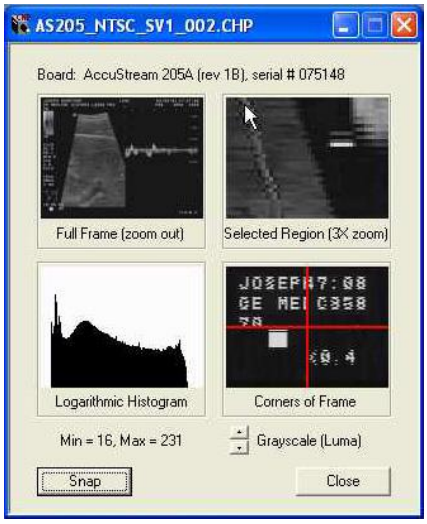


Figure 15: IDEA Auto-SYNC Wizard Multi-view Window

Every page of the Auto-SYNC Wizard includes a pair of **Back**/**Next** buttons for navigation; steps in the Auto-SYNC Wizard can be repeated as needed. Convenient buttons to bring up the **Histogram** (in the multi-view window) or the **Full-Size** view window on the CHP file are available.

Auto-SYNC Wizard

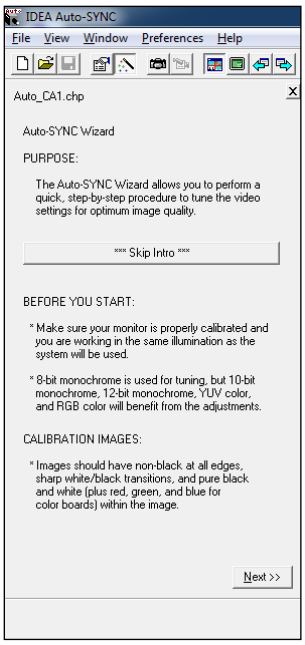


Figure 16: IDEA Auto-SYNC Wizard Information screen

After viewing the Auto-SYNC Wizard introduction, the tuning process begins. There is a large button on the first introduction page that skips to the first tuning step. On the last introduction page is a checkbox that hides the introduction pages the next time the Wizard is used; the user can also enable/disable the introduction from Auto-SYNC's **Preferences** menu.

Note: The Auto-SYNC Wizard process varies slightly for different board types.

AccuStream Auto-SYNC Wizard Step 1: Adjust HTotal for Analog Connections

The first step is to adjust the Horizontal Total (HTotal). The HTotal is the number of pixels per scan line in the video signal; some of these pixels are not part of the active video (e.g., porches which are on the right and left side of the image) so HTotal represents the active plus the inactive video signal measured as pixels. Increasing the HTotal widens the image which increases the aspect ratio.

Note: Be aware of the monitor format (your display, for example, is it 4:3 / 5:4 or 16:9), before adjusting the HTotal. Your display monitor aspect ratio should be set to the same aspect ratio as the video source.

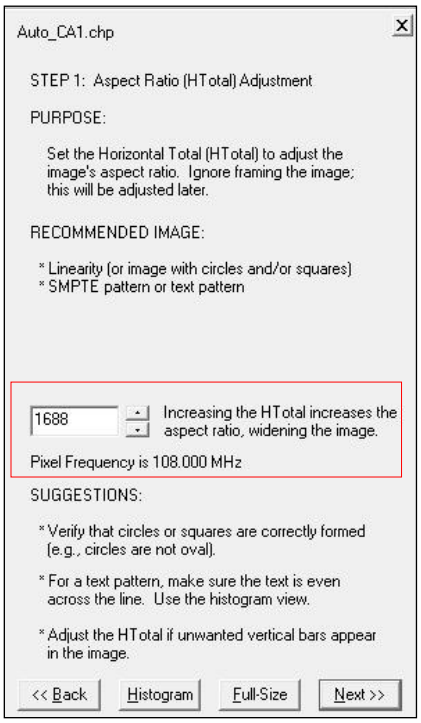


Figure 17: Auto-SYNC Wizard Step 1

HTotal adjustments require a video image that highlights errors in aspect ratio. An image with circles or squares or a text pattern is recommended.

If your video is interlaced, look at the image to see if text or diagonal/curved lines appear ragged. If the text or lines do, try adjusting the Field Polarity to change the ordering of fields/frames. Depending on the video pattern, changes to the field ordering may have invalidated the results of the Auto-SYNC session. You may want to rerun Auto-SYNC to generate a new CHP file.

The HTotal is adjusted by typing a new value into the edit box or using the up/down buttons; the arrow and Page Up/Down keys also work. Changes to the HTotal are reflected in any open views of the CHP file (multi-view, full-size view). Focus on getting the aspect ratio correct; the image framing will be adjusted in a later step.

Aspect Ratio (HTotal) Adjustment Example

This first example shows a video image with the correct values for aspect ratio. Notice that the circle and square shapes are not distorted. Another good way to check aspect ratio is with text images.

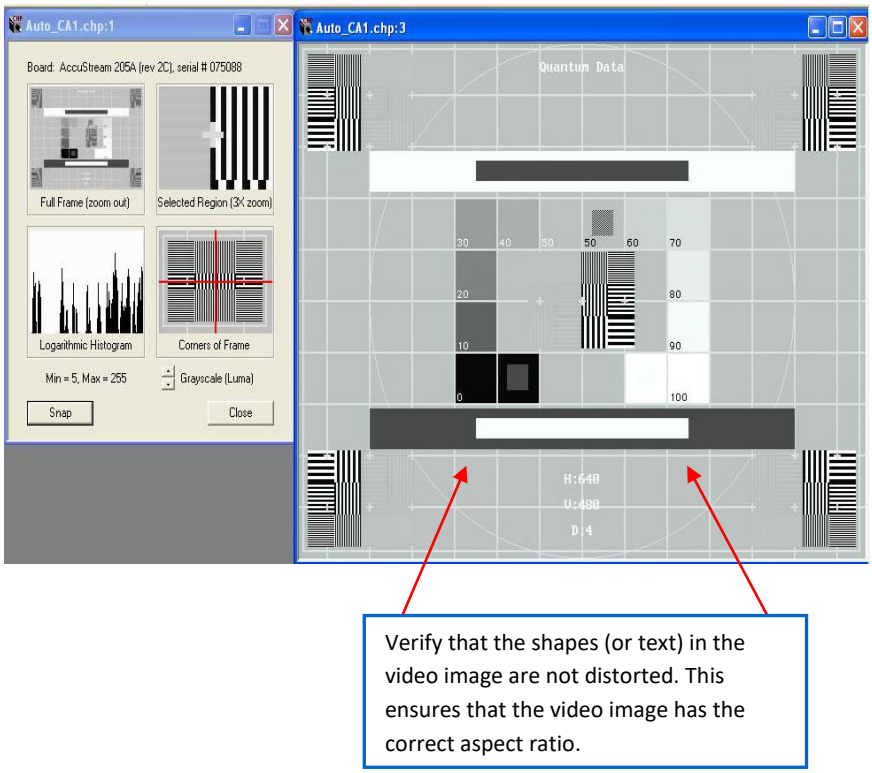


Figure 18: Example of Aspect Ratio (HTotal) with Correct Values

This next example shows a video image that is too narrow. You will notice in this example that the square and circle shapes are distorted vertically. The square and circle images are too narrow.

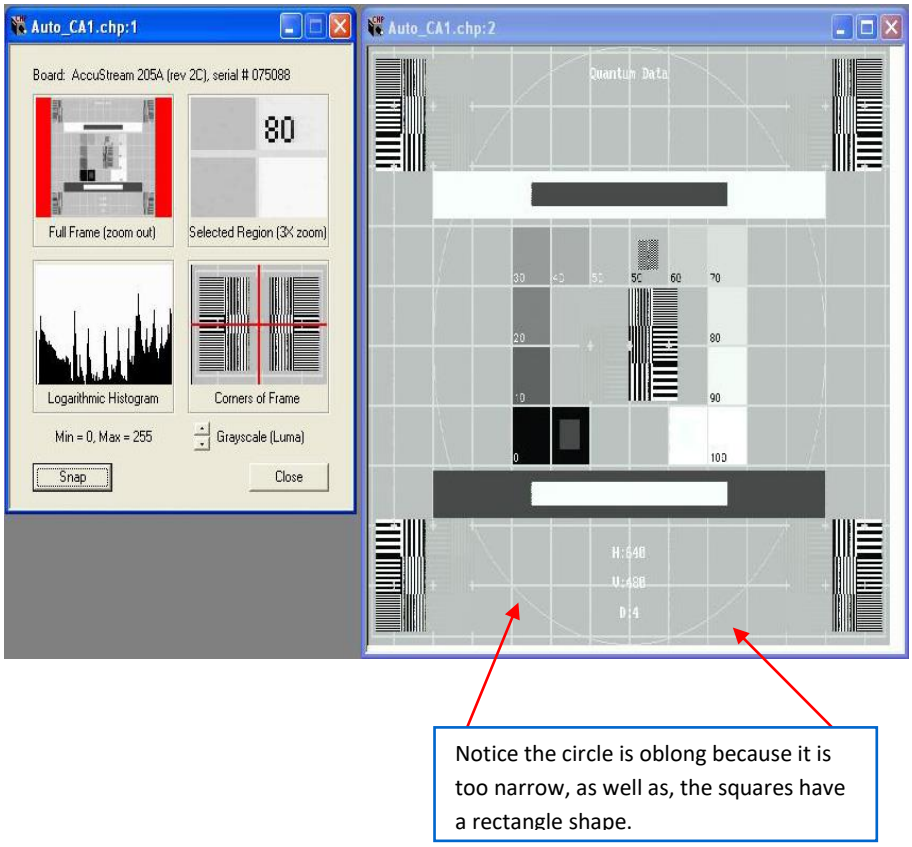
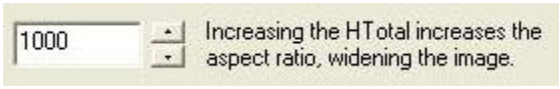


Figure 19: Example of Aspect Ratio (HTotal) that needs a horizontal adjustment

To correct the above example, change the HTOTAL value to a higher value by entering a higher number in the text box or using the up arrow key to change the value. Keep changing the value until the shapes appear correct.



The next example shows a video image that is too wide. The shapes will have the same distortions as shown in the previous example, but horizontally.

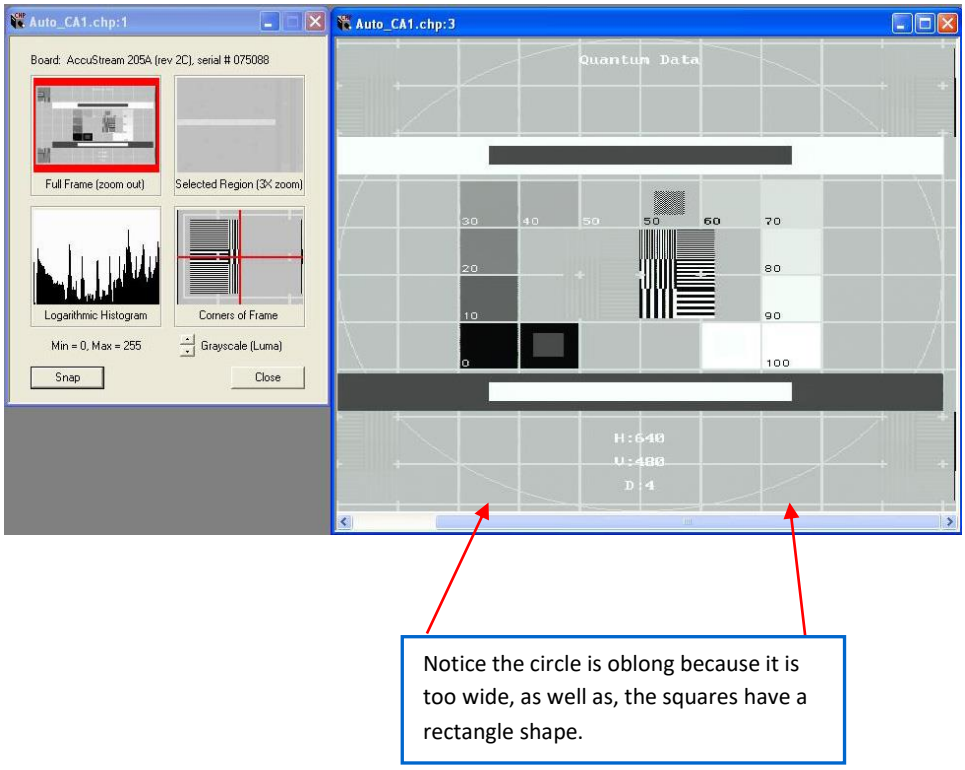
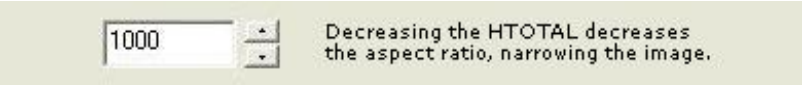


Figure 20: Example of Aspect Ratio (HTotal) that needs a vertical adjustment

To correct the above example, change the HTOTAL value to a lower number by entering a lower number in the field or using the down arrow key to change the value. Keep changing the value until the shapes appear correct.



In this last example, you will see the aspect ratio distorted when viewing a video image with text.

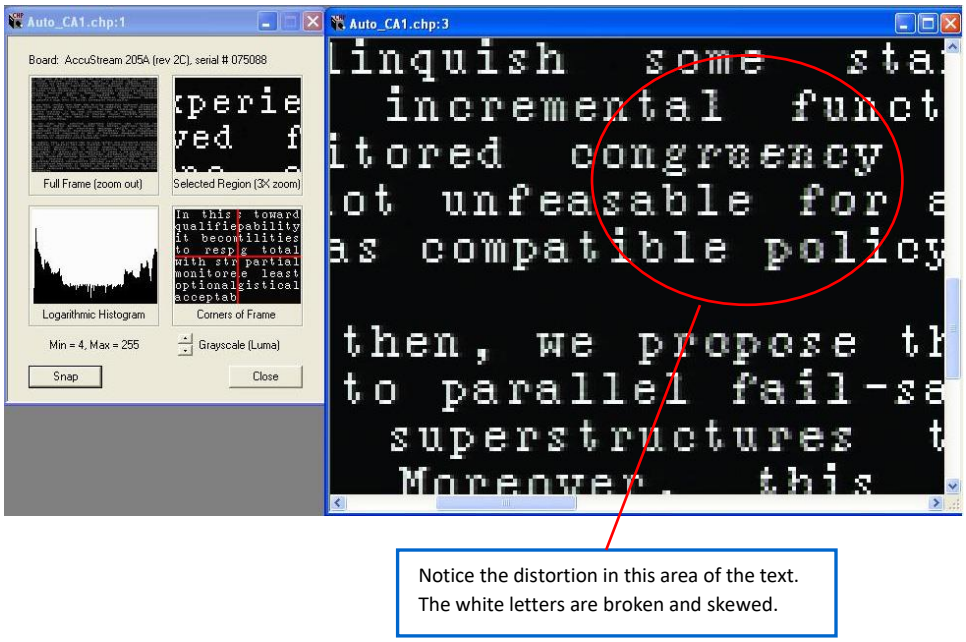


Figure 21: Example of Aspect Ratio with text that needs adjustment

When text is distorted, it is recommended that you change the Field Polarity.

TIPS:

Use the Histogram to view changes needed, if any. Use this Auto-SYNC step to make sure of the following:

- Make changes to HTOTAL if you have issues with any of the following:

Circles are not concentric

Squares are not “square”

Text is not even and consistent across

Have fine vertical lines in the image.

- Make aspect ratio adjustments through HTotal:

Increase HTotal to widen image

Decrease HTotal to narrow image

AccuStream Auto-SYNC Wizard Step 2: Adjust Phase Delay for Analog Connections

The next step is to adjust the phase delay. The phase delay determines how the pixels in the video signal are sampled and acts as an offset to the pixel clock. When the phase is set correctly, the pixels are sampled at their peak values providing the best image quality. Sampling the pixels with the wrong phase offset can lead to poor results.

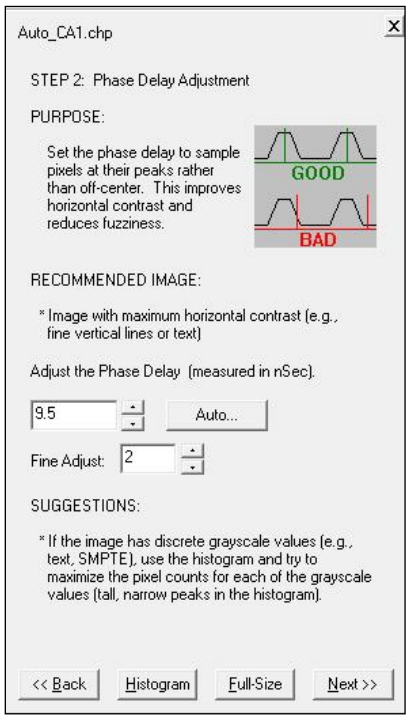


Figure 22: Auto-SYNC Wizard Step 2

Phase delay adjustments require a video image that has maximum horizontal contrast. An image with a grill pattern or high contrast text is recommended.

The Phase Delay is adjusted in the standard way by typing a new value, using the up/down buttons, or using the arrow/Page Up/Page Down keys. The histogram window in the multi-view window can be especially helpful to see the effects of minor changes.

The AccuStream boards support Fine Phase adjustment. There are 32 discrete phase values that allow finer tuning of the phase adjustments.

Auto-SYNC will attempt to recalculate the optimal phase delay setting if you click the "Auto..." button. Auto-SYNC prompts for a selection of the phase determination algorithm; the algorithms are described earlier in this section. The phase determination algorithms vary in time to complete and thoroughness of testing and it

is recommended that the faster algorithms be used unless the results are not satisfactory.

Example

In the first example, a properly aligned video image is shown. Notice how the there is high contrast between the white text and black background with no distortions. This image is properly aligned.

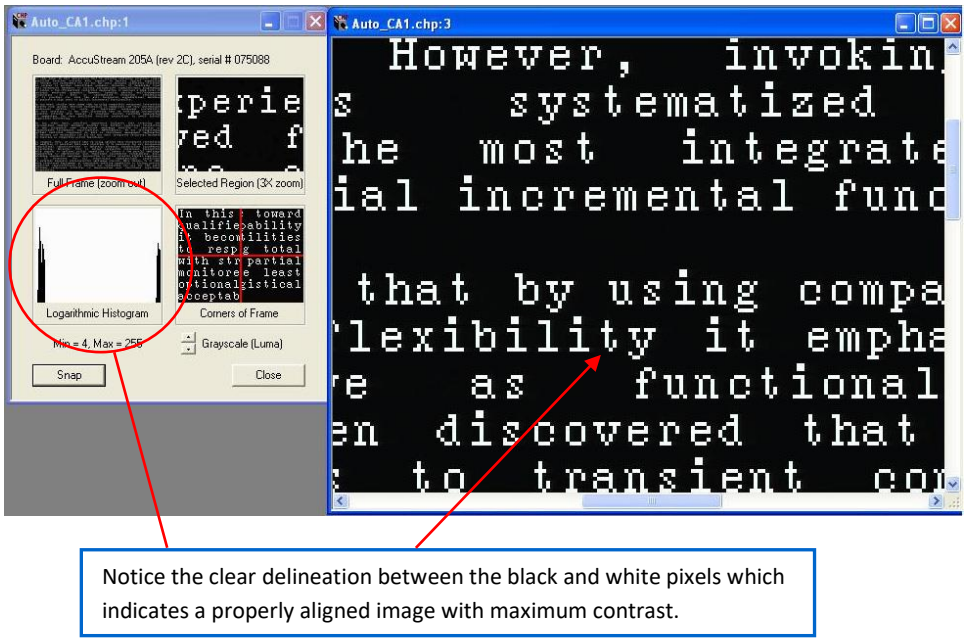


Figure 23: Example of text with good phase delay values

In the next example, you can see the contrast between the white text and black background is blurred. Black and white pixels are mixed which indicates that it is poorly aligned.

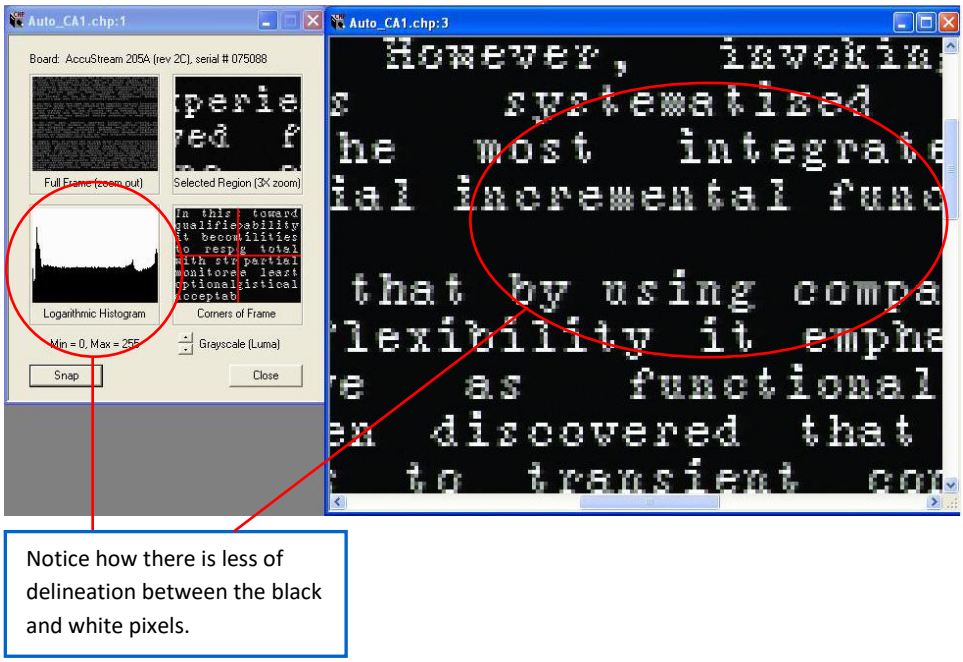


Figure 24: Example of text that needs a phase delay adjustment

It is recommended that you run Auto… first to see if this fixes the phase delay for the video image. If this does not you need to the phase delay but entering values in the Phase Delay text box or using the up/down arrows to change the value.

Tips:

The following illustration phase delay properly aligned and poorly aligned. Use the Phase Delay Adjustment step to make adjustments if your image is not properly aligned. Also, see ***AccuStream Auto-SYNC Wizard Step 2: Adjust Phase Delay.***

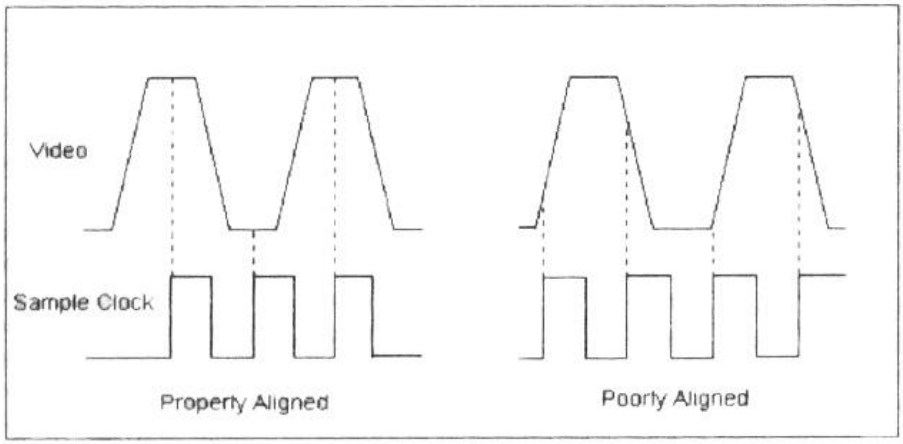


Figure 25: Phase delay adjustment illustration of properly and poorly aligned images

AccuStream Auto-SYNC Wizard Step 3: Adjust Left/Right Framing for Analog Connections

The next step is to adjust the left/right framing of the image. The left edge is set first and then the image width. The left edge is set by the value of the Horizontal Back Sync (HBS), which represents the period between a horizontal sync pulse and the start of active video. The image width is set as the number of pixels per line.

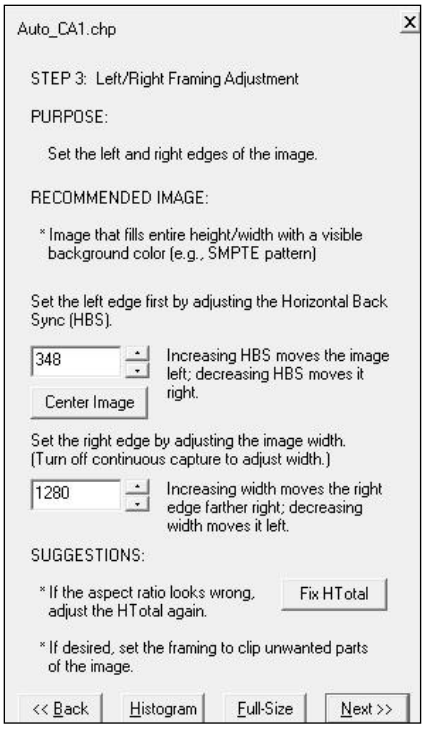


Figure 26: Auto-SYNC Wizard Step 3

Framing adjustments require an image that has a non-black background that extends across the entire image. The SMPTE pattern is recommended.

The Horizontal Back Sync (HBS) is adjusted in the standard way. Increasing the HBS moves the image to the left. Set the HBS so that the image's background extends fully to the left of the viewing window.

Once the HBS is set, the image width can be adjusted in the standard way until the full width of the image appears in the viewing window. Now that the full image width is visible, it is possible that the aspect ratio was incorrectly set in Step 1; click the **<<Back** button to go to Step 1 to fix it.

Note: When adjusting HBS, the number of pixels per line is adjusted so that the image extends to the left of the viewing window.

Example

This first example shows a video image with the correct values for Left/Right Framing. Notice that both edges of the video image align against the edge; there is no distortion or clipping.

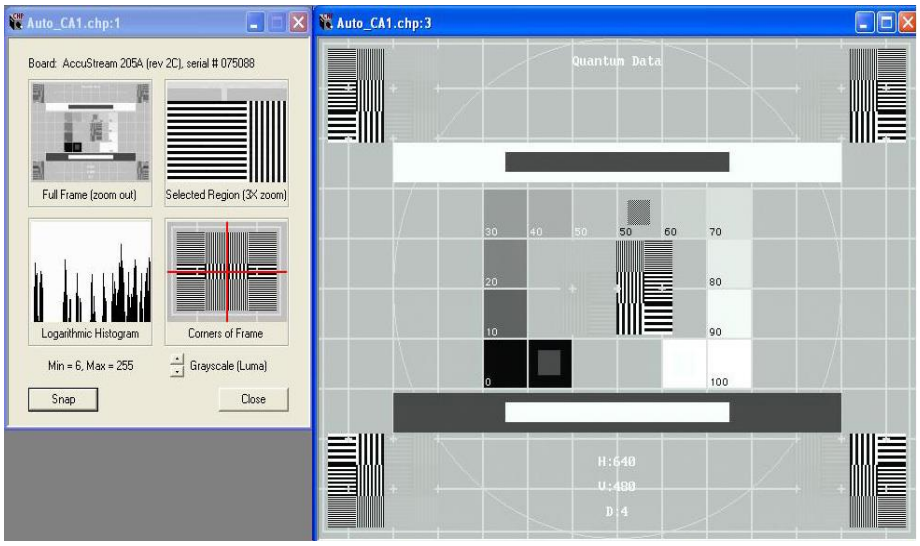


Figure 27: Example of proper video image framing

In the next example, the video image is too large and is clipped on its left edge.

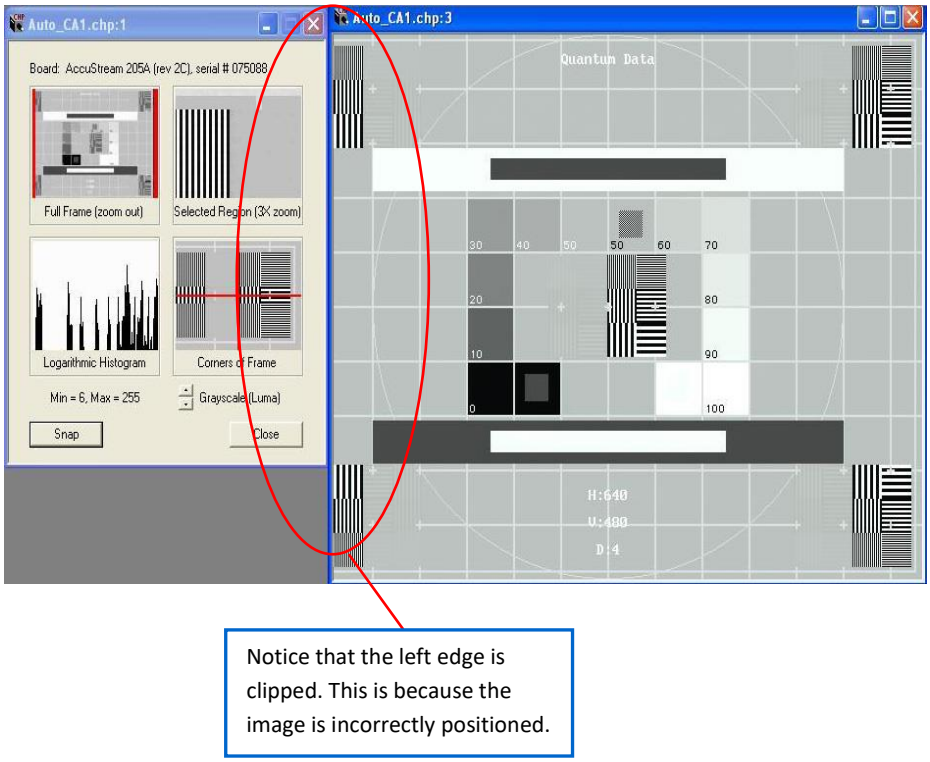


Figure 28: Example of framing values too large

To adjust the image, decrease the HBS value to move the image to the right. This adjustment will result in the whole image displaying without a clipped left edge.

In the next example, the video image is too small. The image is too far from the left edge.

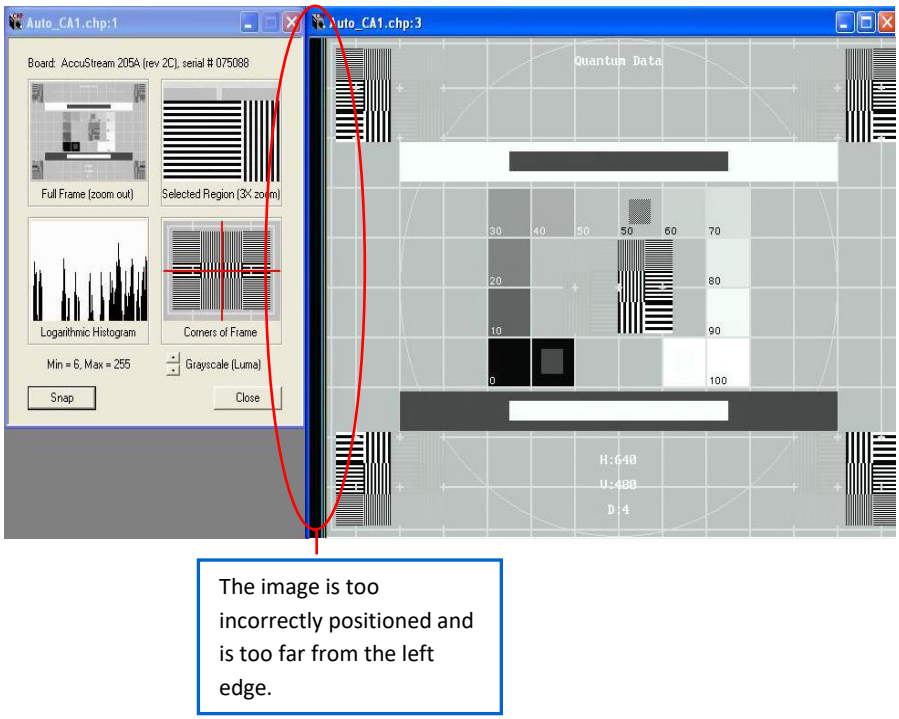


Figure 29: Example of framing values too small

To adjust the image, increase the HBS value to move the image to the left edge.

In the next example, the image width is too small and needs to increase the width to the right edge.

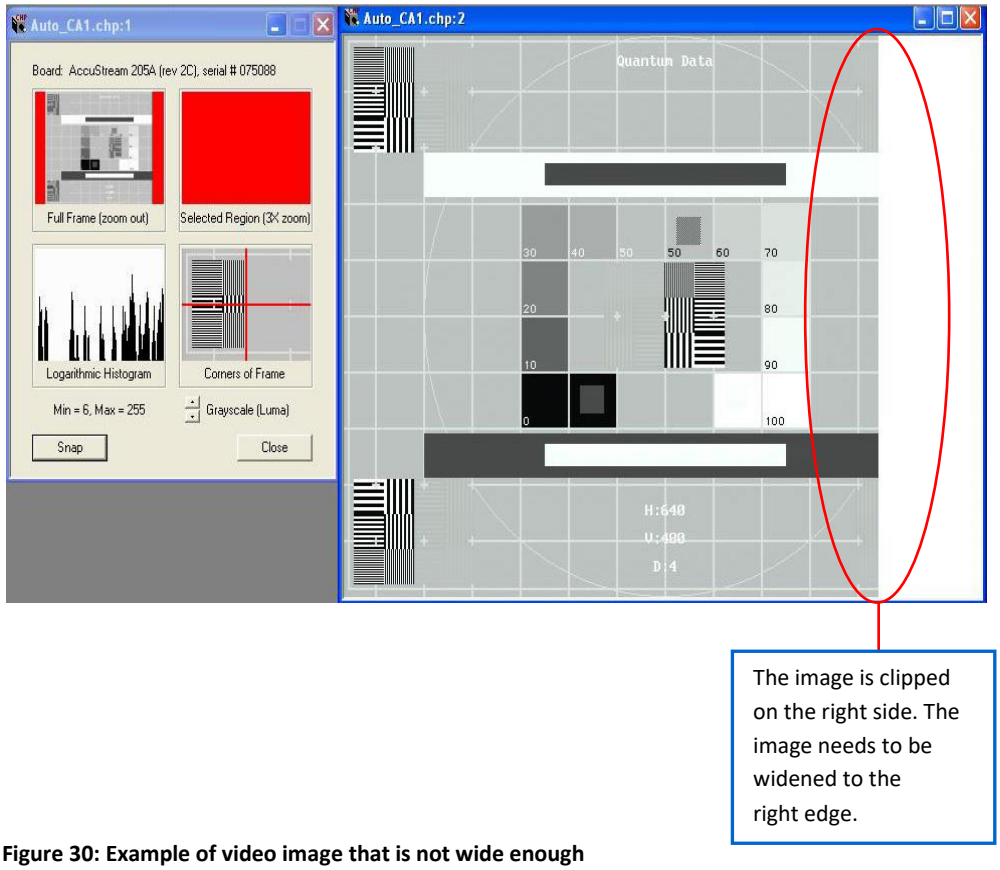


Figure 30: Example of video image that is not wide enough

To adjust the video image, increase the image width to widen the image to the right edge.

In the next example, the image width is too wide.

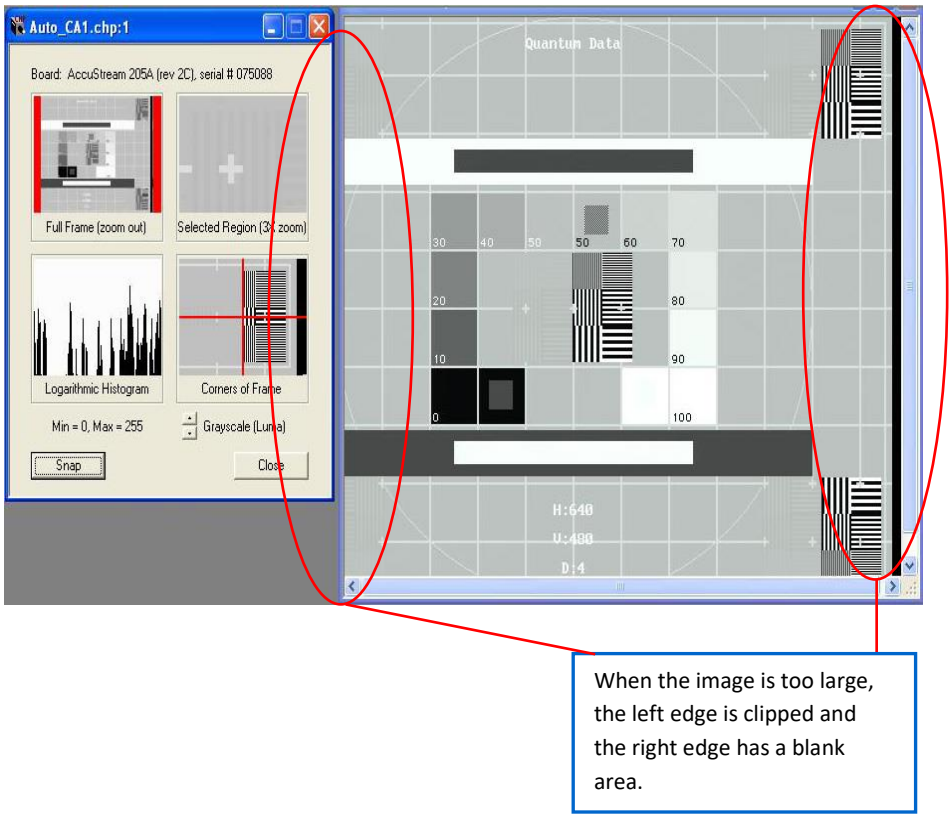


Figure 31: Example of video image that is too wide

To adjust the video image, decrease the image width to fit into the left and right edges.

TIPS:

When making left/right framing adjustments:

- Adjust the left edge with HBS – increase HBS moves image to left; decrease HBS moves image to right.

Use to clip the image's left side.

Use to define horizontal Area of Interest (AOI) position.

- Adjust the right edge with image width – increase width increases right edge; decrease width decreases the left edge.

Use to clip right side of image.

Use to define horizontal size of AOI.

AccuStream Auto-SYNC Wizard Step 4: Adjust Top/Bottom Framing for Analog Connections

The next step is to adjust the top/bottom framing of the image. The top edge is set first and then the image height. The top edge is set by the value of the Vertical Back Porch (VBP), which represents the number of vertical blanking lines in the video signal from the trailing edge of the vertical sync to the start of active video. The image height is set as the number of lines in the image.

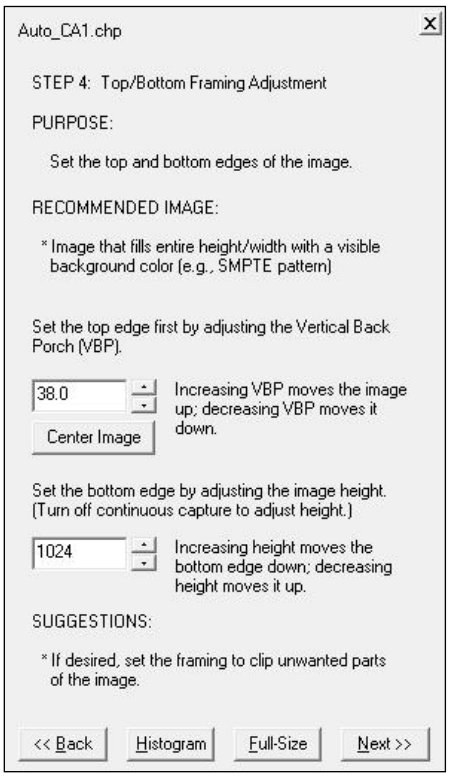


Figure 32: Auto-SYNC Wizard Step 4

Framing adjustments require an image that has a non-black background that extends image upward. Set the VBP so that the image's background extends fully to the top of the viewing window.

Once the VBP is set, the image width can be adjusted in the standard way until the full height of the image appears in the viewing window.

Examples

In this example, the video image is too large and extends beyond the top edge.

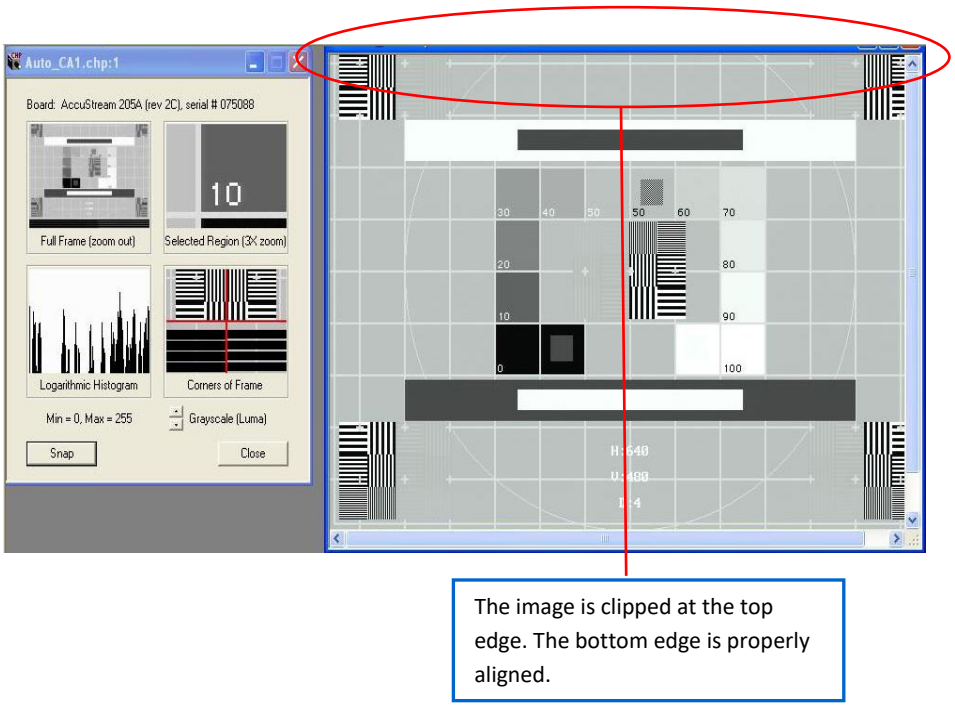


Figure 33: Example of video image that is clipped at the top edge

To adjust the image, decrease the VBP to move the image down. This will align the video image to the top edge.

In the next example, the video image is too small. The top edge is clipped and the bottom edge is above the bottom edge of the image.

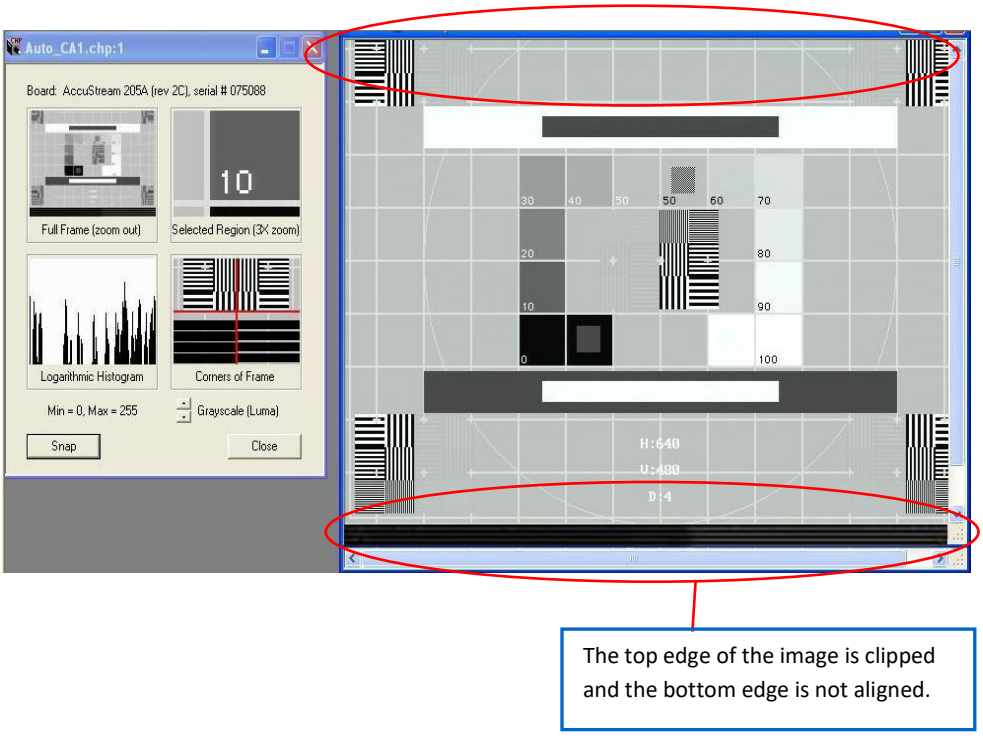


Figure 34: Example of video image that is clipped at the top edge and is not aligned with the bottom edge

To adjust the image, increase the VBP to increase the size of the image. This will align the video image to the top edge.

In the next example, the video image is too small and is not reaching the bottom edge.

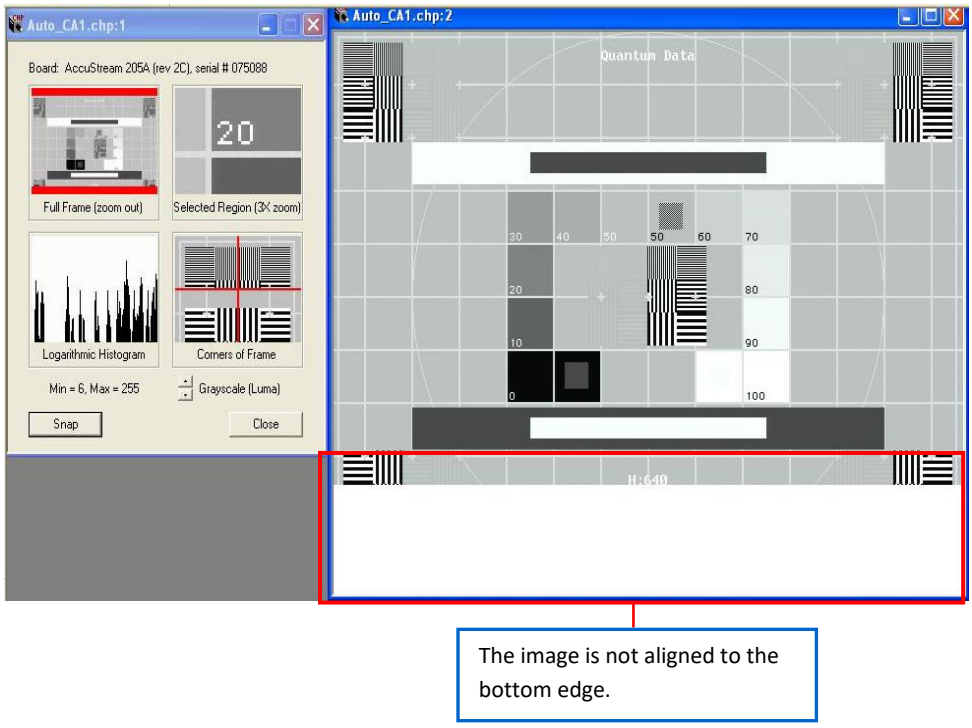


Figure 35: Example of image that is too far from the bottom edge

To adjust the image, increase the height to increase the bottom edge. This will align the video image to bottom edge.

In the next example, the video image is too large and is distorted at the bottom edge.

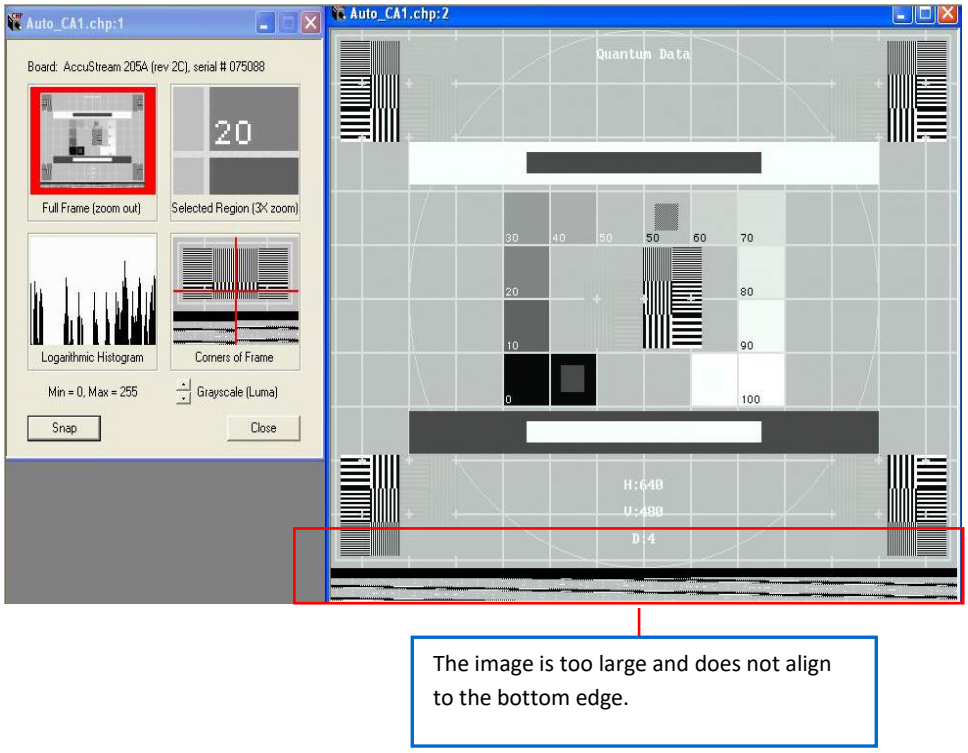


Figure 36: Example of video image that is not aligned to the bottom edge

To adjust the image, decrease the height to decrease the bottom edge. This will align the video image to bottom edge.

TIPS:

When making top/bottom framing adjustments:

- Adjust the top edge with VBP – increase VBP moves image up; decrease VBP moves image down.

Use to clip the top of image

Use to define vertical AOI position

- Adjust bottom edge with height – increase height increases bottom edge; decrease height decreases bottom edge.

Use to clip edge of image

Use to define vertical size of AOI

AccuStream Auto-SYNC Wizard Step 5: Adjust Brightness and Contrast for Analog Connections

The next step is to adjust the brightness and contrast of the image. It is normal for the pixels to range from 0 to 254 to insure you're not clipping the white or black pixels. The frame grabber's maximum range is 0-255.

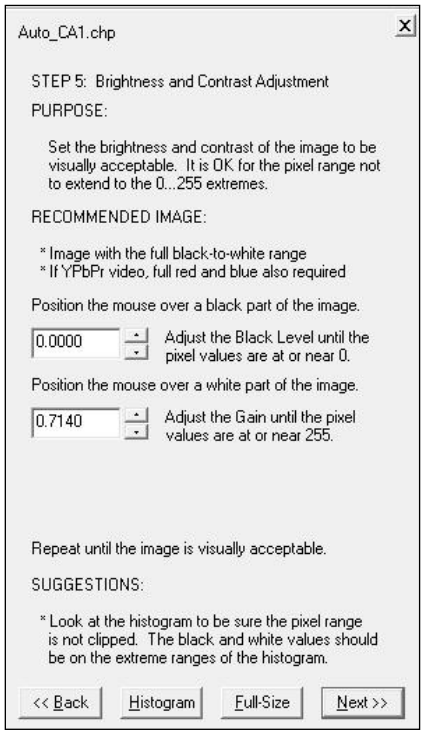


Figure 37: Auto-SYNC Wizard Step 5

Brightness and contrast adjustments require a video image that has the full black-to-white range. Images with a text pattern are recommended. The histogram is very useful for this step so the multi-view window is recommended.

Position the mouse over the blackest part of the image. Adjust the Brightness value in the standard way. Shifting the Brightness changes the pixel values; these changes are visible either in the pixel value reader (in the lower right of Auto-SYNC's status bar) or in the histogram. The goal is to have the black pixels correspond to pixel values near 1.

Once the Brightness is set, move the mouse to the whitest part of the image. Adjust the Contrast value until the white pixels correspond to values near 254.

Changing the Contrast may affect the results of the Brightness adjustment, so this process must be repeated iteratively until the desired brightness and contrast are achieved. Watch the histogram to be sure that the range of pixel values extends from 0 to 254 and that not too many pixels are being mapped to these extremes (i.e., near-black is mapped to total black).

Examples

In this first example, the video image has the correct settings for the brightness and contrast. In this image, the mouse is moved to the black part image to show the value is correct at the 0,0,0 setting. For contrast, you would move the cursor over the white part of the image where the correct setting would be 255,255,255.

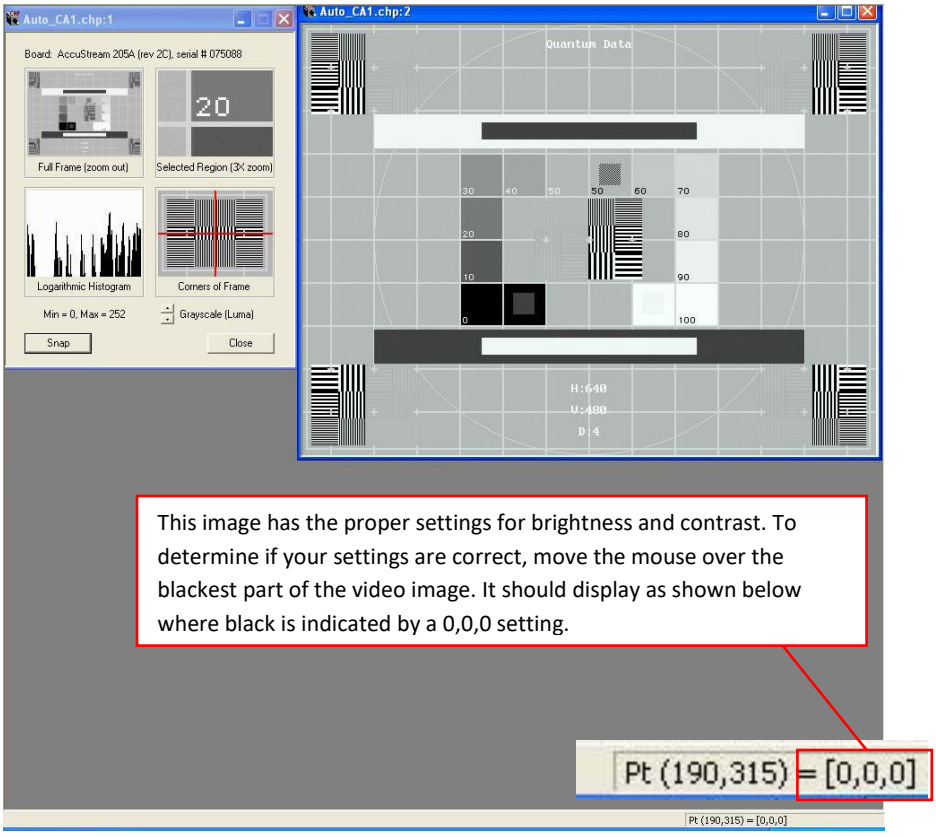


Figure 38: Example of video image with proper settings for brightness and contrast

In this next example, the black or brightness setting is set too low.

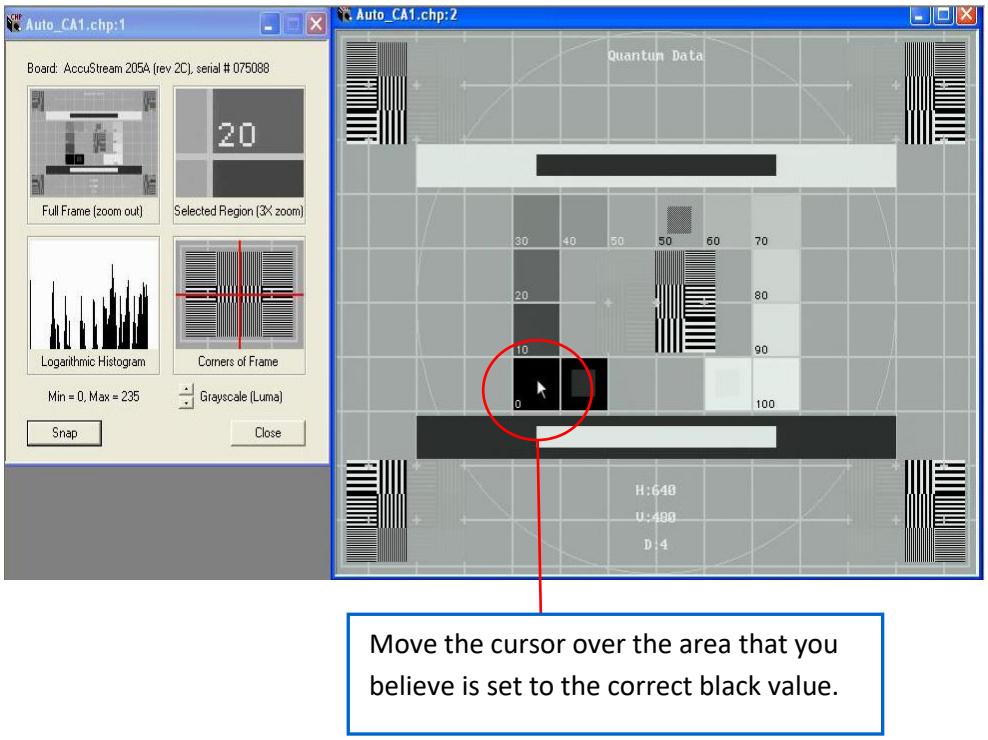


Figure 39: Example of video image where the brightness (Black Level) is too dark

In order to adjust the setting, do the following:

1. Click your mouse in the Brightness field.
2. Move your mouse over the black area of the image until you find the value 0,0,0 in the bottom right hand corner. For example, in the screen example below, move the mouse to the black box labeled.
3. Press the up arrow key once to see if the 0,0,0 value increases. If it does not increase above 0,0,0, then the black value is set too low. Keep pressing the up arrow until you reach the next value above 0,0,0.
4. Once you have reached the next value above 0,0,0, then use the down arrow to move back to the 0,0,0 value. The Brightness is now set properly

In this next example, the value for Black is set too high. This means when you move the mouse cursor over the area which you believe it is set to the correct Black value of 0,0,0, it is higher than that value. In this example, you can see the value is set to 0,3,9.

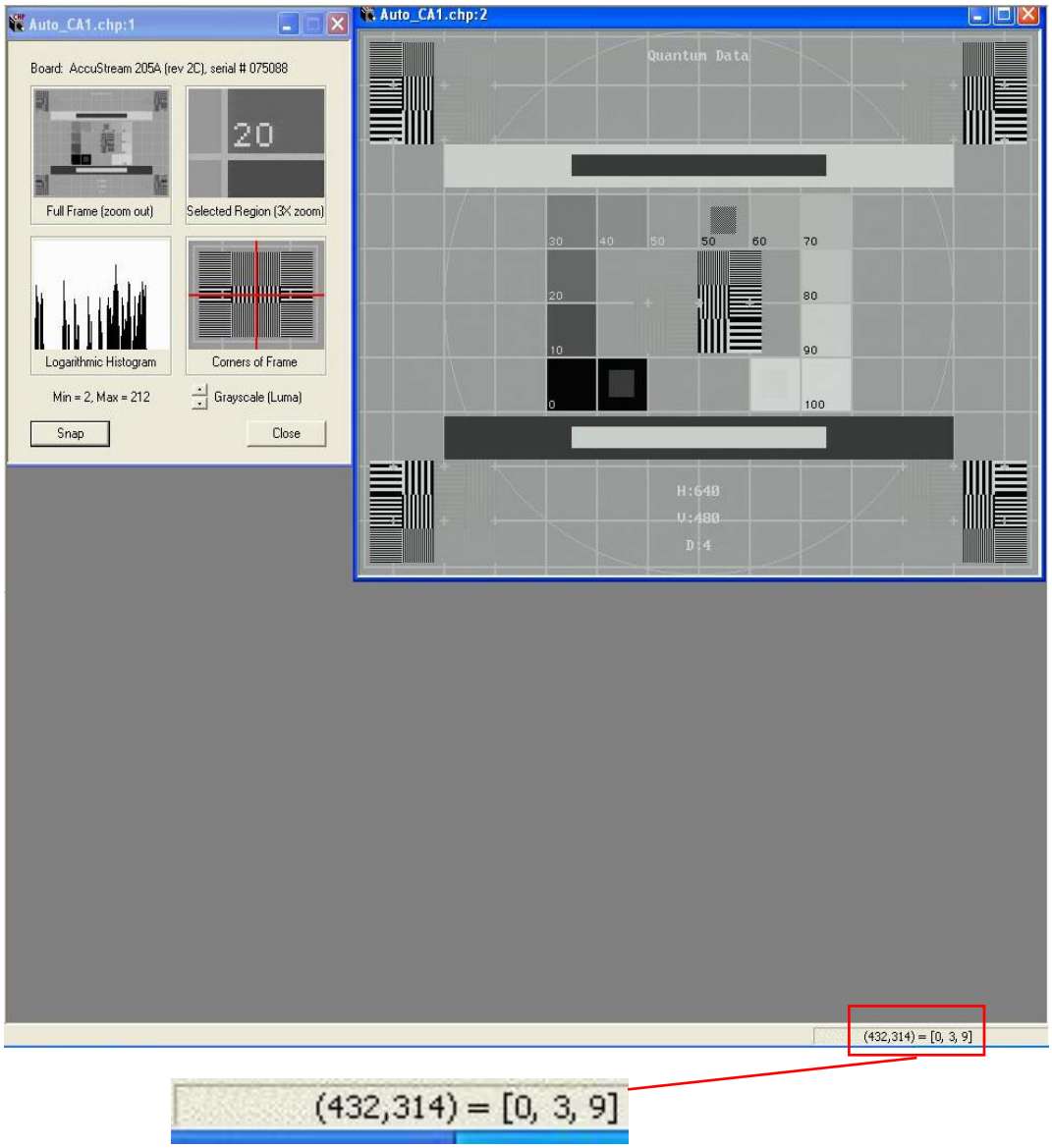


Figure 40: Example of video image where the brightness setting (Black Level) is too high

To adjust this value to the correct value for Black, do the following:

1. Click your mouse cursor over the Black field on the left hand side.
2. Move your mouse cursor over the lowest Contrast (Black) value on the video image.
3. Use the down arrow key to move the Brightness (for Black) setting to 0,0,0 which is displayed in the bottom right hand corner. Stop pressing the arrow key as soon as you reach the 0,0,0 level since if you continue to press the key, the Black Level value will be set too low.

The next example shows how to adjust the Contrast value when it is set too low. In this example, the Contrast is based on the white level should be set to 255,255,255.

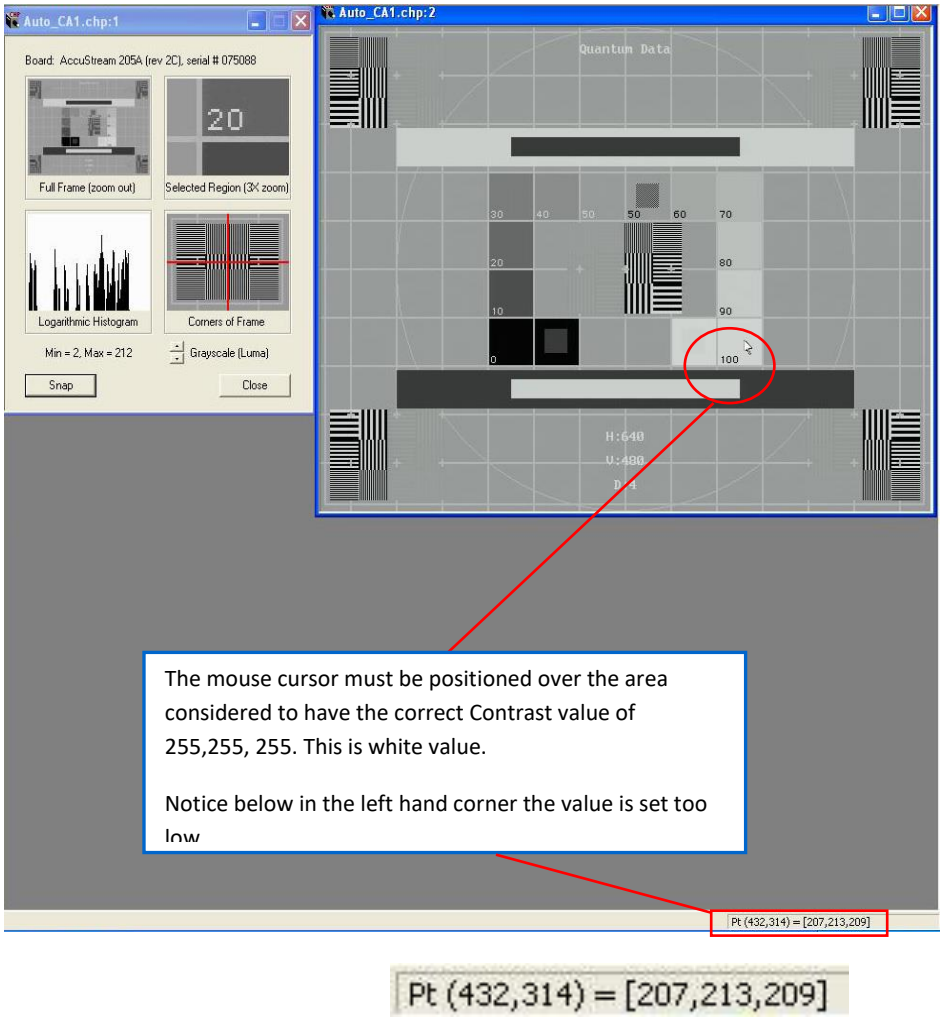


Figure 41: Example of video image where the contrast (White Level) is set too low

To adjust this value, do the following:

1. Click your mouse cursor over the Contrast field on the left hand side.
2. Move your mouse cursor over the lowest Contrast (White) value on the video image.
3. Use the up arrow key to move the Contrast setting to 255,255,255 which is displayed in the bottom right hand corner. Stop pressing the arrow key as soon as you reach the 255,255,255 level since if you continue to press the key, the Contrast value will be set too high for contrast.

In this final example, the Contrast value is set too high. This means that even though it appears that the value is set to 255,255,255, it is really set above that value due to the lack of contrast with the surrounding white squares.

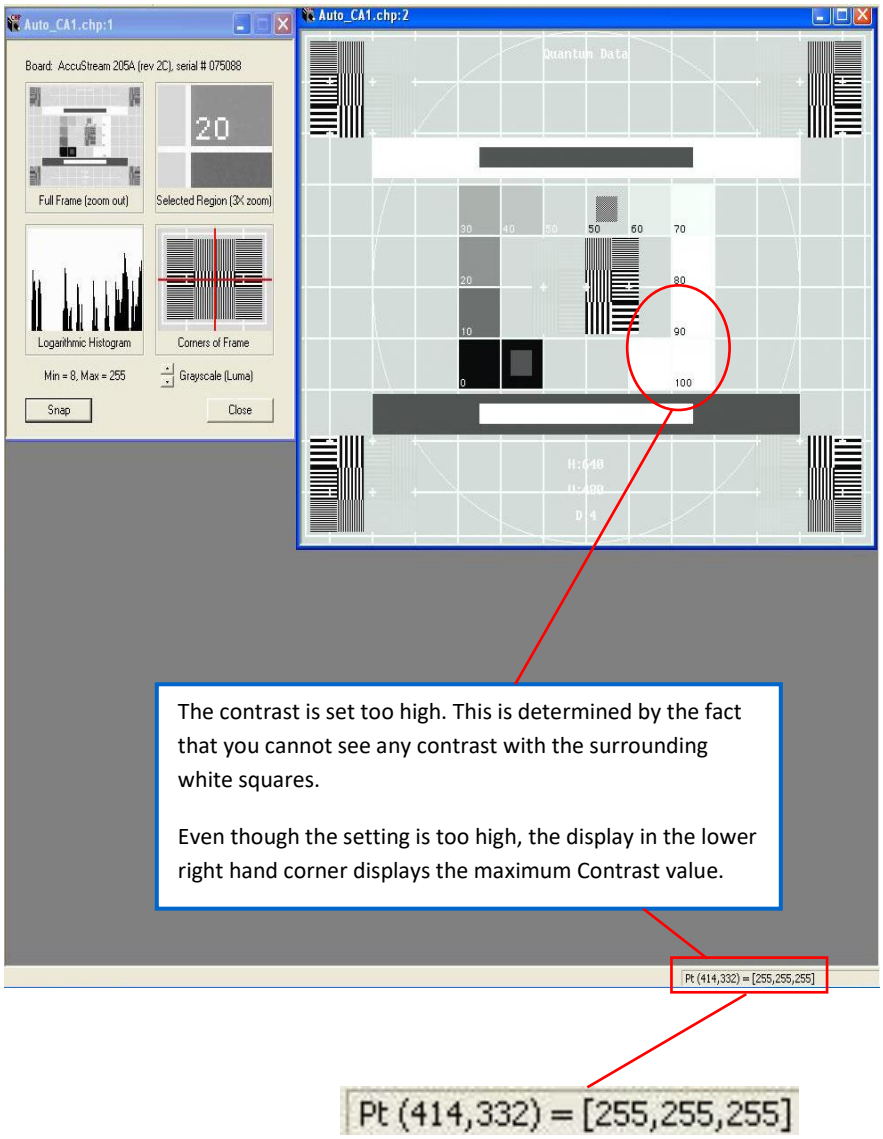


Figure 42: Example of video image where the Contrast (White Level) is set too high

To adjust the contrast value that is set too high, do the following:

1. Click your mouse cursor over the Contrast field on the left hand side.
2. Move your mouse cursor over the lowest Contrast (White) value on the video image which in this case is 255,255,255.
3. Use the down arrow key to move the Contrast setting to the next value below 255,255,255 which is displayed in the bottom right hand corner. Stop pressing the arrow key as soon as you reach the first value below 255,255,255.
4. Use the up arrow to return to the next value up, which should be 255,255,255. The Contrast is now properly set.

Tips:

When making Brightness/Contrast adjustments:

- Have the pixel reader in Full Window mode.
- Have the Histogram in Quad Window mode.
- Adjust Brightness for the level of Black.
- Adjust Contrast for level of White.
- Ensure Brightness/Contrast is not clipped.

AccuStream Auto-SYNC Wizard Step 6: Adjust Miscellaneous Settings for Analog Connections

The final step of the Auto-SYNC Wizard attempts to correct some basic problems that can occur with some video signals.

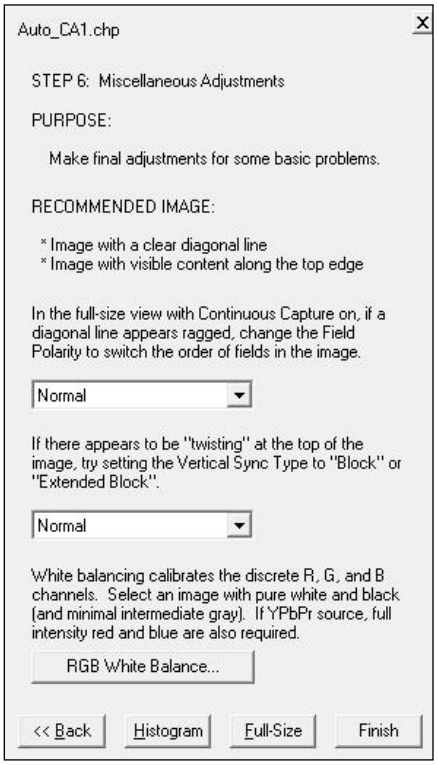


Figure 43: Auto-SYNC Wizard Step 6

A full-size view on an image that has content along the top edge and contains some diagonal lines or text is recommended; the SMPTE or linearity patterns are ideal.

If diagonal lines appear unusually ragged or text in the image appears broken (“shaken”), change the Field Polarity value. This adjusts the order in which the fields of the image are assembled and reverses the ordering of adjacent scan lines in the video.

If there appears to be some twisting at the top edge of the image, the Vertical Sync Type may need to be adjusted from “Normal” to “Block” or “Extended Block”.

The user can run the White Balance procedure to adjust the red, green, and blue channel gain and offset compensation values for the particular source to assure that pure white and pure black are properly calibrated. White balancing should be performed when the video source changes.

Click the **Finish** button to complete the Auto-SYNC Wizard process. You can restart the Auto-SYNC Wizard at anytime by selecting a CHP file and clicking the Auto-SYNC Wizard toolbar icon or by selecting the **View > Auto-SYNC Wizard** menu item.

Example

In this example, the first image shows a video image in motion. Notice there is no broken or distorted lines.

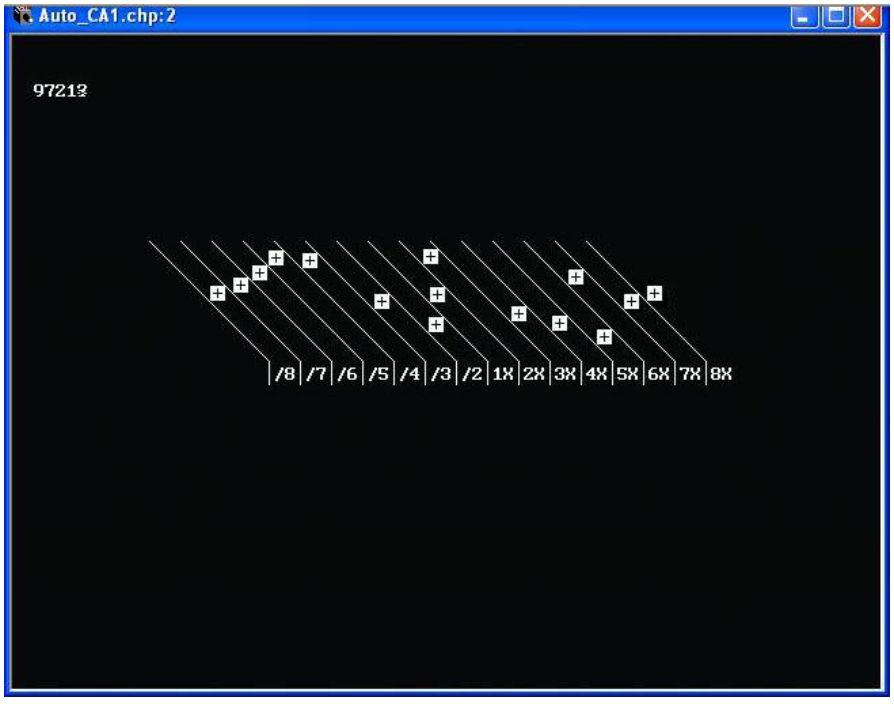


Figure 44: Example of video image with the proper Field Polarity setting

In the next example, the lines are broken and distorted. In order to adjust the image, change the Field Polarity.

Figure 45: Example of video image with the improper Field Polarity setting

Tips:

- Field Polarity

Fields are jagged in interlaced image – select Odd Field Up

- Vertical Sync Type

Flagging at the top of the image – select Block as source

- Miscellaneous Information

One frame is one screen of visible data

A frame of data contains visible AND non-displayed information, image blanking and synchronization

Interlaced signals are comprised of an Odd and Even field of separate Odd and Even lines

Two fields comprise a frame

Non-interlaced, also called progressive scan, is one frame of sequential lines

Fields must be paired properly and “ordered” properly

After the Auto-SYNC Wizard is Finished for Analog Connections

Once the user finishes running the IDEA Auto-SYNC Wizard, the Video Setting controls are displayed.

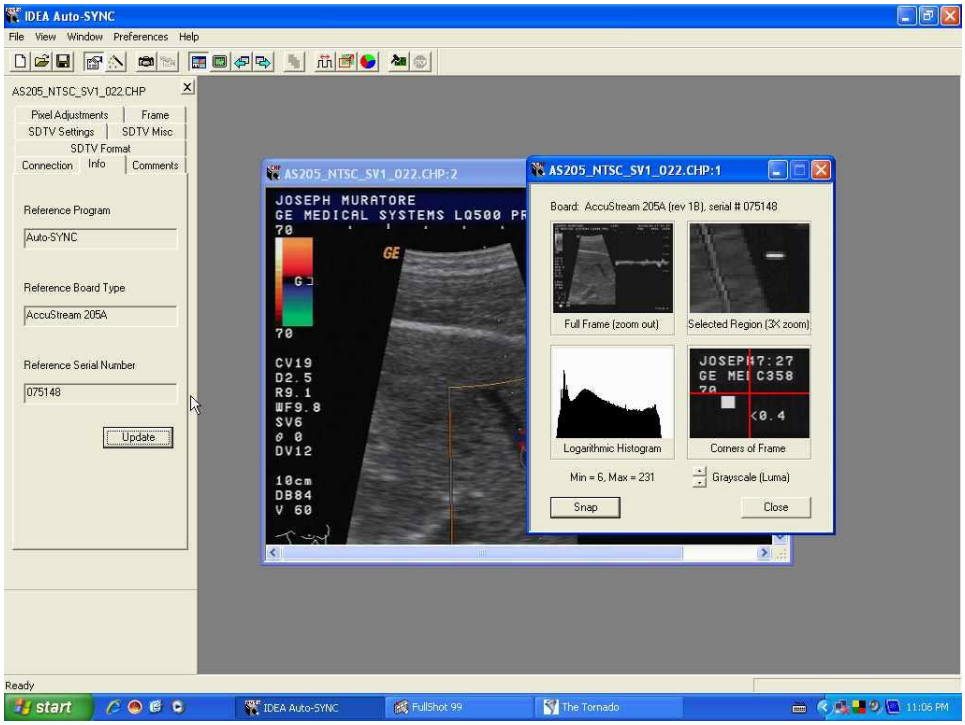


Figure 46: IDEA Auto-SYNC screen after completing Auto-SYNC Wizard.

The window on the right side is the same “Multi-view window” used by the Auto-SYNC Wizard. To open a new full-size window:

- click the “Full-size image window” icon from the toolbar or
- click View > Full-size image window (<F10>).

The Full-size image window will be RGB or Monochrome for DVI-Analog connections or NTSC/PAL Video composite for S-Video Composite connections.

Once you get to this point, you may now either make changes to your Video settings or exit IDEA Auto-SYNC and use a sample Example program.

Auto-SYNC Video Setting Controls

Viewing the Info Setting

The **Info** options provide information concerning the application that created the current CHP file, the AccuStream board type and the serial number. Click **Update** for IDEA Auto-SYNC to verify and/or modify this information.

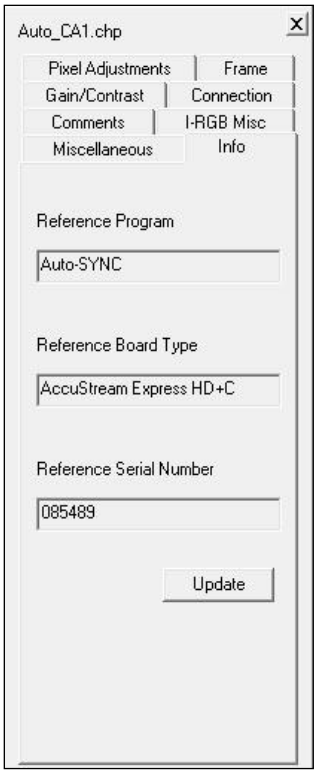


Figure 47: Info Setting

Changing the Comments

When you create a CHP file, you have the option to add your own personal comments to the file. The Comments option allows you to add additional comments at any time.

Figure 48: Comments for Video Settings

Changing Connection Settings

The options in the **Connection** tab concern the physical connection of the AccuStream board, as well as its channel and sync source. If there are multiple AccuStream boards installed in the current system or if you are setting up multiple channels, you should also have multiple CHP files.

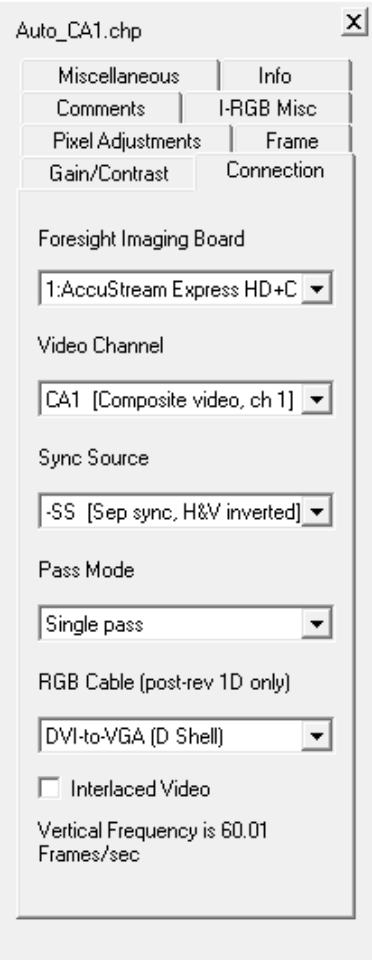


Figure 49: Connection video settings

The **Connection** tab is used to select boards, but is not used to select the video source; those selections are grayed out.

Changing the Miscellaneous Settings

Use the Miscellaneous tab to edit the following video settings:

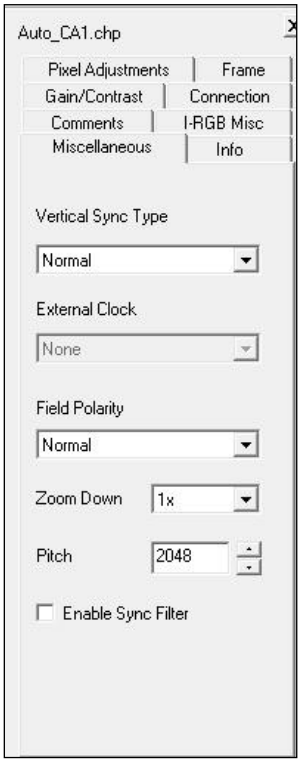
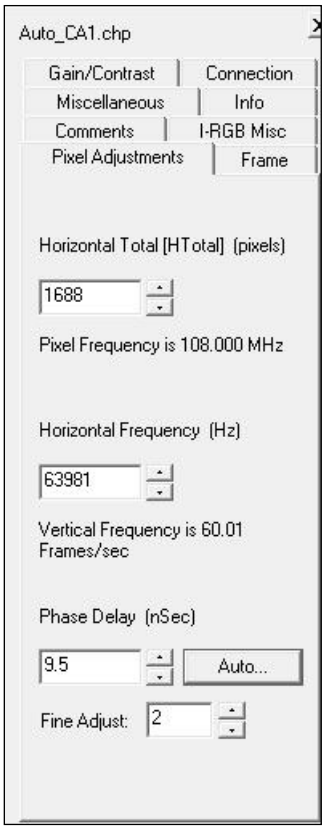


Figure 50: Miscellaneous Settings

Setting	Description
Vertical Sync Type	Specifies the type of sync information that is available during the vertical sync and vertical front porch periods.
External Clock	No longer supported.
Field Polarity	Specifies the order of the signal fields.
Zoom Down	Old method of scaling. No longer supported.
Pitch	Specifies an absolute width reserved for one line of video in frame grabber (i.e. video board) memory.)
Enable Sync Filter	Used only in the accustream170 series frame grabbers. Not supported in the AS170+, 205a, HD+ and HD+C series frame grabbers.

Changing Pixel Adjustments Settings

The **Pixel Adjustments** setting tab is used for aligning / adjusting the frame grabbers sync circuitry to the incoming video signal.



Adjustment video settings

HTotal:	Sets the maximum permitted overall image width. Increasing the HTotal widens the image, increasing the aspect ratio. Decreasing the Htotal value shrinks the overall image width thus decreasing the aspect ratio.
Horizontal Frequency:	The number of scan lines transmitted per second in the video signal. Not usually user adjustable unless deliberately sub sampling the incoming video.
Phase delay:	Specifies the phase of the sampling clock, which is a delay relative to horizontal sync. This allows the sampling operation to be optimally placed relative to the pixel wave form. Use to eliminate shadows or blurriness in text or vertical lines in the image.
Auto..:	The "Auto..." button attempts to automatically recalculate the optimal phase delay setting. If the board supports fine phase adjustment, the phase algorithm will be ignored and the fine phase adjustment value will be set instead. Auto-SYNC will prompt the user to select a phase determination algorithm then begin to scan.

Figure 51: Pixel

Important: When running Auto-SYNC, it is recommended that you use a video image that's representative of the image being captured.

Option	Value	Description
Horizontal Total	1688 pixels	Total number of pixels in one video scan-line.
Horizontal Frequency	63981 Hz	Number of scan lines transmitted per second in the video signal.
Phase Delay	9.5 nSec	Phase of the sampling clock.
Fine Adjust	2	Sets fine phase adjustment value for AccuStream boards.

Auto-SYNC Phase Determination Method uses various algorithms that vary in time to complete and thoroughness of testing. It is recommended that the faster algorithms be used unless the results are not satisfactory. This feature is also available from the Auto-SYNC toolbar

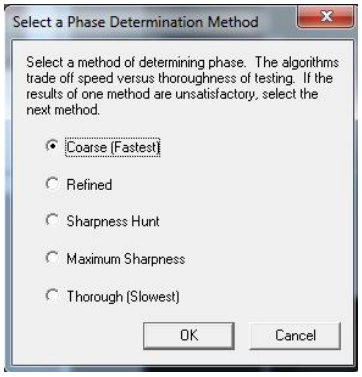


Figure 52: Select a Phase Determination Algorithm

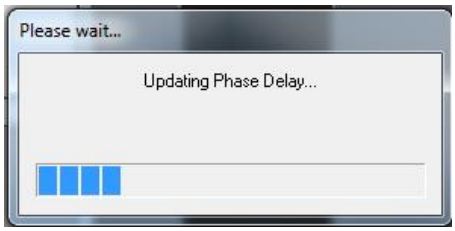


Figure 53: Phase Determination Status

You can review the results by looking at the Logarithmic Histogram. The following example shows the change that occurs when performed on an analog video.

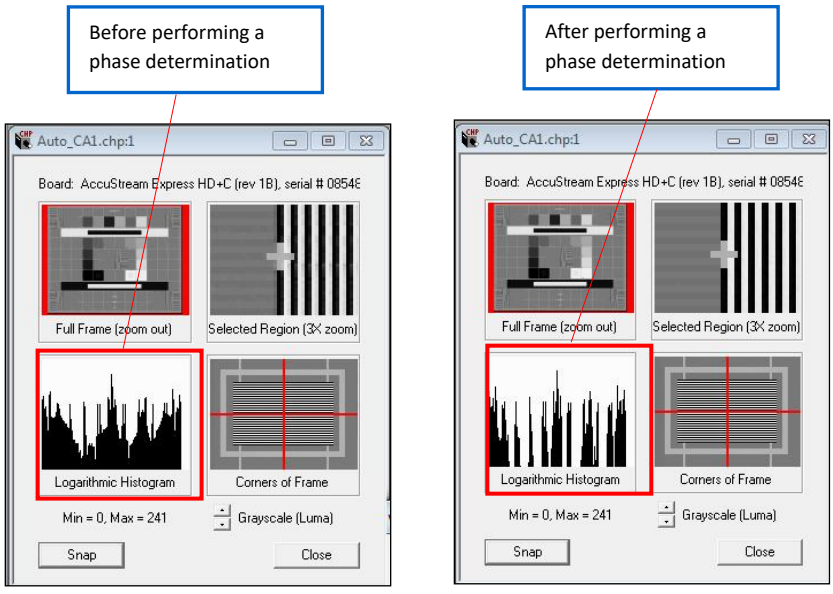


Figure 54: Phase Determination Analog Before and After

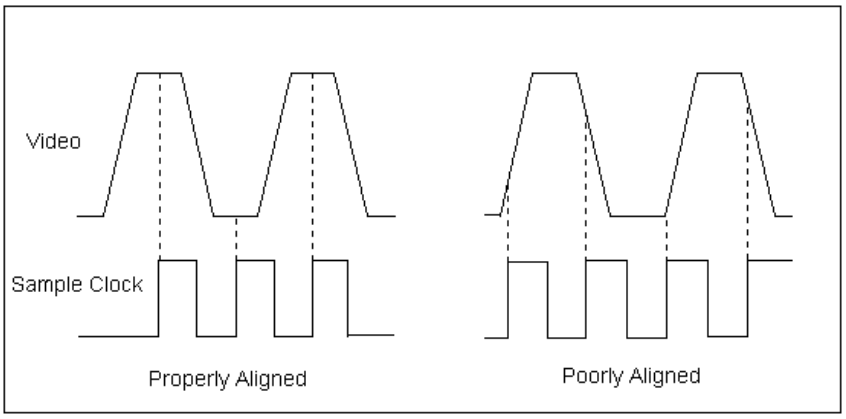


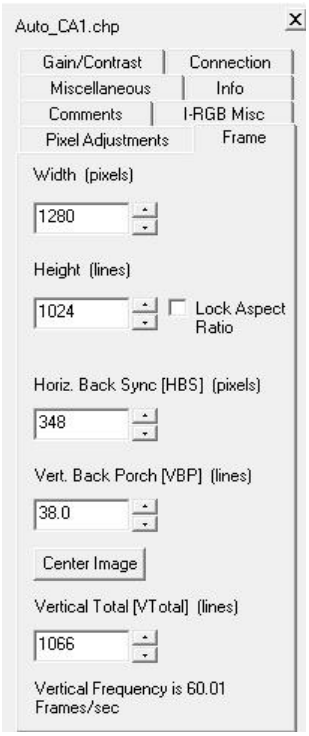
Figure 55: Phase delay adjustment illustration of properly and poorly aligned images

Frame Tab

The Frame tab allows adjustment to the image Width, height, centering position of the image.

Changing Frame Video Settings

This option allows you to modify options that affect the video frame.



To define horizontal AOI:
Adjust left edge with HBS Increase HBS moves image to left; Decrease HBS moves image to right. Use to clip left side of image.

Adjust the image right edge with WIDTH.

To define vertical AOI position:
Adjust top edge - VBP Increase moves image up; VBP decrease moves image down. Use to clip top of image.

Adjust the image HEIGHT to set the image's bottom position.

Figure 56: Frame Video Settings

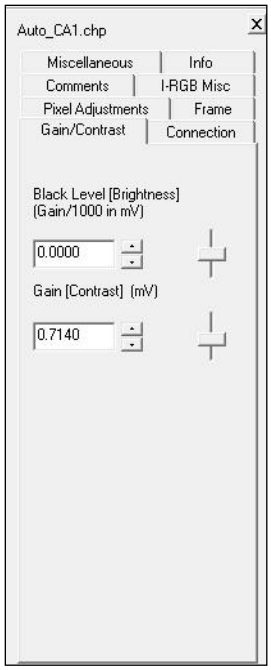
Definitions

Option	Value	Description
Width	1280	Number of pixels in a line in the image. Adjusts the WIDTH (***RIGHT***) side of the image.
Height	1024	Number of lines in the image.
Horizontal Back Sync	348 pixels	The time period from the beginning of the horizontal sync pulse to the beginning of active video.
Vertical Back Porch	38.0 lines	Sets the starting position of the 1st. (***TOP)*** scan line of the image.
Vertical Total	1066 lines	Total number of vertical lines in the video signal.

Gain/Contrast Setting

Sets the peak White and Black pixel value.

- Click on the **Gain/Contrast** tab to view the options.



- Adjust Black Level for “Blackness”, 0-5.
- Adjust Gain level to “Whiteness”, 254-255. This prevents clipping peak white or black.

The following table shows the effect of making changes to each of these options.

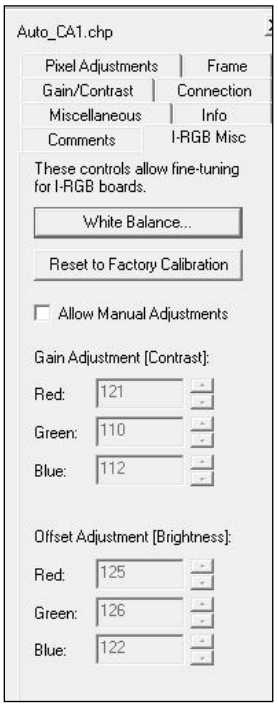
Option	Value	Description
Black Level	0.0000 mV	As Black Level increases, the image becomes lighter, but mid-range contrast is not affected.
Gain	0.7140 mV	As Gain increases, picture becomes darker and has less contrast.

Figure 57: Gain/Contrast video setting

When an AccuStream RGB is used by a CHP file, Auto-SYNC displays an I-RGB Misc tab that allows you to edit the following video settings:

Changing AccuStream RGB Settings

When an AccuStream RGB is used by a CHP file, Auto-SYNC displays an I-RGB Misc tab that allows you to edit the following video settings:



I-RGB White Balance settings allow manually adjusting the white's white balance and the blacks by enabling **Allow Manual Adjustments** and adjusting the gain and black level of the RGB colors.

- Adjust **Gain** Red, Green, and Blue levels that White has the same pixel value 255-255,255, in the Auto-SYNC pixel reader.
- Adjust **OFFSET** Adjustment Red, Green, and Blue levels that Black has the pixel value 0, 0, 0, in the Auto-SYNC pixel reader.

Option	Description
Gain	Sets the RGB gain adjustments for the individual red, green, and blue channels. RGB gain affects the image contrast.
Offset	Sets the RGB offset adjustments for the individual red, green, and blue channels. RGB offset affects the image brightness.

Figure 58: AccuStream RGB video settings

It is highly recommended that you use the AUTO White Balance!

The White Balance button starts a process that automatically determines red, green, and blue channel gain and offset values for the current video source. AccuStream boards are factory-calibrated by Foresight Imaging, but you may desire to recalibrate the CHP file based on your imaging source. White balancing should be performed when the video source changes.

Automatic White Balance

When you click the White Balance button, an information dialog appears. Click **Yes** to continue. An update dialog appears until the process completes.

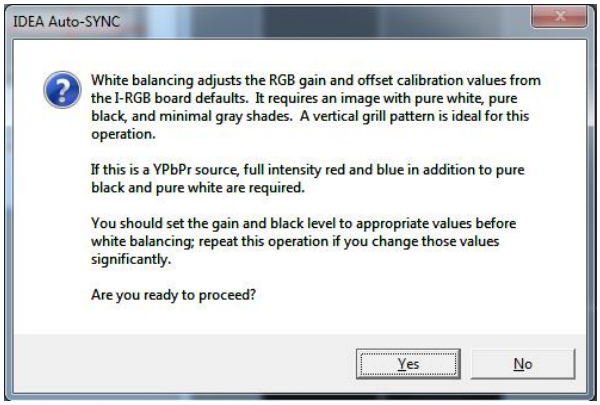


Figure 59: White Balance Information Dialog

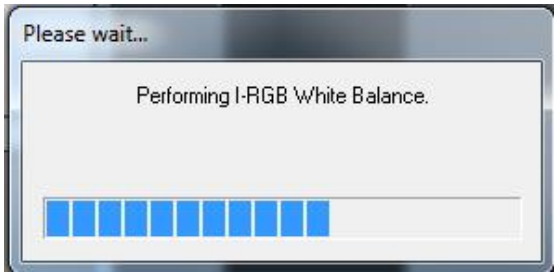


Figure 60: White Balance Update Dialog

When the process completes, confirm whether you want to keep or discard the changes.

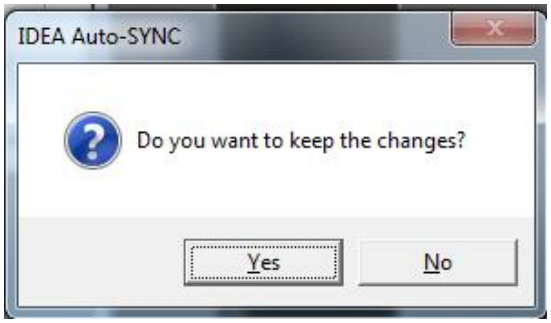


Figure 61: Confirm Whether to Keep or Revert the White Balance Changes

Adjust Combined RGB Settings

Not Used. This setting is only for the I-Series and AccuStream170 frame grabbers and not applicable to the AccuStream205a, AccuStream+, HD+ and HD+C Series frame grabbers.

Saving and Undoing Changes to your Video Settings

If you make any changes to any of the settings, be sure to select **File > Save** or **File > Save As** to save these changes. Saving a combined RGB window saves all three of the component CHP files to disk.

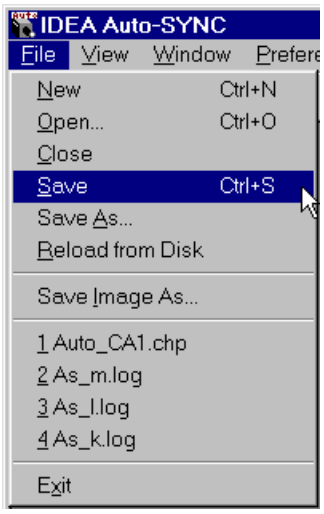


Figure 62: Saving your CHP file

If you want to undo any pending changes to your settings, you can restore the video settings by selecting **File > Reload from Disk**.

Saving an Image

Once you have an active CHP file, you may save a captured image as a bitmap (BMP) file. This BMP may be viewed with any graphics program. To perform this save, select **File > Save Image As**.

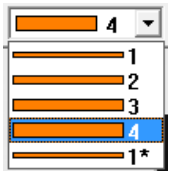
Aspect Ratio Verification Function

This function verifies the aspect ratio of any captured image, calibrates if needed and adjusts the aspect ratio if necessary.

You can verify the aspect ratio for new or existing Command Hardware Profile (CHP) files.

Aspect Ratio Menu Selections

The table provides a description of each of the IDEA Auto-SYNC menu items.

Menu Item	Description
	The first button (on the left) is to hide or show the circle. Clicking this toolbar button toggles the circle visibility state between shown and hidden.
	The second button (from the left) always centers the circle in the image with its edges extending to almost the full height/width of the image, leaving a small border. A 1:1 aspect ratio between the width – height is always maintained. When the size of the image changes, the circle will always automatically re-center when you press this button.
	The third button, showing the circle with red arrows extending from it, is for sizing and moving the circle. When this button is selected, centering is turned off so you can resize the circle. • Use your mouse to click the center of the circle (where the **+** is shown) so that the circle can then be moved. • Use your mouse to click on any edge of the circle to drag it inward or outward to change the size of the circle. The circle resizes from the edge that is dragged, with the opposite edge maintaining its currently anchored position.
	The color selection drop-down menu allows you to change the color of the circle.
	The circle line width lets you change the width in pixels of the circle line edges. The selections are 1, 2, 3, 4, and 1* pixels. • The first 4 selections change the width to be 1 pixel, 2 pixels, 3 pixels, and 4 pixels, respectively. With any of these selections when the image is zoomed, the width increases accordingly. • The 1* width selection always maintains a 1-pixel width regardless of the current zoom state.

Procedure for Using the Aspect Ratio Function

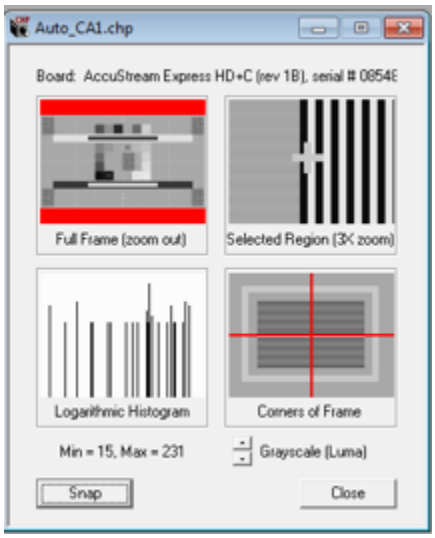
IMPORTANT: If a calibrated image is not available, then see the Procedure for Non-Calibrated Images on page 173 first.

To use aspect ratio function:

1. Start the IDEA Auto-SYNC program as you normally would using Express mode.

   NOTE: Use the **TIMS MVP Setup and Configuration Guide** for step-by-step instructions for using the IDEA Auto-SYNC program.

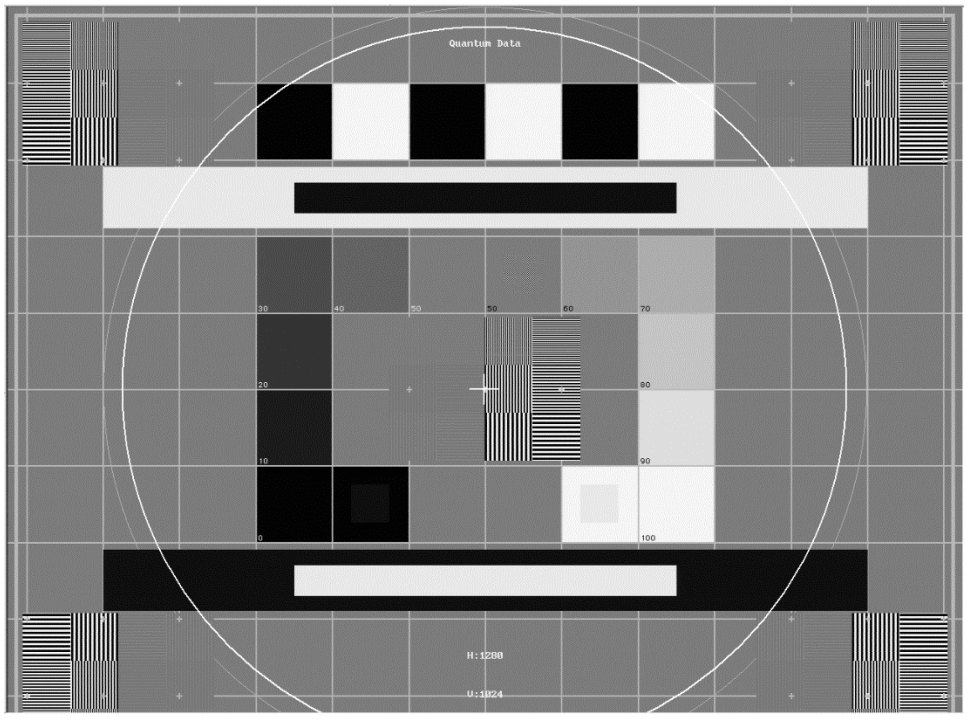
2. When you have completed running Auto-SYNC in Express mode, you will see the Auto-SYNC Video Settings Window.



3. Click the **Full Frame** icon in the IDEA Auto-SYNC main menu. It is recommended that you make the image as large as you can on your monitor.

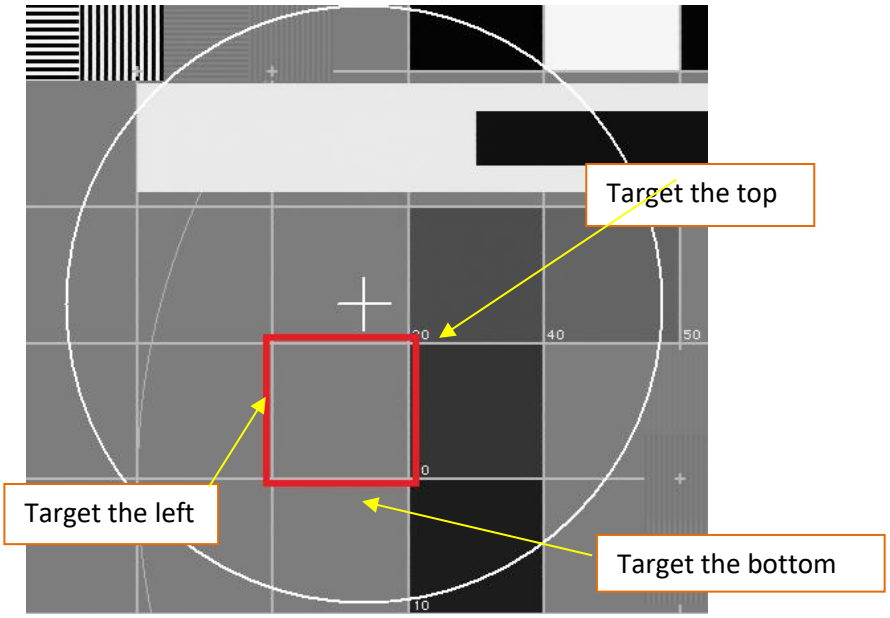
4. Select the hide/unhide circle icon from the IDEA Auto-SYNC main menu to display the white circle.

RESULT: A white circle appears in your captured image.

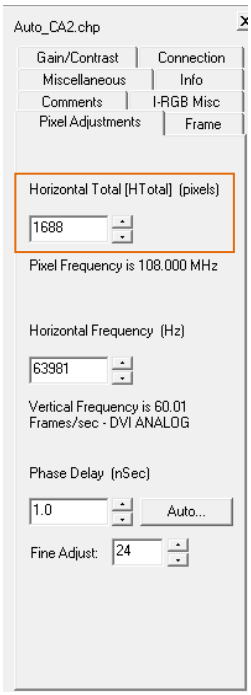


5. In the captured image, target an area which is either a square or circular. In this example we will target a square area.

6. Grab the edges of the circle with your mouse, size and position the circle to overlay the target area on your image at three points – top, bottom and left. Right-click to zoom image, if needed.

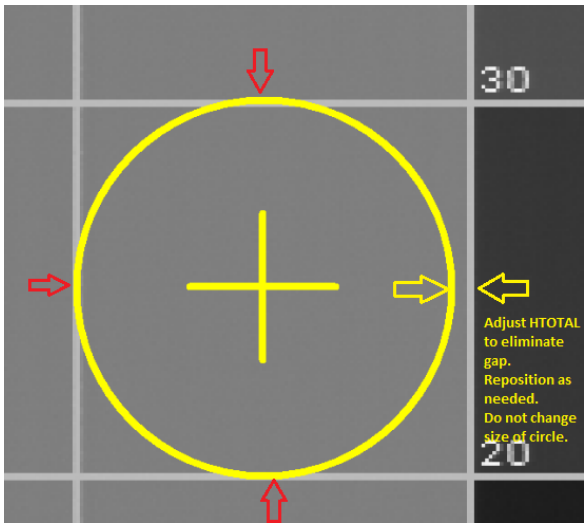


7. Adjust HTOTAL and reposition the circle horizontally to touch the same three points (top, bottom, left). You can also use the Page Up or Page Down keys to adjust the HTOTAL.



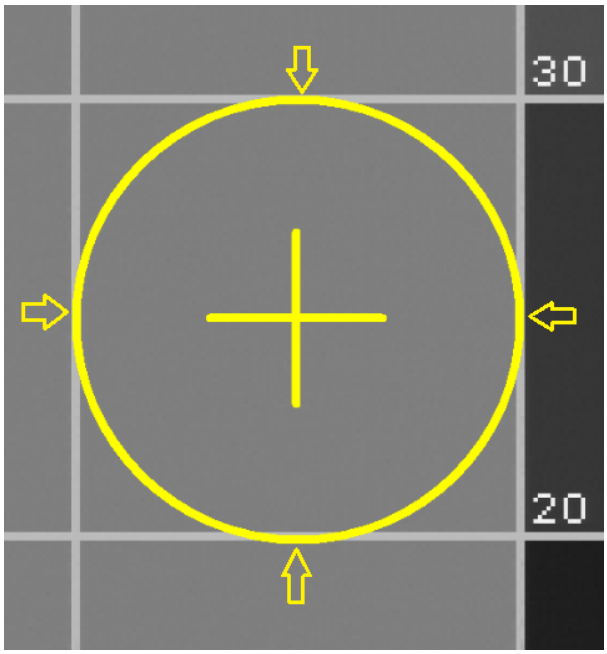
NOTE: Do not resize the circle, only reposition. (Hold left mouse button on the circle center while using left / right arrow keys).

- If circle is *smaller* than the target, *increase* HTOTAL.
- If circle is *larger* than the target, *decrease* HTOTAL.



Shortcut keys: There are shortcut keys available to move and resize the circle. See Shortcut Keys for details.

8. Repeat step 7 until the circle matches all four points of the target area.



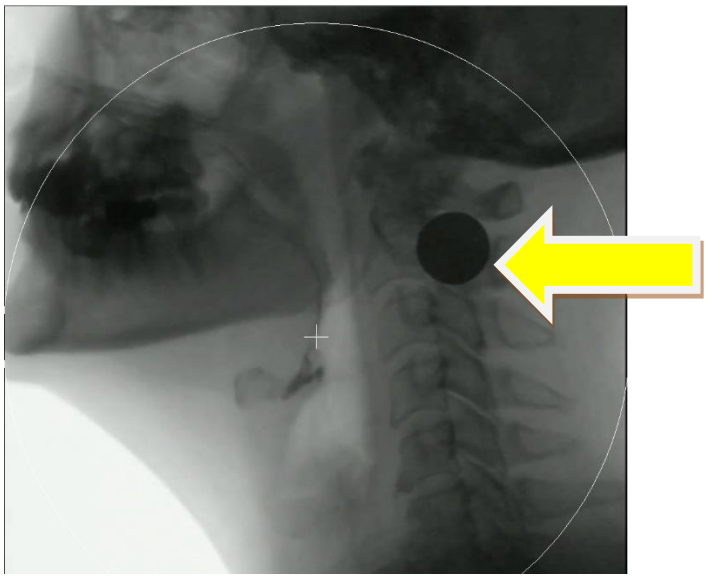
9. Once the HTOTAL is set, adjust framing as normal.

Procedure for Non-Calibrated Images

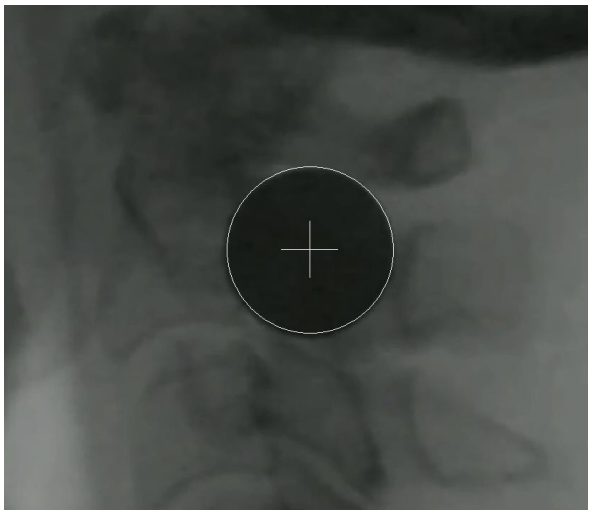
Use these steps when you have a non-calibrated image for which you want to verify the aspect ratio.

1. Follow steps 1 through 4 in the previous procedure.
2. For a non-calibrated image, x-ray/fluoro a solid round object, preferably metal like a coin.

   RESULT: A solid circle will appear in the image as shown.



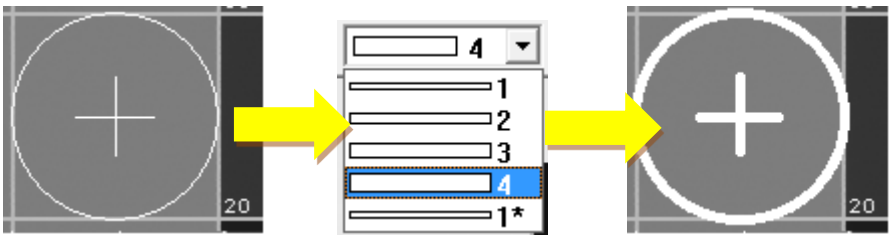
3. Go back to the previous procedure, follow steps 5 through 9 to make adjustments to the circle so it overlays correctly on the scanned image over the round object.



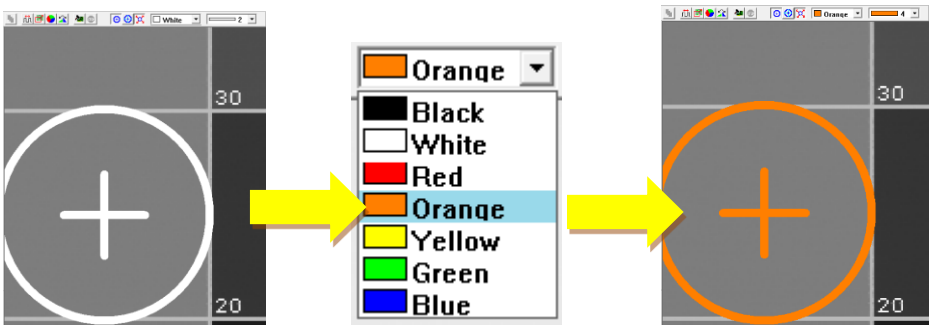
Change the Circle Width or Color

If you want to change the circle line width from the default of 1 pixel, use the drop-down menu to select:

- a new width (2, 3, o4-pixels) or return to the default (1-pixel
- the 1* width which maintains a line width of 1-pixel even when you zoom in on the image



If you want to change the circle color from the default white to another color, use the drop-down menu to select a new color.



Shortcut Keys

Use these shortcut keys for:

- Fine-tuning the location
- Sizing the circle overlay

NOTE: You need to use the keyboard and mouse for these shortcuts.

Description	Shortcuts
Fine-tuning the location	1. Left-click and hold the left mouse button down in the center of the circle to select the circle for movement. The color changes to indicate the circle has been selected. 2. Use the arrow keys to move the circle 1 pixel in the direction of the arrow key selected.
Sizing the circle overlay	There are four selection points to grab on the circle: • Top-center • Bottom-center • Left-center • Right-center When you hover the mouse over a grab point, the cursor changes to a selection cursor indicating the circle edge can be "grabbed". 1. Left-click and hold the left mouse button to select the grab point on the circle edge. This is the edge you will use to either increase or decrease the size of the circle. The opposite edge of circle will act as an anchor point that remains in its location while you resize. 2. Use the arrow keys or the plus (+) and minus (-) keys to increase/decrease the circle size at the grab point. As you increase/decrease the circle size, the circle maintains its shape with the anchor point remaining in its location as you resize.

Using Auto-SYNC for Digital Input Connections

Select the Connection Type

Auto-SYNC determines the input selection availability based on the model frame grabber being used. Thus an AccuStream+ and AccuStream Express+ will not display the Input Connector options as those boards only uses DVI-A or DVI-D inputs.

After verifying the board's capabilities, IDEA Auto-SYNC will first prompt you to identify the AccuStream board mode. Select the connection you have to the AccuStream board and then click OK. If you want to keep the selection as your default, click the checkbox below the connection selection so that this dialog does not appear again.

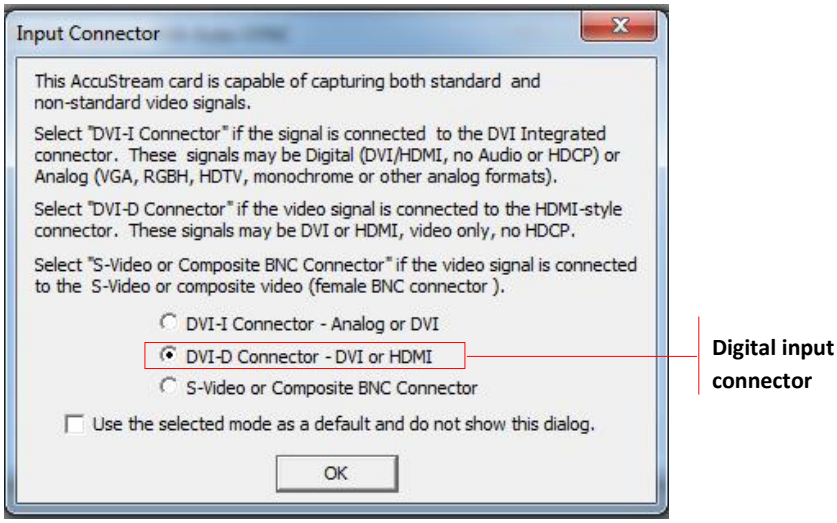


Figure 63: AccuStream Input Connector

After you make your selection and click OK, the Hints dialog appears. It is recommended that you read the dialog and click OK. If you do not want this dialog to appear each time you start an Auto-SYNC session, uncheck the **Always display hints before an Auto-SYNC session** box.

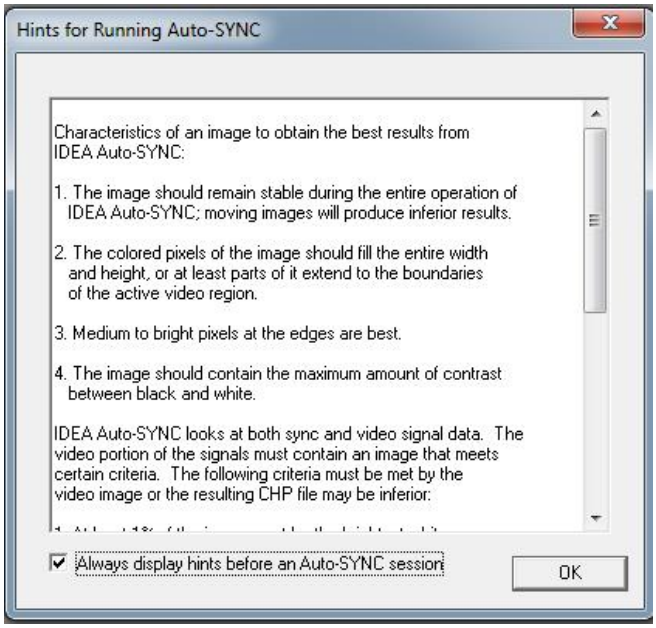


Figure 64: Hints dialog

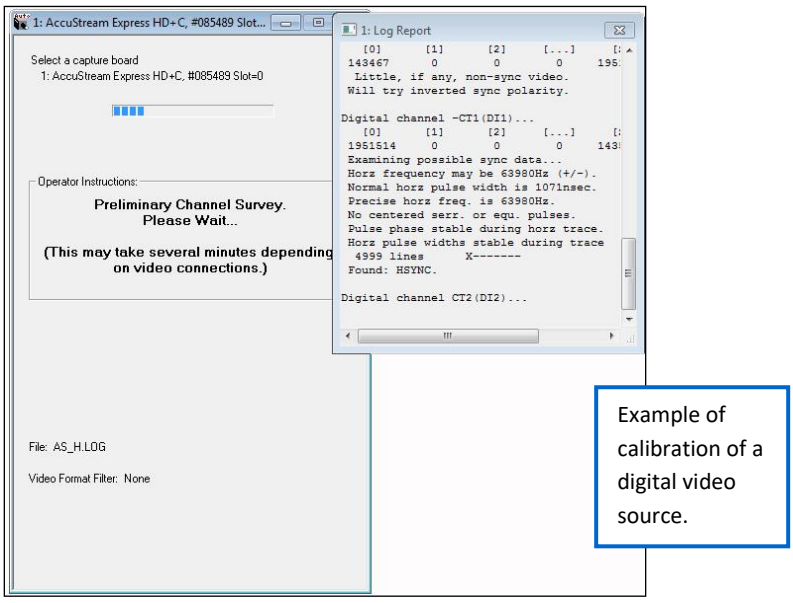


Figure 65: Calibrating and creating a CHP file

Next select the type of input video from the dropdown menu.
RGB, YPbPr or Monochrome video.

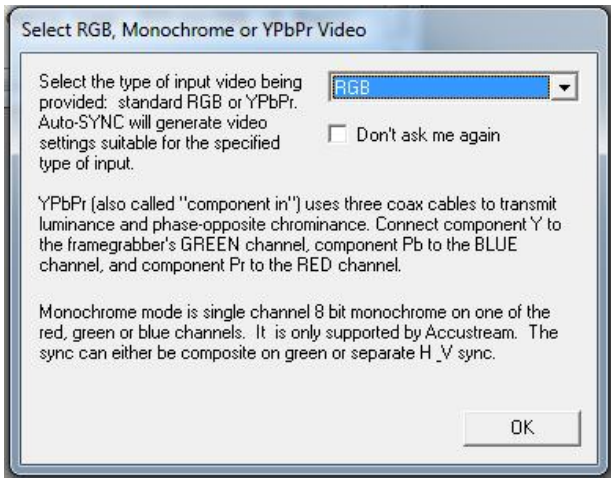


Figure 66: Select RGB, Monochrome or YPbPr video

Auto-SYNC will measure the incoming video's pixel clock rate and match the video source with a pre-made video format template and create the new chp file.

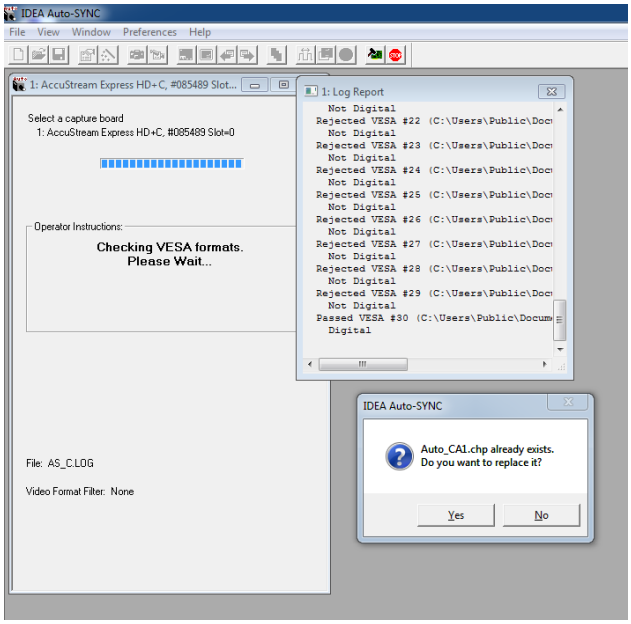


Figure 67: Prompt to Save CHP file.

If the CHP file already exists, you will be prompted to overwrite the file.

Important: When saving the CHP file, provide a filename that you will easily recognize for your video source.

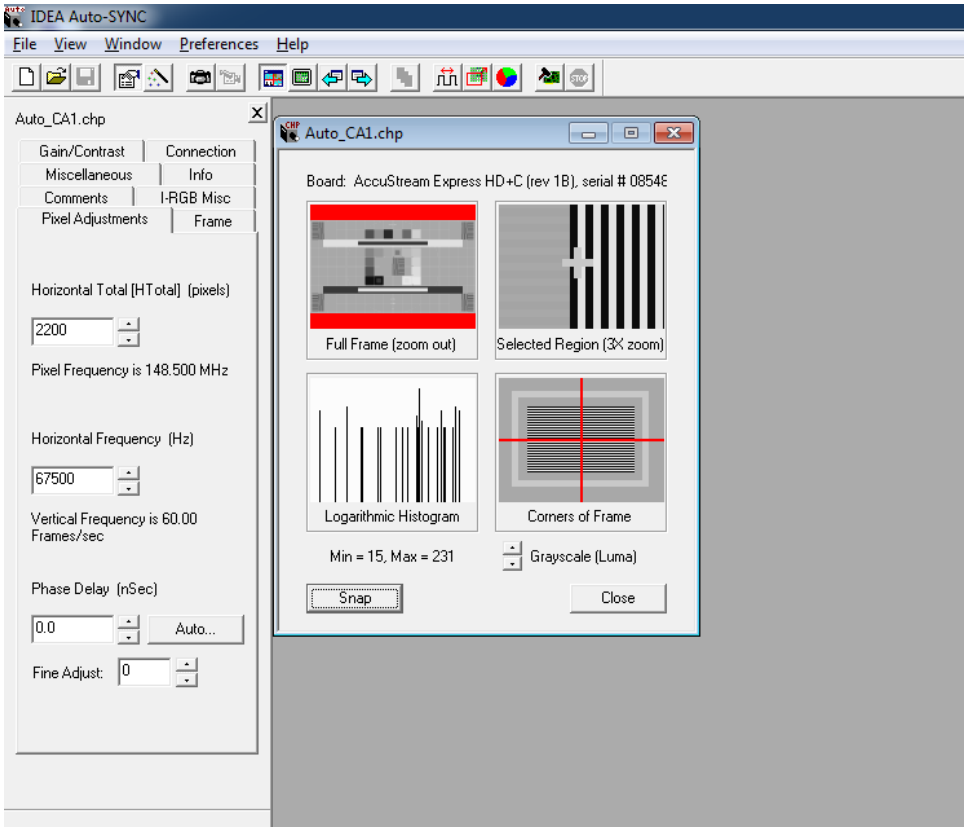


Figure 68: Auto-SYNC Video Settings Window

Note: Digital Images are used in this example.

Auto-SYNC for Digital Connections

With DVI Digital and HDMI sources, not all controls are adjustable or presented since the digital interfaces have a reference clock and the data is already in digital form.

HTotal and Phase are derived from the reference clock and are not adjustable.

Black Level and Gain (Brightness and Contrast) are adjustable on the SD+, HD+, SD+C and HD+C board families where the digital interface allows these modifications.

Non-Adjustable settings include Htotal, Horizontal Frequency, Phase, Vertical Total, Vertical Frequency and White Balance.

To learn how to adjust the other settings in Auto-SYNC the Auto-SYNC Wizard is available from the Auto-SYNC top menu **VIEW** or keyboard **CTRL-W**.

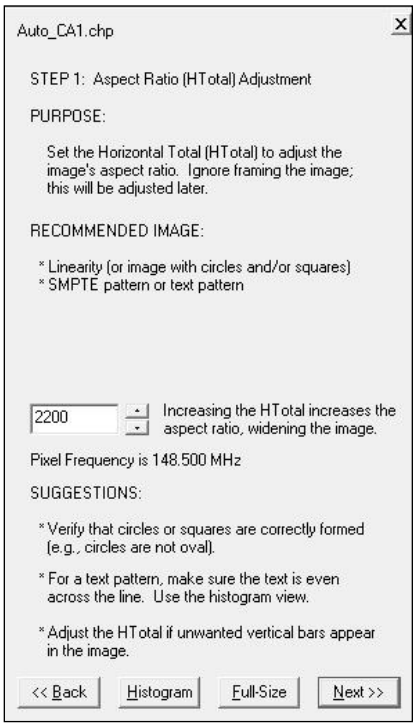


Figure 69: Auto-SYNC Wizard

Auto-SYNC derives the Image Htotal and image Width and Height values etc from the digital video signal then compares these against factory template files then presents/writes the best match chp file.

If you have a video signal that Auto-SYNC miss calibrates to then please contact support@fi-llc.com for further assistance.

Auto-SYNC Wizard Step 1: Creating an Area Of Interest for Digital Connections

To set an Area Of Interest (AOI) we need to adjust the left/right framing of the image. The left edge is set by adjusting (**HBS**) and then the image (**WIDTH**).
Increasing the **HBS** moves the image to the left.

Then we adjust the **VBS** to set the top of the image starting position and finally reduce **HEIGHT** to set the bottom position of the image.

If the Auto-SYNC is not viewable then from the Auto-SYNC toolbar select' VIEW' then 'AUTO-SYNC WIZARD' or press CTRL-W.

Example

This first example shows a 1024x768-60Hz Digital video image with the correct values for Left/Right Framing. Notice that both edges of the video image align against the edge; there is no distortion or clipping.

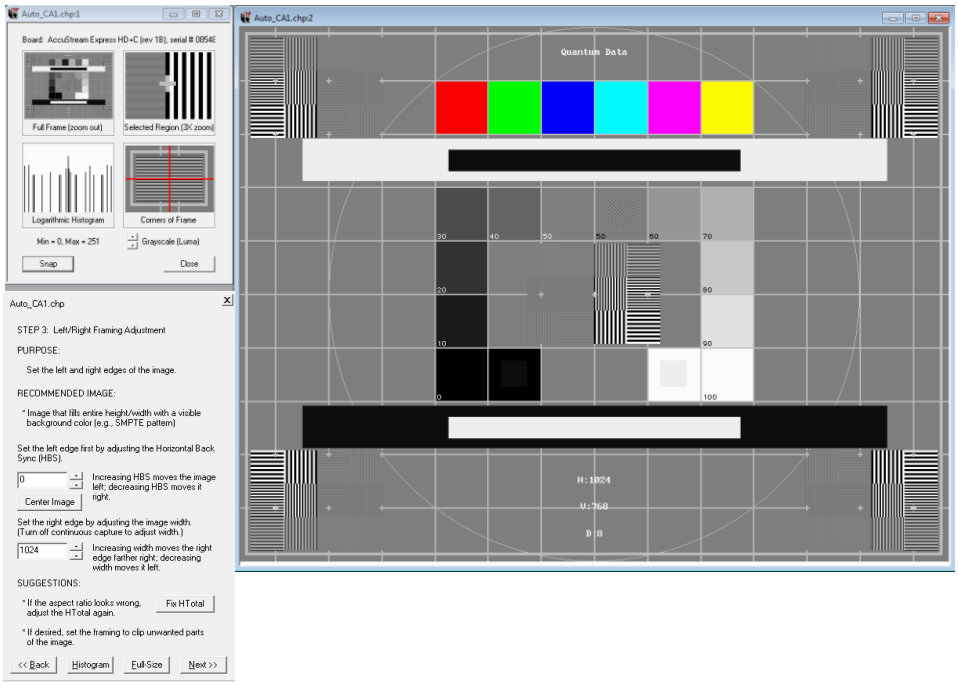


Figure 70: Example of proper video image framing

Let's set the image AOI to 776x768:

Set the starting position of the image:

- Adjust the left edge by increasing **HBS to 125**. (Horizontal Back Sync)
- To set the end position of the image: Decrease **WIDTH** to **776**.

Notice the image width is now the size of the SMPTE circle.

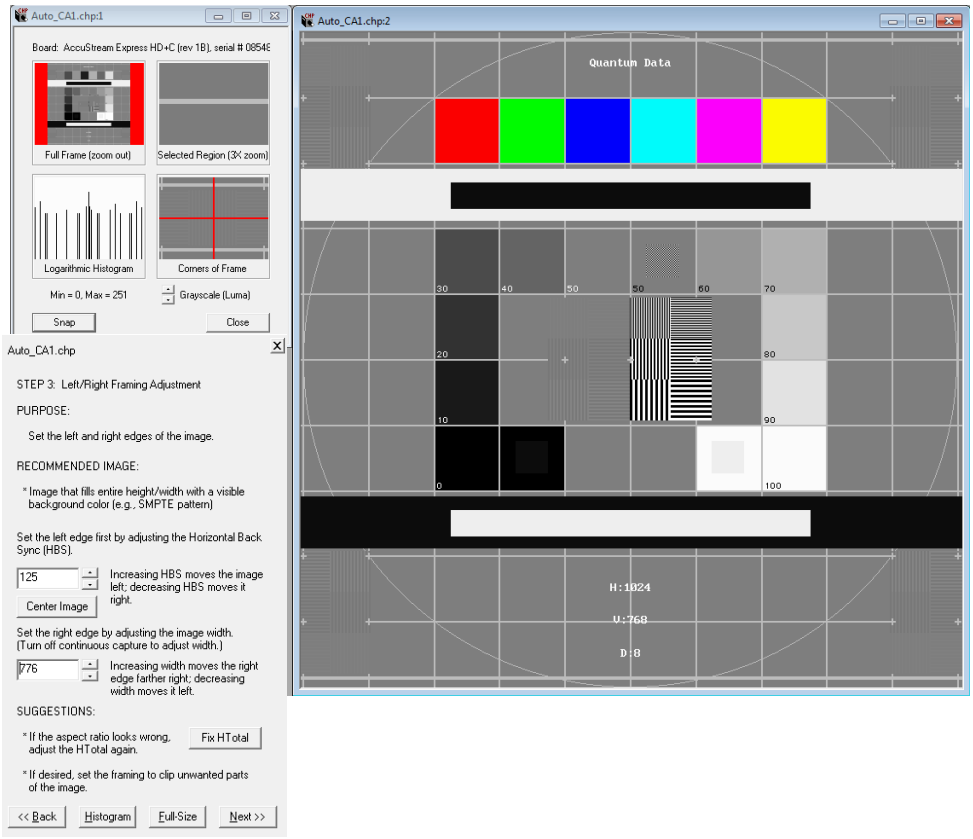


Figure 71: Auto-SYNC Wizard Step 1

Original image 1024x768, AOI set to 778x690

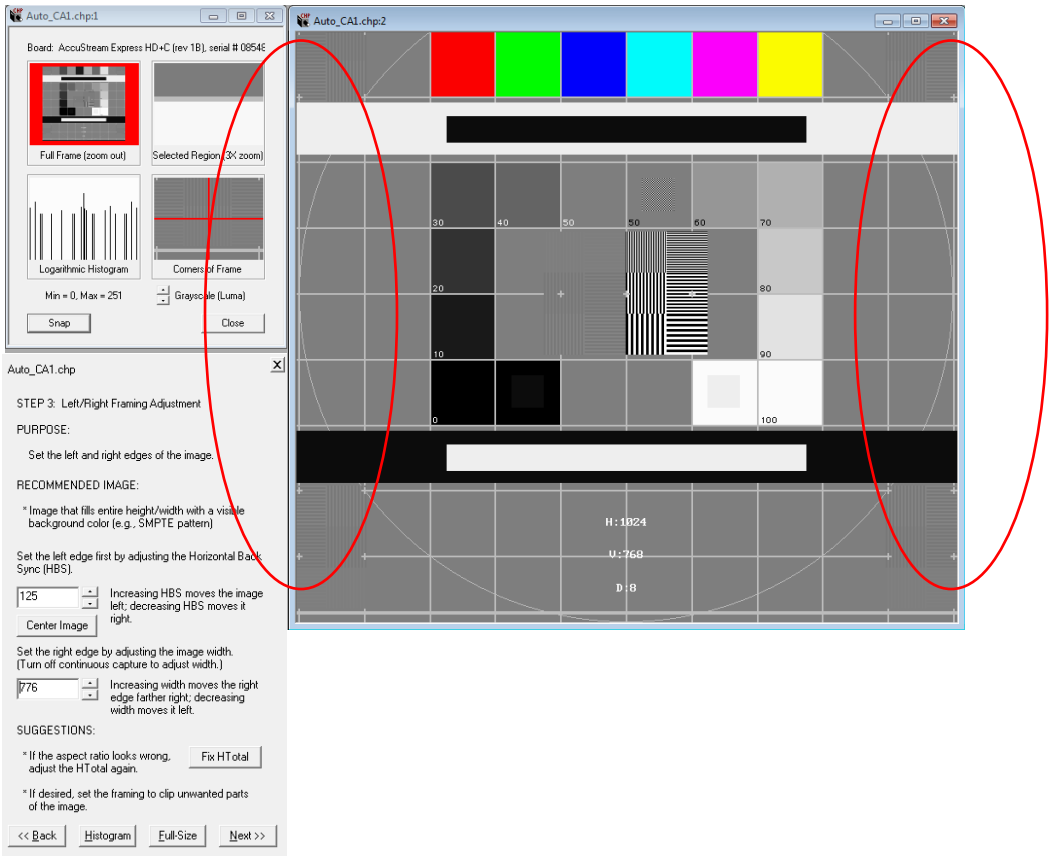


Figure 72: Area of Interest Example

AccuStream Auto-SYNC Wizard Step 2: Adjust AOI Top/Bottom Framing for Digital Connections

The next step is to adjust the top/bottom framing of the image.

To set an image height AOI, you need to adjust the **VBP** and **HEIGHT**.
Increasing the **VBP** (Vertical Back Porch) moves the image to **UP**.

Example

- To set the top starting position of the image: Increase V**BP** To **78**
- To set the end position (HEIGHT) of the image: Decrease **HEIGHT** to **690**.

If Auto-SYNC does not increase VBP beyond a certain value, then you need to decrease HEIGHT some more.

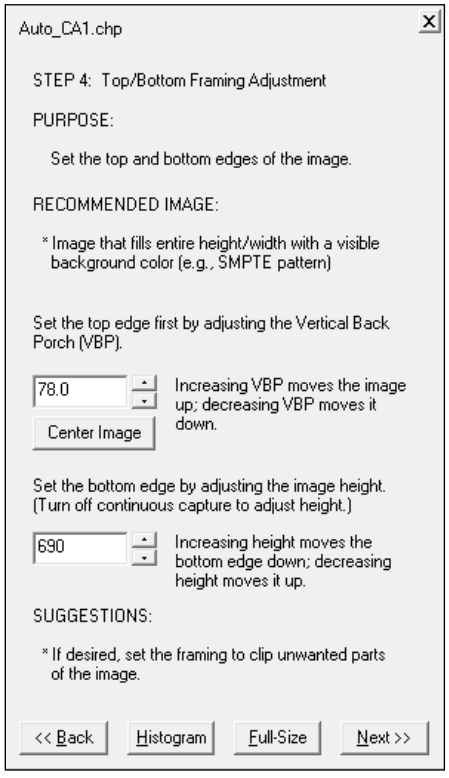


Figure 73: Auto-SYNC Wizard Step 2

Original image 1024x768, AOI set to 778x690

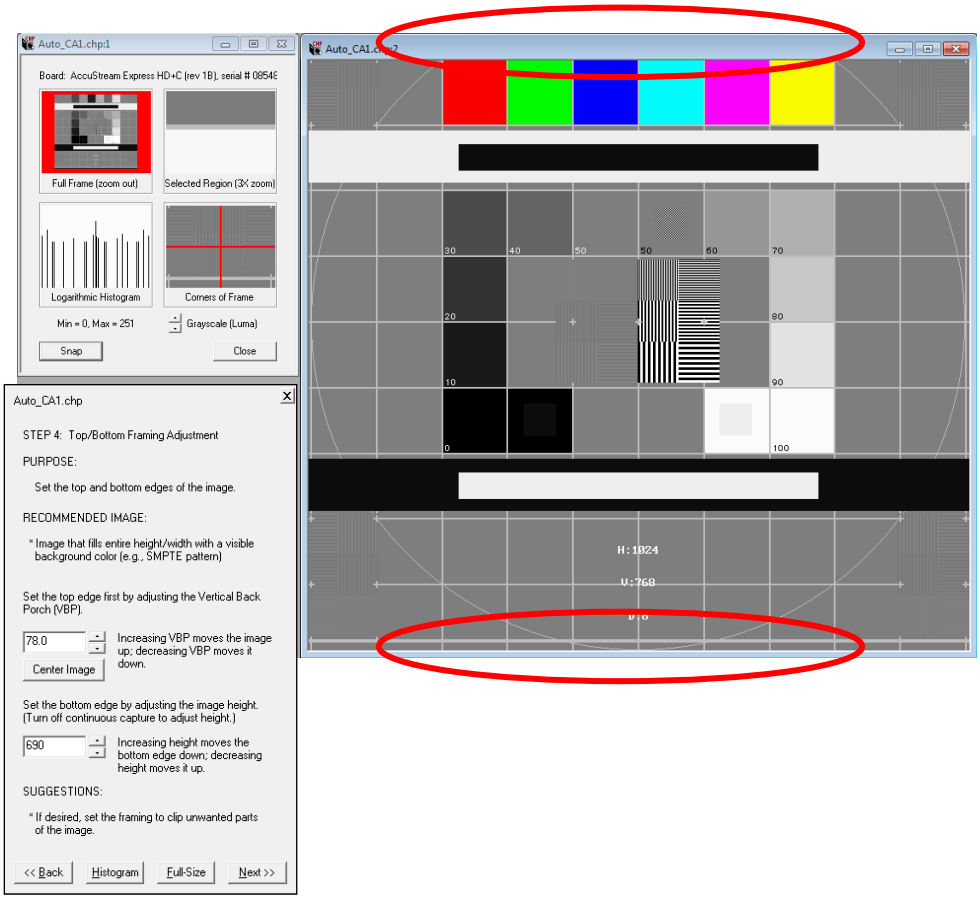


Figure 74: Area of Interest Example

TIPS:

When making top/bottom framing adjustments:

- Adjust the top edge with VBP – increase VBP moves image up; decrease VBP moves image down.
    - Use to clip the top of image
    - Use to define vertical AOI position
- Adjust bottom edge with height – increase height increases bottom edge; decrease height decreases bottom edge.
    - Use to clip edge of image
    - Use to define vertical size of AOI

AccuStream Auto-SYNC Wizard Step 3: Adjust Brightness and Contrast for Digital Connections

The next step is to adjust the brightness and contrast of the image. It is normal for the pixels to range from 0 to 254. Since the goal is for the image to be visually acceptable, other ranges may be desirable.

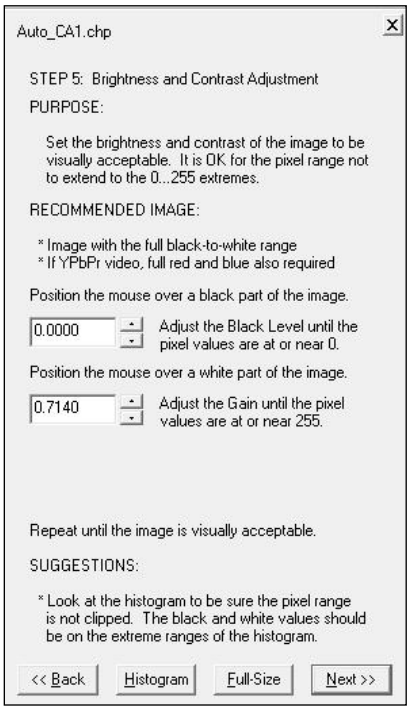


Figure 75: Auto-SYNC Wizard Step 3

Brightness and contrast adjustments require a video image that has the full black-to-white range. Images with a text pattern are recommended. The histogram is very useful for this step so the multi-view window is recommended.

Position the mouse over the blackest part of the image. Adjust the Brightness value in the standard way. Shifting the Brightness changes the pixel values; these changes are visible either in the pixel value reader (in the lower right of Auto-SYNC's status bar) or in the histogram. The goal is to have the black pixels correspond to pixel values near 1.

Once the Brightness is set, move the mouse to the whitest part of the image. Adjust the Contrast value until the white pixels correspond to values near 254.

Changing the Contrast may affect the results of the Brightness adjustment, so this process must be repeated iteratively until the desired brightness and contrast are achieved. Watch the histogram to be sure that the range of pixel values extends from 0 to 254 and that not too many pixels are being mapped to these extremes (i.e., near-black is mapped to total black).

Examples

In this first example, the video image has the correct settings for the brightness and contrast. In this image, the mouse is moved to the black part of the image to show the value is correct at the 0,0,0 setting. For contrast, you would move the cursor over the white part of the image where the correct setting would be 255,255,255.

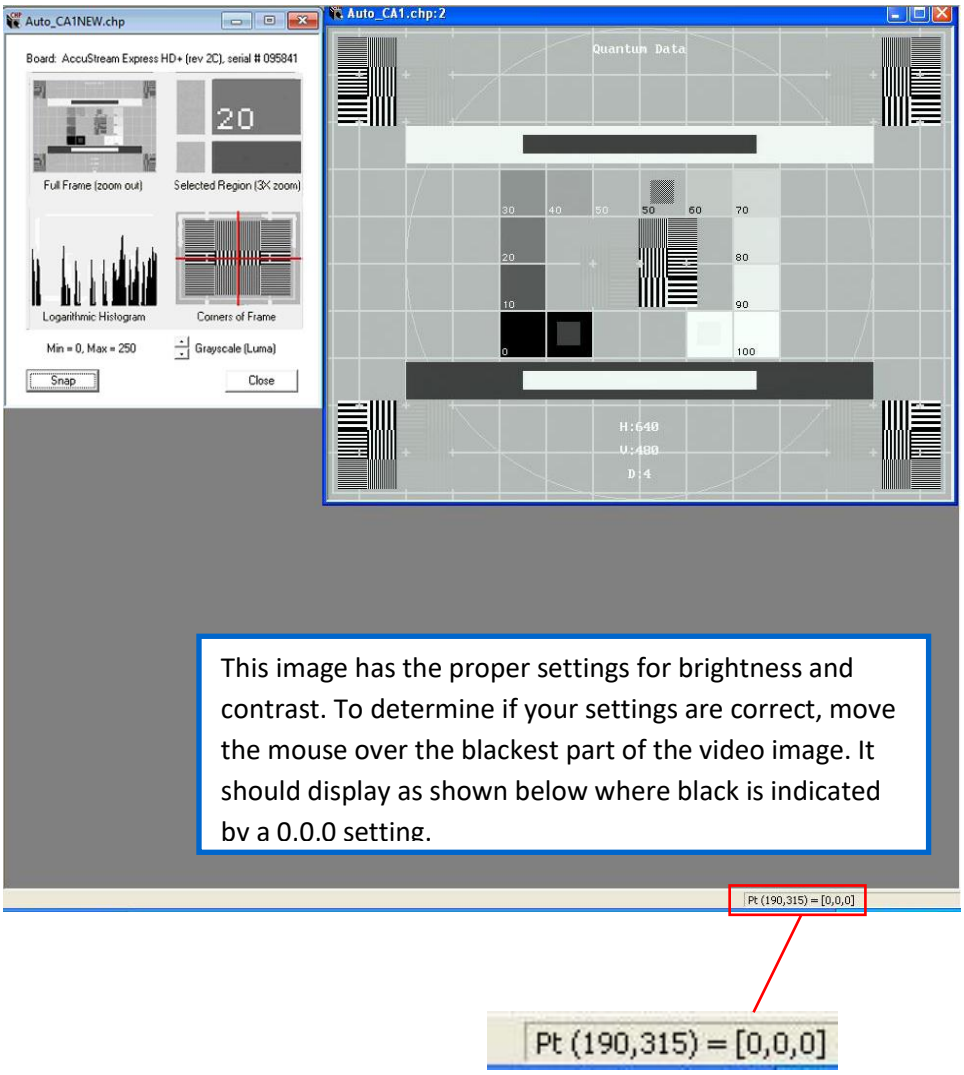


Figure 76: Example of video image with proper settings for brightness and contrast

Note: If you move the mouse over the black or white areas in the image, the values for the black or white portion always display in the lower right hand corner.

In this next example, the black or brightness setting is set too low.

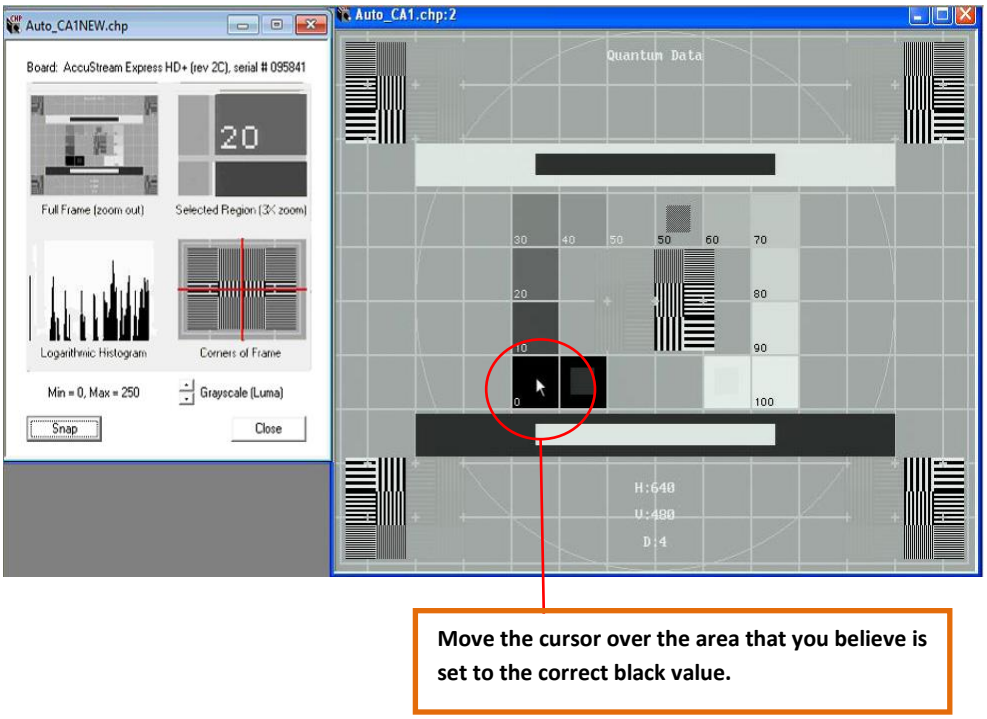


Figure 77: Example of video image where the brightness (Black Level) is too dark

In order to adjust the setting, do the following:

1. Click your mouse in the **Black** field.

2. Move your mouse over the black area of the image until you find the value 0,0,0 in the bottom right hand corner. For example, in the screen example below, move the mouse to the black box labeled.

3. Press the up arrow key once to see if the 0,0,0 value increases. If it does not increase above 0,0,0, then the black value is set too low. Keep pressing the up arrow until you reach the next value above 0,0,0.

4. Once you have reached the next value above 0,0,0, then use the down arrow to move back to the 0,0,0 value. The Black is now set properly

In this next example, the value for BLACK is set too high. This means when you move the mouse cursor over the area which you believe it is set to the correct Brightness value of 0,0,0, it is higher than that value. In this example, you can see the value is set to 0,3,9.

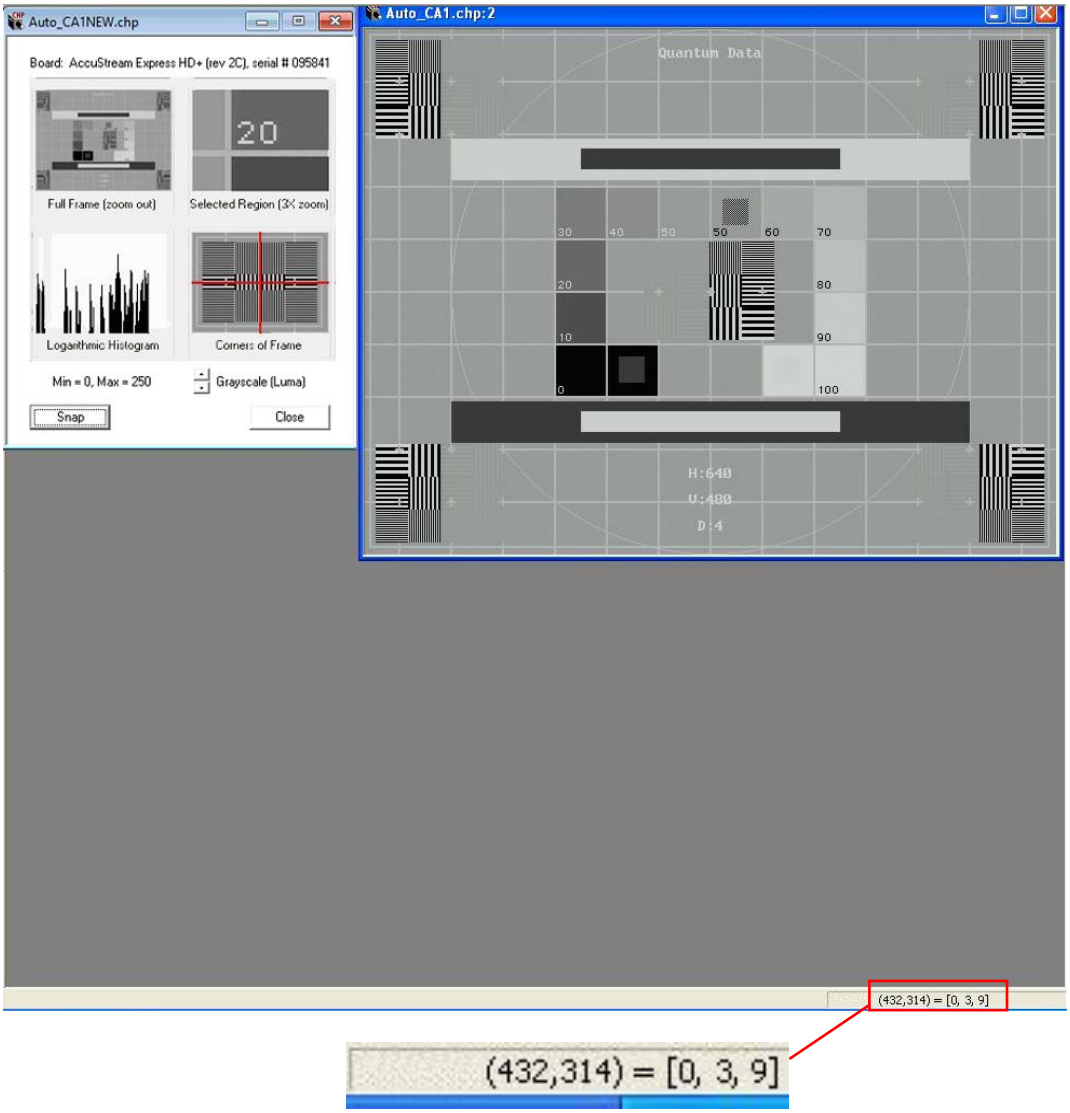


Figure 78: Example of video image where the brightness setting (Black Level) is too high

To adjust this value to the correct value for Brightness, do the following:

1. Click your mouse cursor over the Brightness field on the left hand side.
2. Move your mouse cursor over the lowest Contrast (Black) value on the video image.
3. Use the down arrow key to move the Brightness (for Black) setting to 0,0,0 which is displayed in the bottom right hand corner. Stop pressing the arrow key as soon as you reach the 0,0,0 level since if you continue to press the key, the Black Level value will be set too low.

The next example shows how to adjust the Contrast value when it is set too low. In this example, the Contrast is based on the white level should be set to 255,255,255.

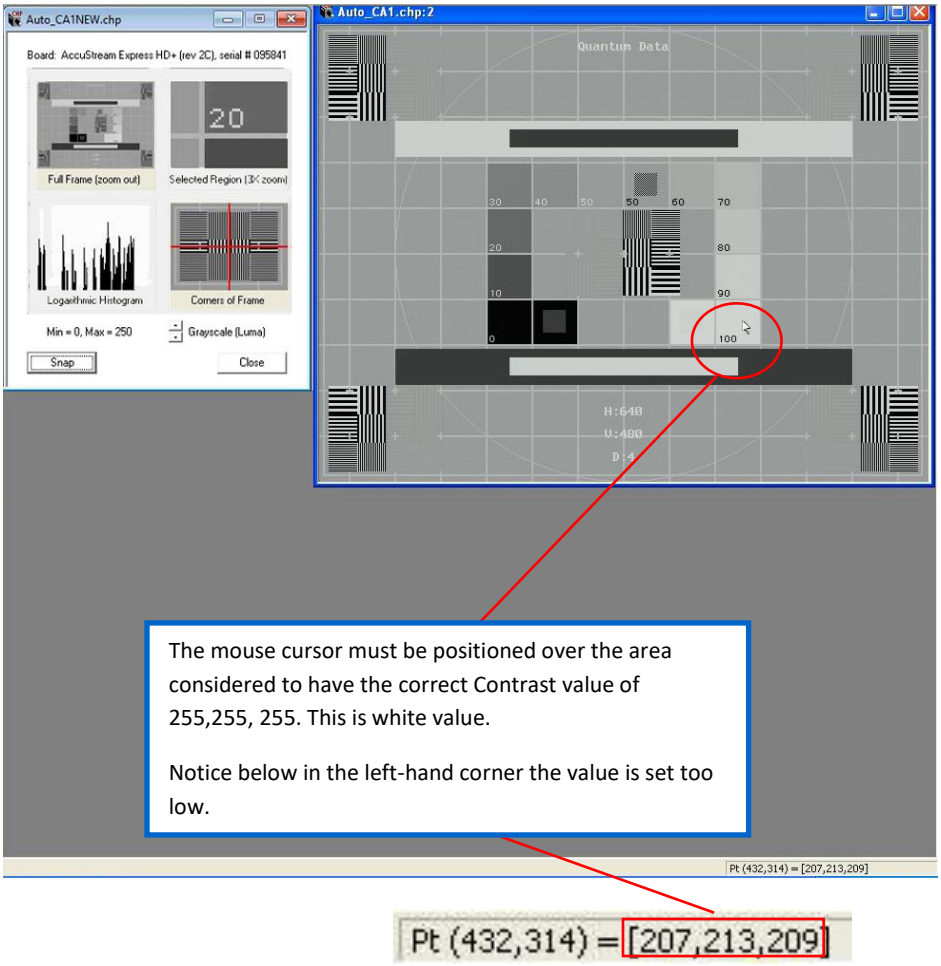


Figure 79: Example of video image where the contrast (White Level) is set too low

To adjust this value, do the following:

1. Click your mouse cursor over the Contrast field on the left hand side.
2. Move your mouse cursor over the lowest Contrast (White) value on the video image.
3. Use the up arrow key to move the Contrast setting to 255,255,255 which is displayed in the bottom right hand corner. Stop pressing the arrow key as soon as you reach the 255,255,255 level since if you continue to press the key, the Contrast value will be set too high for contrast.

In this final example, the Contrast value is set too high. This means that even though it appears that the value is set to 255,255,255, it is really set above that value due to the lack of contrast with the surrounding white squares.

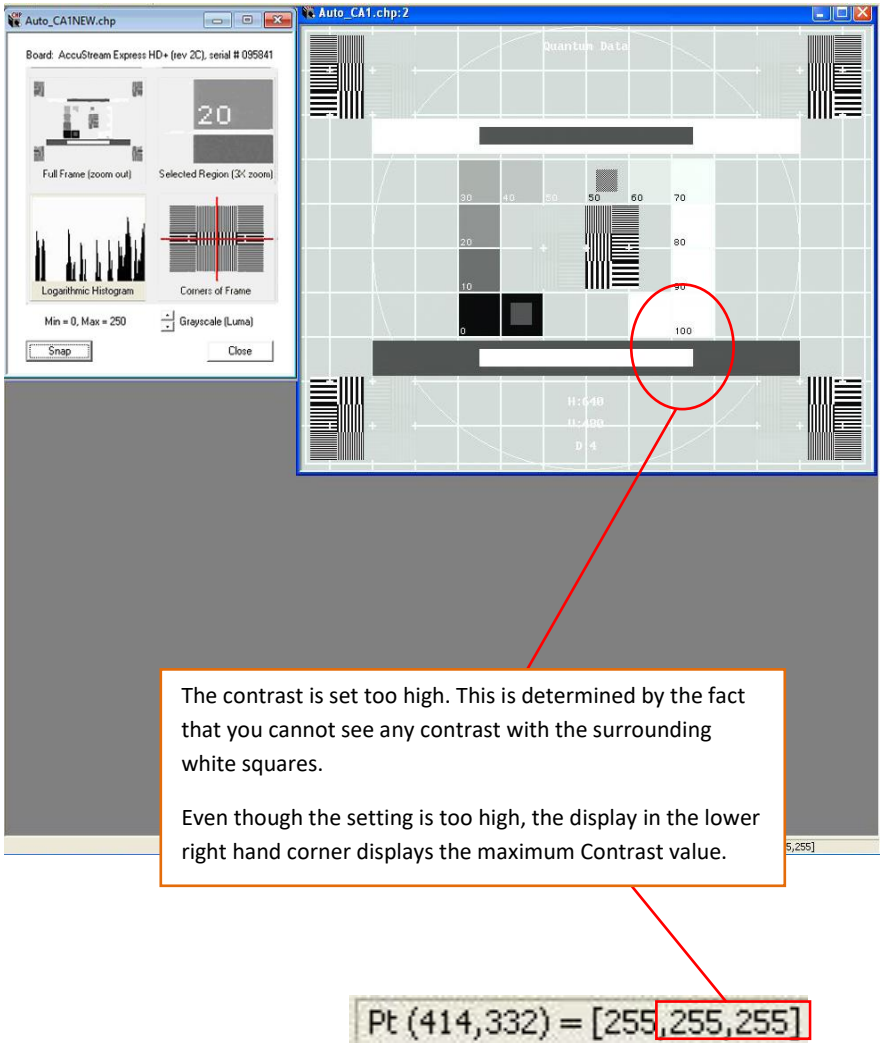


Figure 80: Example of video image where the Contrast (White Level) is set too high

To adjust the contrast value that is set too high, do the following:

1. Click your mouse cursor over the Contrast field on the left hand side.
2. Move your mouse cursor over the lowest Contrast (White) value on the video image which in this case is 255,255,255.
3. Use the down arrow key to move the Contrast setting to the next value below 255,255,255 which is displayed in the bottom right hand corner. Stop pressing the arrow key as soon as you reach the first value below 255,255,255.
4. Use the up arrow to return to the next value up, which should be 255,255,255. The Contrast is now properly set.

Tips:

When making Brightness/Contrast adjustments:

- Have the pixel reader in Full Window mode.
- Have the Histogram in Quad Window mode.
- Adjust Brightness for the level of Black.
- Adjust Contrast for level of White.
- Ensure Brightness/Contrast is not clipped.

AccuStream Auto-SYNC Wizard Step 4: Adjust Miscellaneous Settings for Interlaced Digital Video

The final step of the Auto-SYNC Wizard attempts to correct some basic problems that can occur with some interlaced video signals.

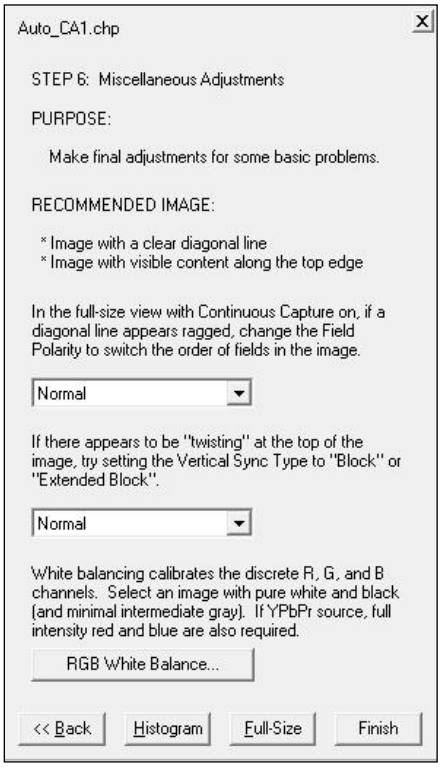


Figure 81: Auto-SYNC Wizard Step 6

A full-size view on an image that has content along the top edge and contains some diagonal lines or text is recommended; the SMPTE or linearity patterns are ideal.

If diagonal lines appear unusually ragged or text in the image appears broken (“shaken”), change the Field Polarity value. This adjusts the order in which the fields of the image are assembled and reverses the ordering of adjacent scan lines in the video.

If there appears to be some twisting at the top edge of the image, the Vertical Sync Type may need to be adjusted from “Normal” to “Block” or “Extended Block”.

The user can run the White Balance procedure to adjust the red, green, and blue channel gain and offset compensation values for the particular source to assure that pure white and pure black are properly calibrated. White balancing should be performed when the video source changes.

- Click the **Finish** button to complete the Auto-SYNC Wizard process. You can restart the Auto-SYNC Wizard at anytime by selecting a CHP file and clicking the Auto-SYNC Wizard toolbar icon or by selecting the **View > Auto-SYNC Wizard** menu item.

Example

In this example, the first image shows a video image in motion. Notice there is no broken or distorted lines.

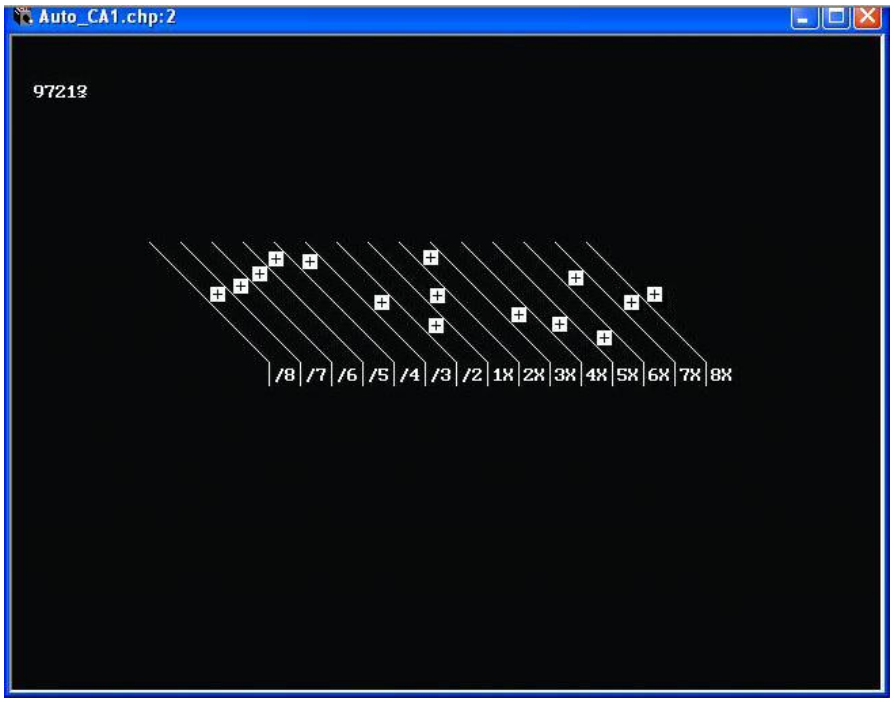


Figure 82: Example of video image with the proper Field Polarity setting

In the next example, the lines are broken and distorted. In order to adjust the image, change the Field Polarity.

Figure 83: Example of video image with the improper Field Polarity setting

Tips:

Field Polarity

Fields are jagged in interlaced image – select Odd Field Up

Vertical Sync Type

Flagging at the top of the image – select Block as source

Miscellaneous Information

- One frame is one screen of visible data
- A frame of data contains visible AND non-displayed information, image blanking and synchronization
- Interlaced signals are comprised of an Odd and Even field of separate Odd and Even lines
- Two fields comprise a frame
- Non-interlaced, also called progressive scan, is one frame of sequential lines
- Fields must be paired properly and “ordered” properly

After the Auto-SYNC Wizard is Finished

Once the user finishes running the IDEA Auto-SYNC Wizard, the Video Setting controls are displayed.

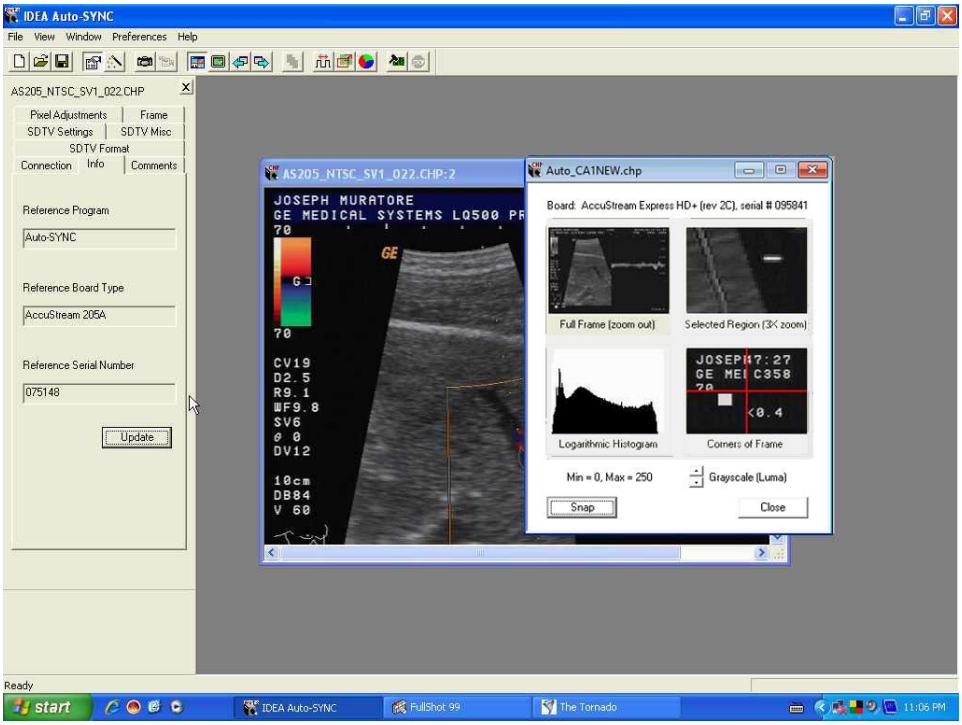


Figure 84: IDEA Auto-SYNC screen after completing Auto-SYNC Wizard.

The window on the right side is the same "Multi-view window" used by the Auto-SYNC Wizard. To open a new full-size window:

- click the "Full-size image window" icon from the toolbar or
- click **View** > **Full-size image window** (<F10>).

The Full-size image window will be RGB or Monochrome for DVI-Analog connections or NTSC/PAL Video composite for S-Video Composite connections.

Auto-SYNC will open the new CHP files from analog channels CA1 for RGB or for Monochrome channels CA1 through CA3.

Once you get to this point, you may now either make changes to your Video settings or exit IDEA Auto-SYNC. You can then use the CHP file with any IDEA Example program located in *Program files**Foresight**IDEA**Demo**Bin* directory.

Viewing the Info Setting

The **Info** options provide information concerning the application that created the current CHP file, the AccuStream board type and the serial number. Click **Update** for IDEA Auto-SYNC to verify and/or modify this information.

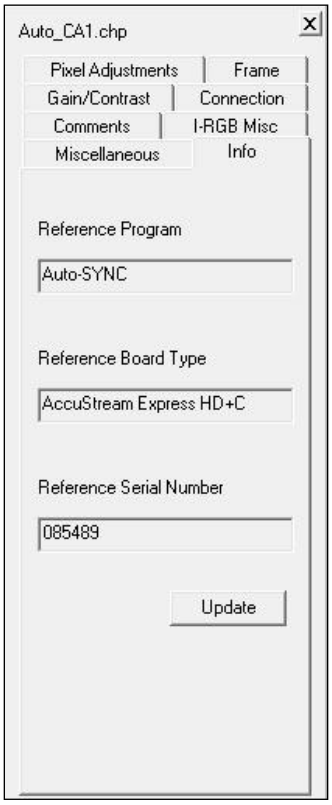


Figure 85: Info Settings

Changing the Comments

When you create a CHP file, you have the option to add your own personal comments to the file. The Comments option allows you to add additional information about the video source/signal at any time.

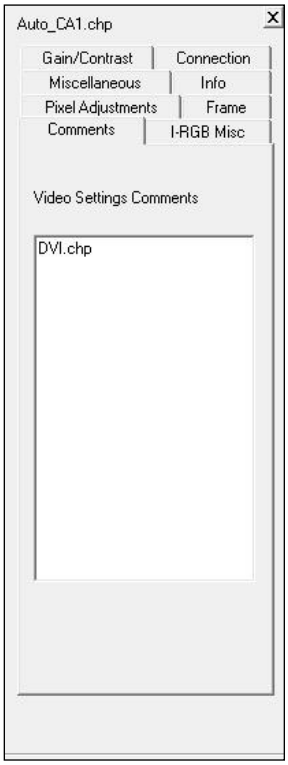


Figure 86: Comments for Video Settings

Changing Connection Settings

The options in the **Connection** tab concern the physical connection of the AccuStream board, as well as its channel and sync source.

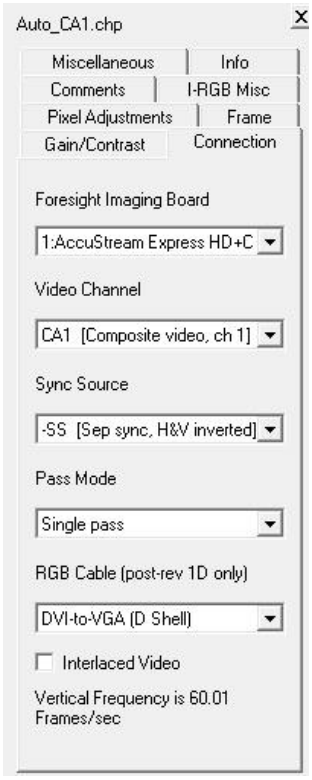


Figure 87: Connection video settings

Setting	Description
Foresight Board	Selects the frame grabber to be used.
Video Channel	RGB/YPbPr Analog & Digital inputs are grouped as CA1. Monochrome channels are separate as CA1, CA2, CA3.
Sync Source	CA4 (Composite, Video Sync Format, SS, (Separate H&V), SS-H, (Inverted Hsync) SS-V, (Inverted V Sync), –SS (H&V Sync Inserted)
Pass Mode	Single Pass. Captures the images in a single pass. Double Pass no longer supported.
RGB Cable	Selects the cable types used to connect to the frame grabber. DVI to BNC DVI to VGA 15 pin DSub. DVI to DVI (Either analog or digital) DVI to VGA 5BNC (Standard DVI to 5BNC Analog cable)

Connection Settings

The **Connection** tab is used to select boards, and video source and cable input type. Video Source may not be selectable on certain model frame grabbers.

Changing the Miscellaneous Settings

Use the Miscellaneous tab to edit the following video settings:

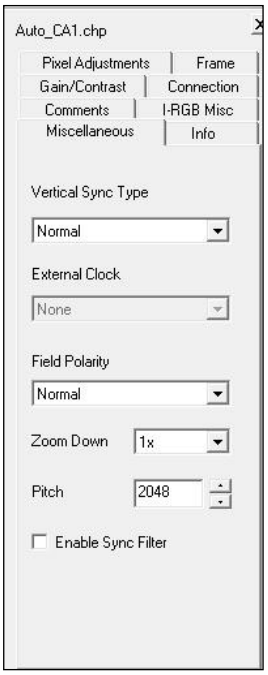


Figure 88: **Miscellaneous Settings**

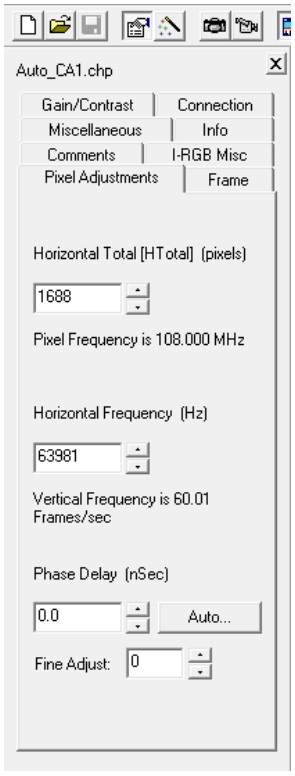
Setting	Description
Vertical Sync Type	Specifies the type of sync information that is available during the vertical sync and vertical front porch periods.
External Clock	For I-Series and AccuStream170 frame grabbers only. Not Used
Field Polarity	Specifies the order of the signal fields.
Zoom Down	Old method of scaling for I-Series and AccuStream170 frame grabbers. Not Used.
Pitch	Specifies an absolute width reserved for one line of video in frame grabber (i.e. video board) memory.
Enable Sync Filter	Used with the accustream170 series frame grabbers only. Not supported in the (AccuStream+, AccuStream HD+ and HD+C series frame grabbers)

Auto-SYNC Video Settings Tabs

Changing Pixel Adjustments Settings

Options available under the **Pixel Adjustments** tab.

The following table defines some of the terms available under the Pixel Adjustments tab.



Option	Default Value	Description
Horizontal Total	1688 pixels	Total number of pixels in one video scan-line.
Horizontal Frequency	63981 Hz	Number of scan lines transmitted per second in the video signal.
Phase Delay	0.0 nSec	Not Applicable with digital video sources.
Fine Adjust	0.0	Not Applicable with digital video sources.

Figure 89: Pixel Adjustment video settings

Changing Frame Video Settings

This option allows you to modify options that affect the video frame.

The following table defines some of the terms available under the **Frame** tab.

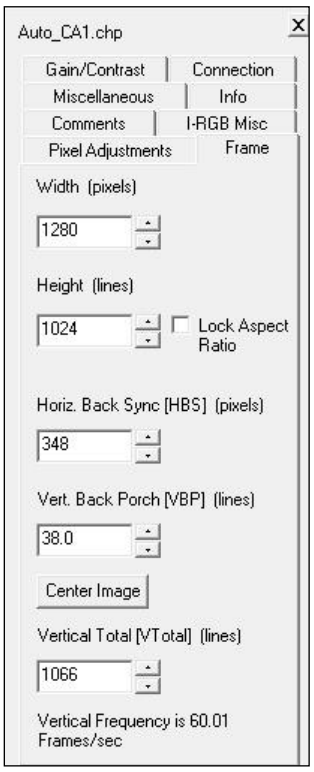


Figure 90: Frame Video Settings

Option	Default Value	Description
Width	1280	Number of pixels in a line in the image.
Height	1024	Number of lines in the image.
Horizontal Back Sync	348 pixels	The time period from the beginning of the horizontal sync pulse to the beginning of active video
Vertical Back Porch	38.0 scan lines	Number of vertical blanking lines in the video signal that does not include any vertical sync information.
Vertical Total	1066 scan lines	Total number of vertical lines in the video signal.

Changing Gain/Contrast Setting

Click on the **Gain/Contrast** tab to view the options.

The following table shows the effect of making changes to each of these options.

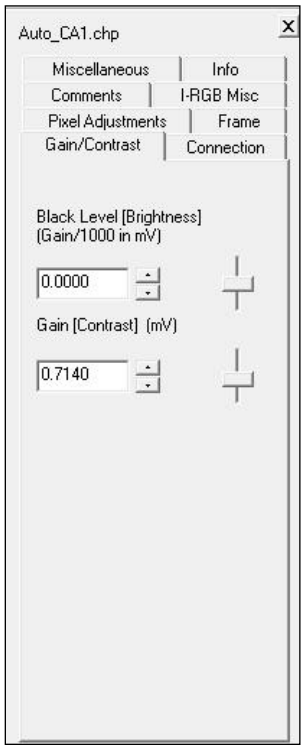
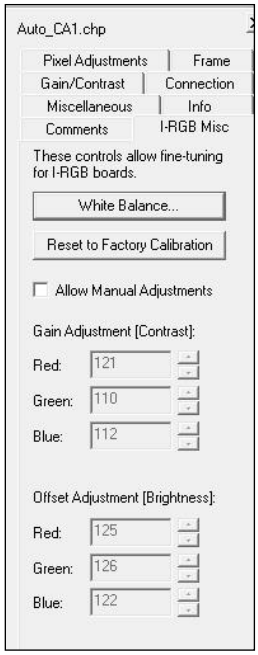


Figure 91: Gain/Contrast video setting

Option	Default Value	Description
Black Level	0.0000 mV	As Black Level increases, the image becomes lighter, but mid-range contrast is not affected.
Gain	0.7140 mV	As Gain increases, picture becomes darker and has less contrast.

AccuStream RGB Gain/Offset Settings

When an AccuStream RGB setting is used by a CHP file, depending on the frame grabber model, Auto-SYNC may display an I-RGB Misc tab that normally allows you to edit the following video settings:



Option	Description
Gain	Sets the RGB gain adjustments for the individual red, green, and blue channels. RGB gain affects the image contrast.
Offset	Sets the RGB offset adjustments for the individual red, green, and blue channels. RGB offset affects the image brightness.

Figure 92: AccuStream RGB Gain and Offset video settings

Note: AccuStream boards are originally calibrated by Foresight Imaging, Inc.

As White Balance is an analog only function that adjusts the amount of red, green, and blue in the black and white portion of the image.

The White Balance function is not available when using digital video.

Adjust Combined RGB Settings

The Combined RGB Settings is only available on the I-Series and AccuStream170 frame grabbers and not supported with the AccuStream+, HD+ and HD+C series frame grabbers.

Saving and Undoing Changes to your Video Settings

If you make any changes to any of the settings, be sure to select **File > Save** or **File > Save As** to save these changes.

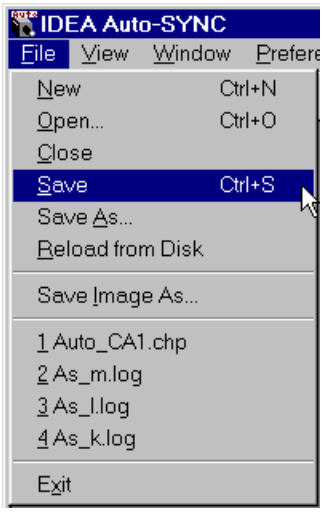


Figure 93: Saving your CHP file

If you want to undo any pending changes to your settings, you can restore the video settings by selecting **File > Reload from Disk**.

Saving an Image

Once you have an active CHP file, you may save a captured image as a bitmap (BMP) file. This BMP may be viewed with any graphics program. To perform this save, select **File > Save Image As**.

Using Auto-SYNC for SDTV Connections

This chapter describes using Auto-SYNC for SDTV connections with AccuStream HD+ and HD+C frame grabbers

Select the Connection Type

When you click **OK**, IDEA Auto-SYNC will first prompt you to identify the AccuStream board mode. Select the connection you have to the AccuStream board and then click OK. If you want to keep the selection as your default, click the checkbox below the connection selection so that this dialog does not appear again.

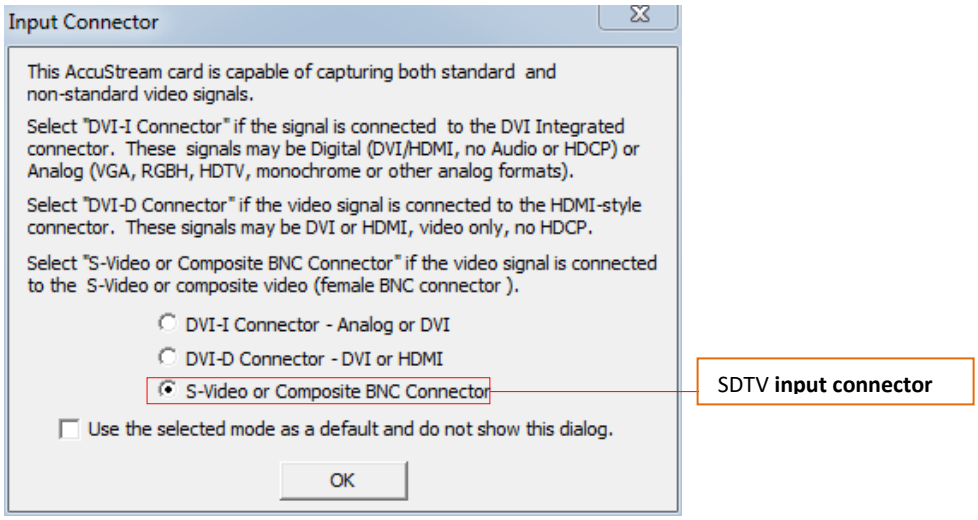


Figure 94: AccuStream Input Connector

After you make your selection and click **OK**, the Hints dialog appears. It is recommended that you read the dialog and click OK. If you do not want this dialog to appear each time you start an Auto-SYNC session, uncheck the **Always display hints before an Auto-SYNC session** box.

Note: SDTV is defined as Standard Definition Television formats:
RS170Yus, NTSC Color/Monochrome 640x480 or PAL 768x576, S-Video or Composite video signal.

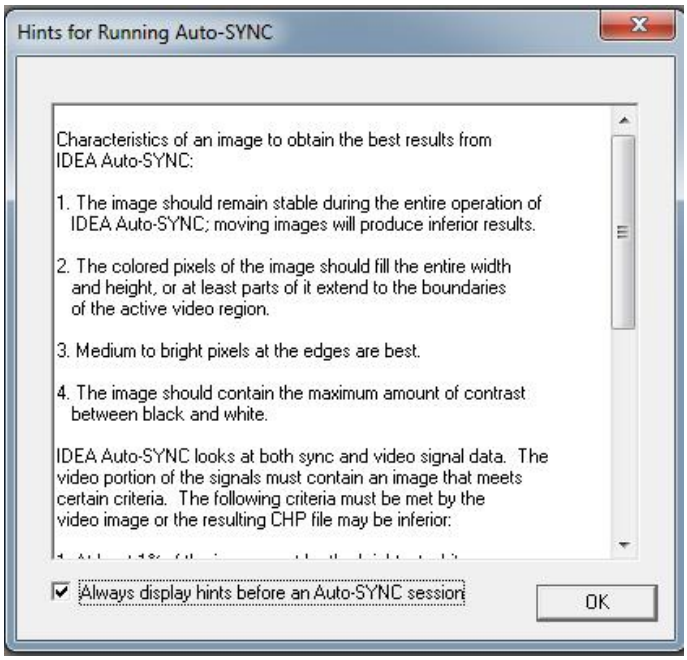


Figure 95: Hints dialog

Next you need to select the type of input video format and channel.

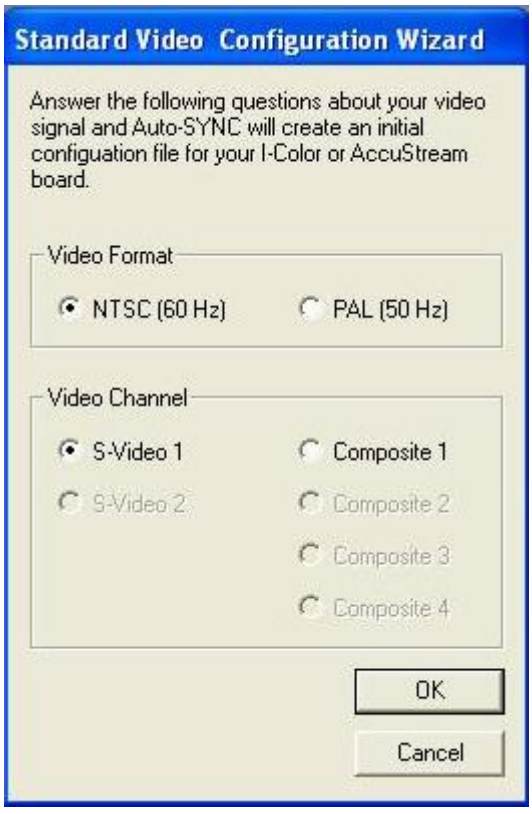


Figure 96: Select NTSC or PAL Video Format and S-Video or Composite 1 video channel

Auto-SYNC then measures the incoming video's pixel clock and compares it against the SDTV template chp files then creates the CHP file. If the CHP file already exists you will be prompted to overwrite the file.

Important: When saving the CHP file, provide a filename that you will easily recognize for your video source.

Next you can add text comments for the CHP file.

Figure 97: Comments on the CHP file

After you add text comments for the CHP file, the following screen appears.

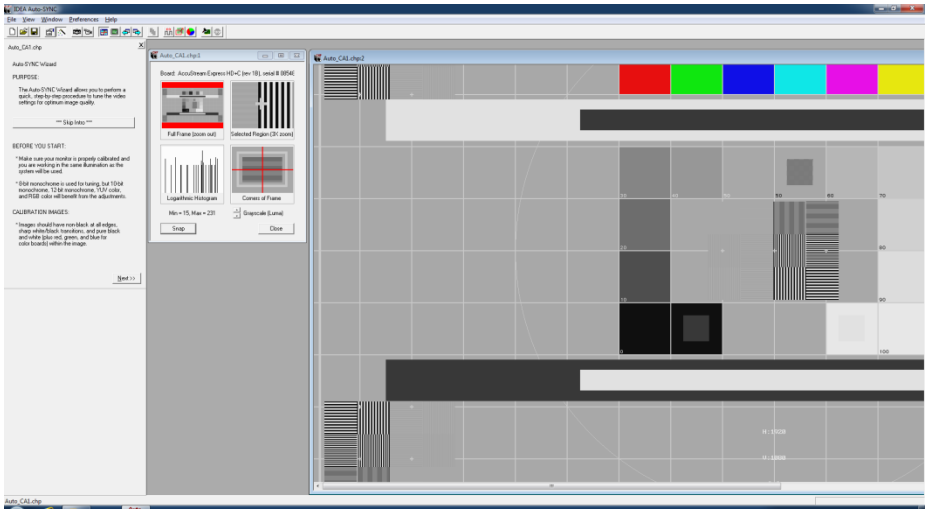


Figure 98: Start screen for the Auto-SYNC wizard

When the Auto-SYNC wizard start page appears, ensure that your PC monitor is properly calibrated and you are working in the same illumination as the system you will use. Use the calibration dialog to help you determine what changes you need to make, if any. Use the **Snap** (F5) button to refresh the Auto-SYNC window.

Note: Analog Images used in this example.

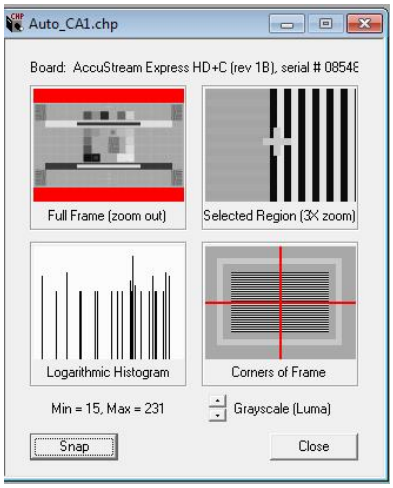


Figure 99: Calibration Dialog

After selecting the input video being provided, you can start the Auto-SYNC wizard. See Running the Auto-SYNC Wizard on page **119.**

Phase Determination

Phase Determination is not supported when using SDTV S-video or Composite video inputs with the AccuStream HD+ and HD+C series frame grabbers.

The following phase determination methods are supported:

Coarse (default):

Performs a fast measurement survey, generating summary information for about 1/6th of the candidate phase values.

Attempts to locate the candidate with the lowest pixel value standard deviation.

Runs quickly and provides reasonable results with a wide variety of image/format combinations.

Refined:

Performs a thorough measurement survey, generating summary information for all of the candidate phase values.

Typically slower than the other methods, but is more precise and reliable for most image/format combinations.

Thorough:

Performs a thorough measurement survey, generating detailed image information for all of the candidate phase values.

Uses the image data to precisely measure the image stability at each candidate value and selects the most stable.

This is the slowest method (often slower than manual calibration), but the results are the most resilient to changes in temperature and image content. The results are superior to those produced by the unaided eye.

Custom A (StDev best):

Performs a thorough measurement survey, generating summary information for all candidate phase values.

Is a variation of the Coarse and Refined methods.

Attempts to locate the candidate with the lowest pixel value standard deviation.

Custom B (Sharp hunt):

Performs a fast measurement survey and generates summary information for about 1/6th of the candidate phase values.

Attempts to locate the candidate value with the sharpest histogram peaks.

This method produces best results with images that are almost entirely an alternating white-pixel/black-pixel pattern. Examples of such patterns include the checkerboard "resolve" pattern and the vertical striped "grill" pattern (with one-pixel stripes).

Custom C (Sharp max):

Similar to Custom B except that it performs a more thorough testing of candidate phase values.

Running the Auto-SYNC Wizard

Once the IDEA Auto-SYNC process has completed, the Auto-SYNC Wizard is automatically started to facilitate fine tuning of the video settings. The Auto-SYNC Wizard can be started manually at any time.

To start the Auto-SYNC wizard, you can do one of the following:

- Click the **Skip Intro** to skip the video calibration images information. The three page introduction provides basic information about image calibration and introduces the standard image types that are most useful when using the Auto-SYNC Wizard. To view details on the video calibration images, *see* ***Recommended Calibration Images*** *on page 106*.
- To view the video calibration images information as part of the Auto-SYNC wizard, click **Next**.

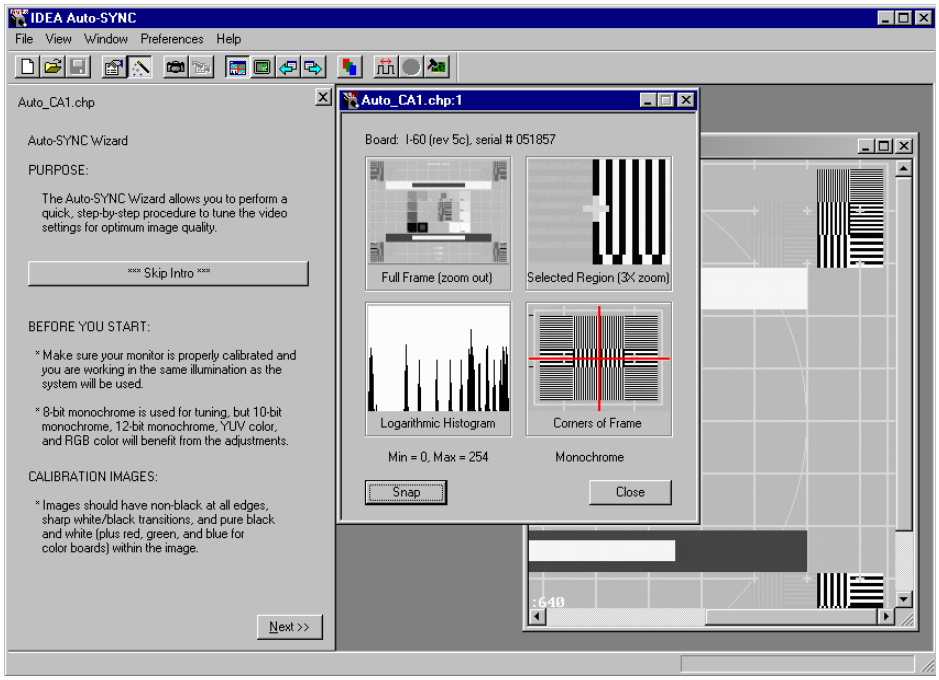


Figure 100: IDEA Auto-SYNC Wizard introductory screen once the CHP file is created

The upper window on the right side is called the “Multi-view window”. The Multi-view window displays multiple monochrome views of the image (zoom, histogram, etc.) and also displays the board type (and its serial number) that is being used. When using an AccuStream board, the Multi-view window can display either Y-only (luma) grayscale or one of the three RGB color planes. The figure also shows a full-size window that displays the entire image (with scroll bars, if needed). Both windows are useful when running the Auto-SYNC Wizard.

Every page of the Auto-SYNC Wizard includes a pair of **Back**/**Next** buttons for navigation; steps in the Auto-SYNC Wizard can be repeated as needed. Convenient buttons to bring up the **Histogram** (in the multi-view window) or the **Full-Size** view window on the CHP file are available.

After viewing the Auto-SYNC Wizard introduction, the tuning process begins. There is a large button on the first introduction page that skips to the first tuning step. On the last introduction page is a checkbox that hides the introduction pages the next time the Wizard is used; the user can also enable/disable the introduction from Auto-SYNC's **Preferences** menu.

The Auto-SYNC Wizard process varies slightly for different board types.

AccuStream Auto-SYNC Wizard Step 1: Adjust HTotal for SDTV Connections

In the Analog world normally the video's Horizontal Total (HTotal) can be adjusted, however, due to the design of the AccuStream Express HD+ frame grabber when using the S-Video or BNC inputs AutoSYNC will use factory pre-made SDTV CHP files and HTotal is not adjustable.

If the SDTV video is connected using the DVI to 5 BNC cable (P/N: 030093), the DVI to BNC Adapter (P/N: 030175) or the S-Video to BNC cable (P/N: 030193), then AutoSYNC will measure the incoming video source and Htotal is adjustable.

Use of the DVI to 5 BNC cable or DVI to BNC adapter for NTSC Color S-Video or Composite video signals requires a low pass filter or a color burst filter to filter out the color information, or else the color information will produce a herringbone pattern in the video. Use of this procedure will result in MONOCHROME video.

Adjusting Htotal for SDTV using the DVI Adapters

Htotal is the number of pixels per scan line in the video signal; some of these pixels are not part of the active video (e.g., porches which are on the right and left side of the image) so HTotal represents the active plus the inactive video signal measured as pixels. Increasing the HTotal widens the image, increasing the aspect ratio.

Note: Be aware of the monitor format (your display, (for example, is it 5:4 or 16:9), before adjusting the HTotal. Your display monitor aspect ratio should be set to the same aspect ratio as the video source.

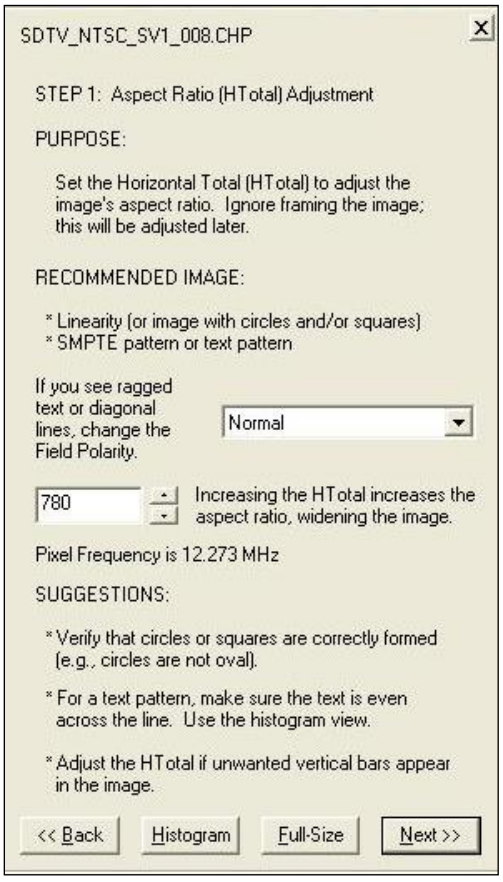


Figure 101: Auto-SYNC Wizard Step 1

HTotal adjustments require a video image that highlights errors in aspect ratio. An image with circles or squares or a text pattern is recommended.

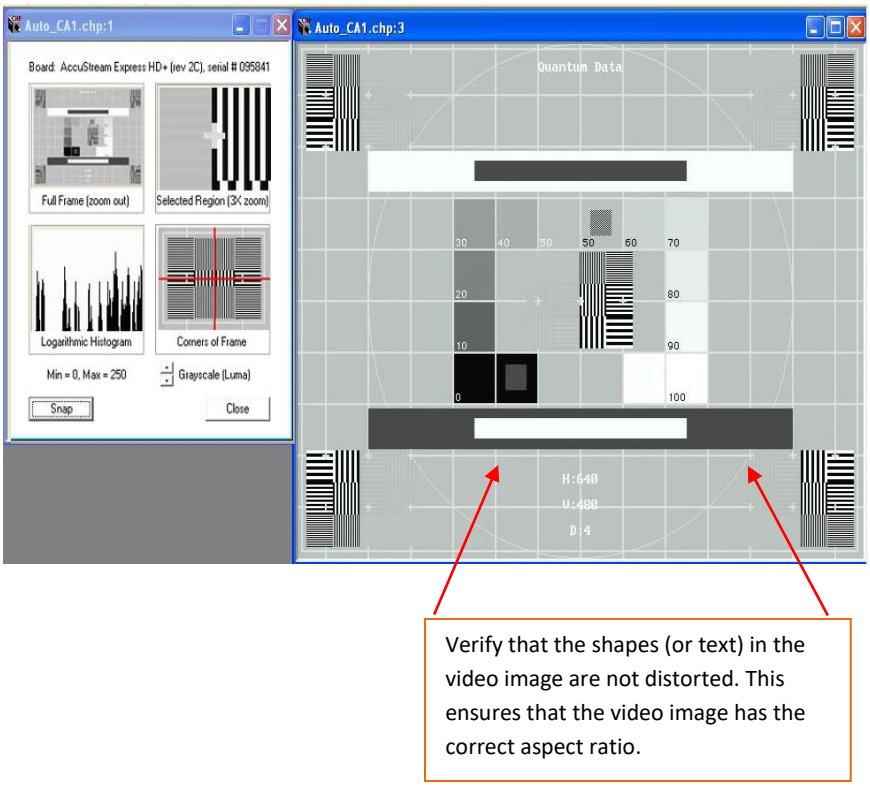
Note: Htotal's value must be divisible by 4.

If your video is interlaced, look at the image to see if text or diagonal/curved lines appear ragged. If the text or lines do, try adjusting the Field Polarity to change the ordering of fields/frames. Depending on the video pattern, changes to the field ordering may have invalidated the results of the Auto-SYNC session. You may want to rerun Auto-SYNC to generate a new CHP file.

The HTotal is adjusted by typing a new value into the edit box or using the up/down buttons; the arrow and Page Up/Down keys also work. Changes to the HTotal are reflected in any open views of the CHP file (multi-view, full-size view). Focus on getting the aspect ratio correct; the image framing will be adjusted in a later step.

Aspect Ratio (HTotal) Adjustment Example

This first example shows a video image with the correct values for aspect ratio. Notice that the circle and square shapes are not distorted. Another good way to check aspect ratio is with text images.



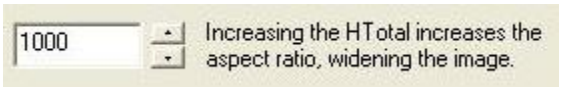
Verify that the shapes (or text) in the video image are not distorted. This ensures that the video image has the correct aspect ratio.

Figure 102: Example of Aspect Ratio (HTotal) with Correct Values

This next example shows a video image that is too narrow. You will notice in this example that the square and circle shapes are distorted vertically. The square and circle images are too narrow.

Figure 103: Example of Aspect Ratio (HTotal) that needs a horizontal adjustment

To correct the above example, change the HTOTAL value to a higher value by entering a higher number in the text box or using the up arrow key to change the value. Keep changing the value until the shapes appear correct.



The next example shows a video image that is too wide. The shapes will have the same distortions as shown in the previous example, but horizontally.

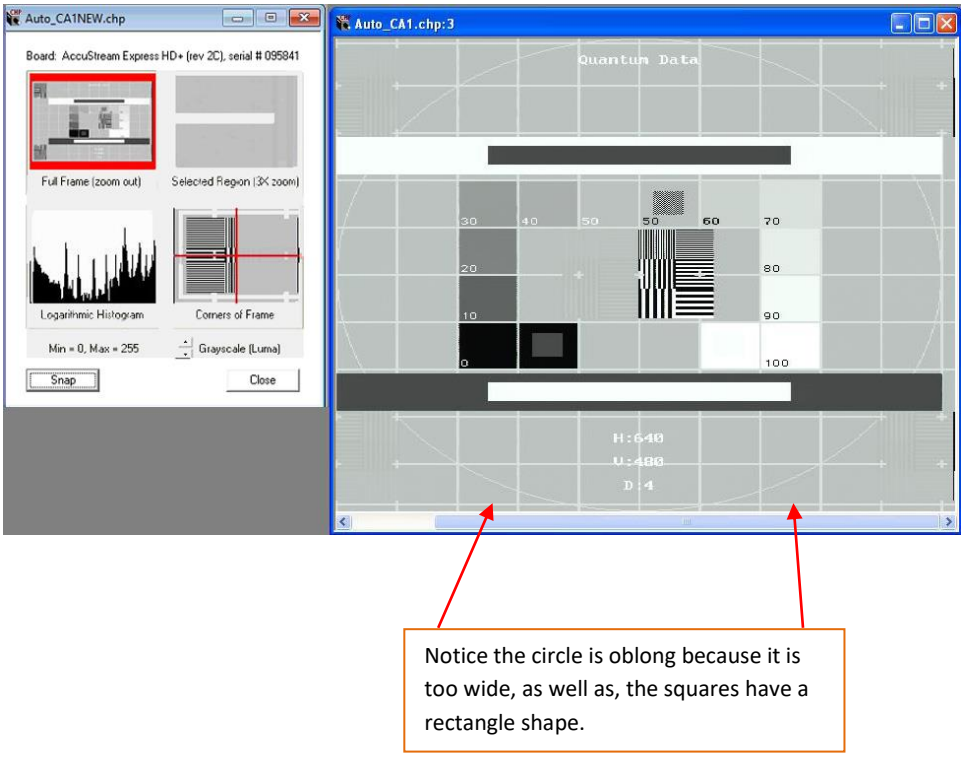
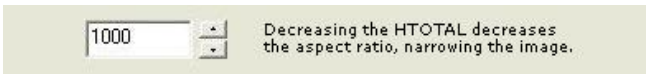


Figure 104: Example of Aspect Ratio (HTotal) that needs a vertical adjustment

To correct the above example, change the HTOTAL value to a lower number by entering a lower number in the field or using the down arrow key to change the value. Keep changing the value until the shapes appear correct.



In this last example, you will see the aspect ratio distorted when viewing a video image with text.

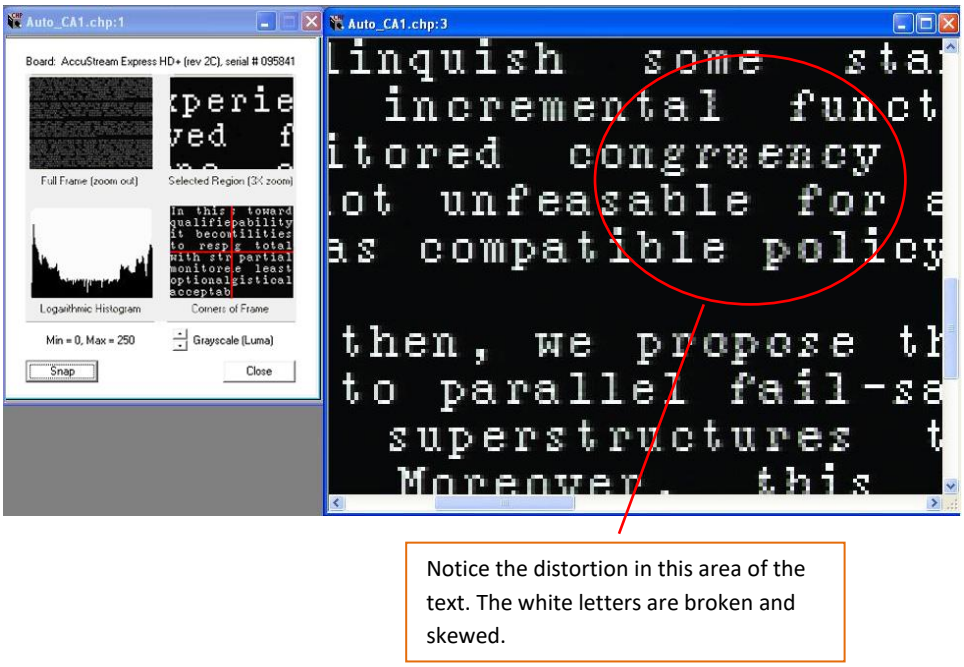


Figure 105: Example of Aspect Ratio with text that needs adjustment

When text is distorted, it is recommended that you change the Field Polarity.

TIPS:

Use the Histogram to view changes needed, if any. Use this Auto-SYNC step to make sure of the following:

- Make changes to HTOTAL if you have issues with any of the following:
    - Circles are not concentric
    - Squares are not “square”
    - Text is not even and consistent across
- Make aspect ratio adjustments through HTotal:
    - Increase HTotal to widen image
    - Decrease HTotal to narrow image

AccuStream Auto-SYNC Wizard Step 2: Adjust Left/Right Framing for SDTV Connections

The next step is to adjust the left/right framing of the image. The left edge is set first and then the image width. The left edge is set by the value of the Horizontal Back Sync (HBS), which represents the period between a horizontal sync pulse and the start of active video. The image width is set as the number of pixels per line.

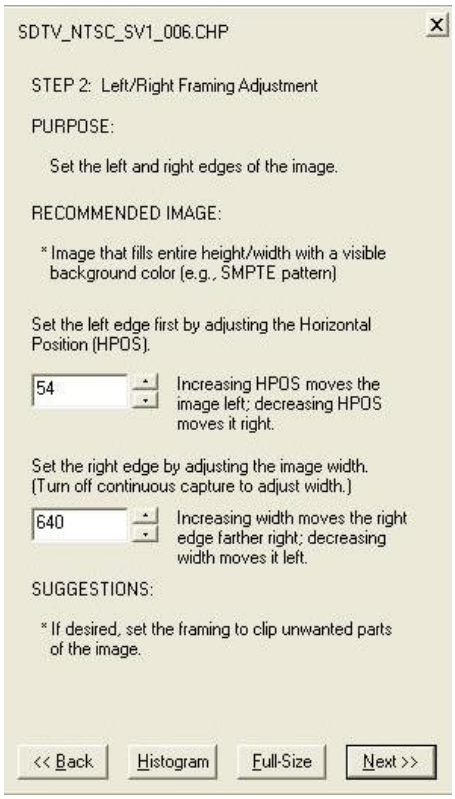


Figure 106: Auto-SYNC Wizard Step 3

Framing adjustments require an image that has a non-black background that extends across the entire image. The SMPTE pattern is recommended.

The Horizontal Back Sync (HBS) is adjusted in the standard way. Increasing the HBS moves the image to the left. Set the HBS so that the image's background extends fully to the left of the viewing window.

Once the HBS is set, the image width can be adjusted in the standard way until the full width of the image appears in the viewing window. Now that the full image width is visible, it is possible that the aspect ratio was incorrectly set in Step 1; click the **<<Back** button to go to Step 1 to fix it.

Note: When adjusting HBS, the number of pixels per line is adjusted so that the image extends to the left of the viewing window.

Example

This first example shows a video image with the correct values for Left/Right Framing. Notice that both edges of the video image align against the edge; there is no distortion or clipping.

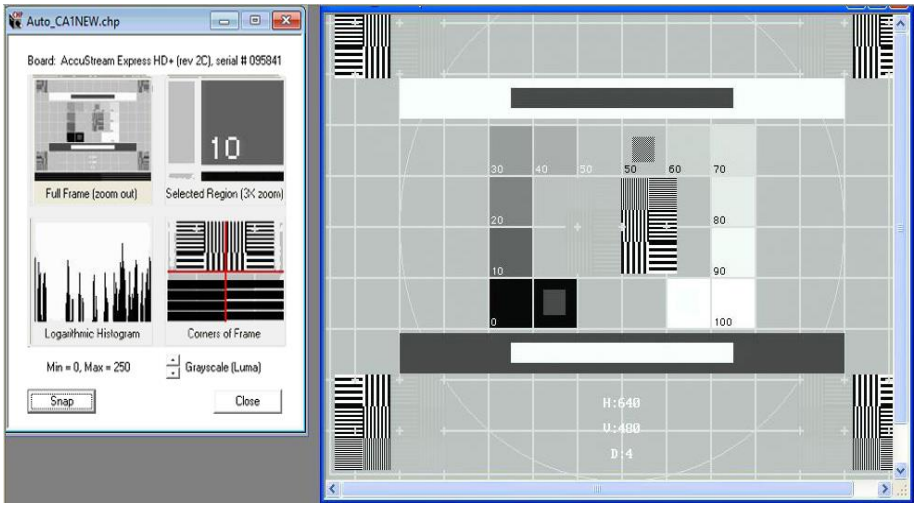


Figure 107: Example of proper video image framing

In the next example, the video image is too large and is clipped on its left edge.

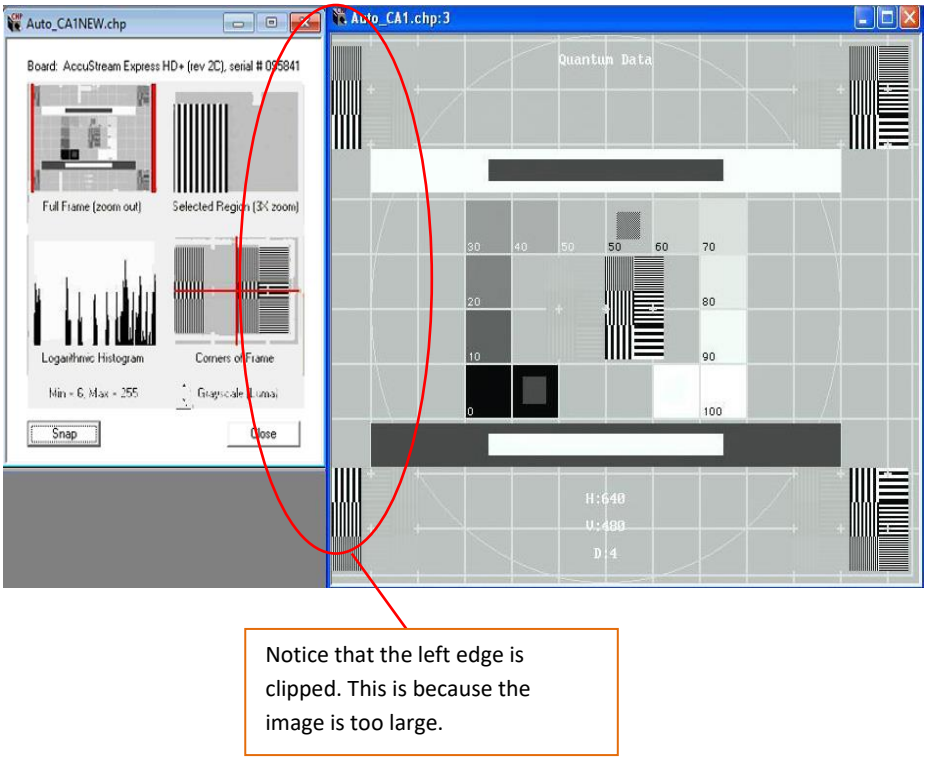


Figure 108: Example of framing values too large

To adjust the image, decrease the HBS value to move the image to the right. This adjustment will result in the whole image displaying without a clipped left edge.

In the next example, the video image is too small. The image is too far from the left edge.

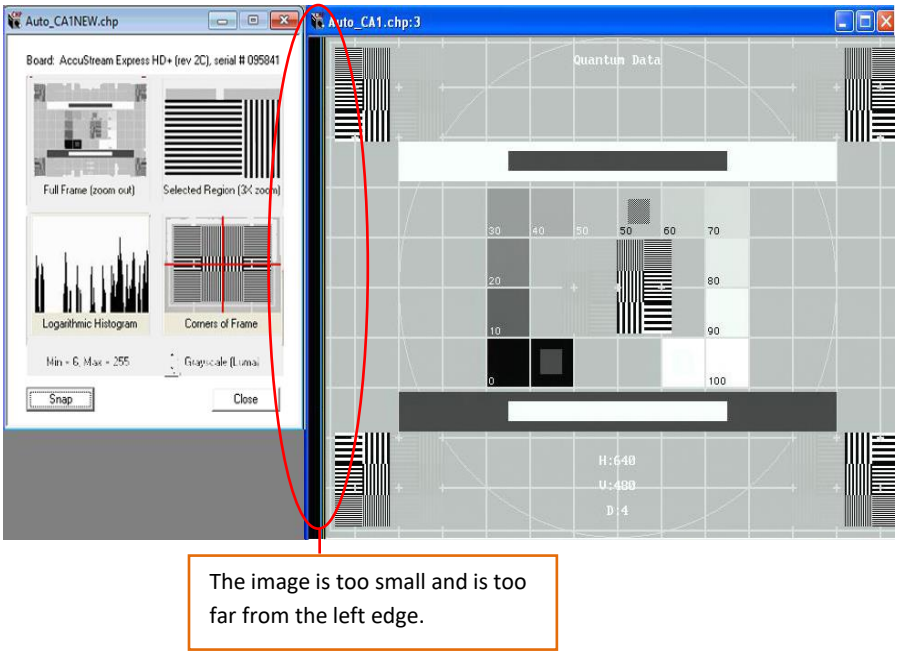


Figure 109: Example of framing values too small

To adjust the image, increase the HBS value to move the image to the left edge.

In the next example, the image width is too small and needs to increase the width to the right edge.

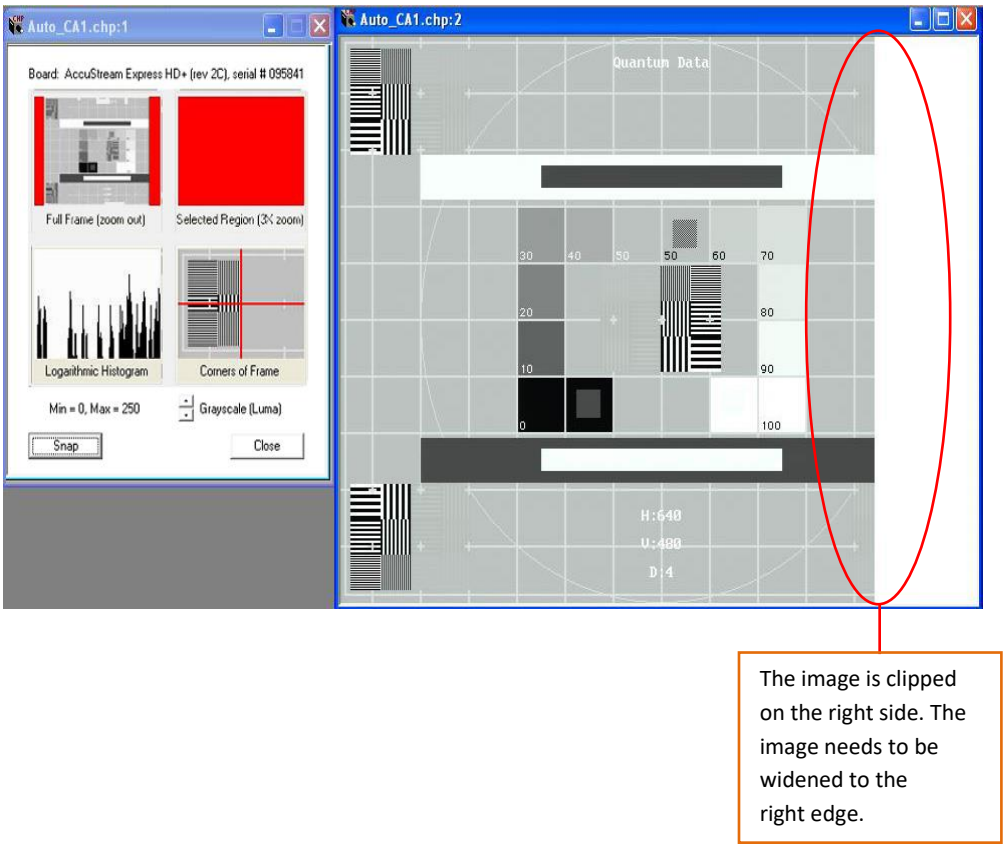


Figure 110: Example of video image that is not wide enough

To adjust the video image, increase the image width to widen the image to the right edge.

In the next example, the image width is too wide.

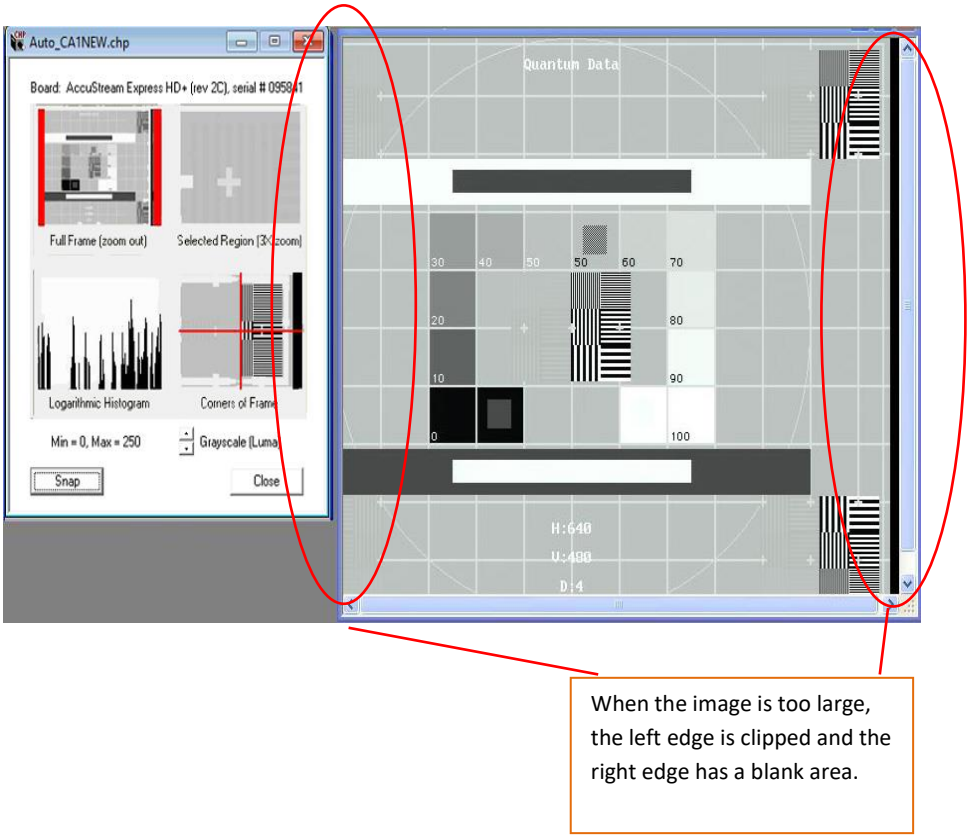


Figure 111: Example of video image that is too wide

To adjust the video image, decrease the image width to fit into the left and right edges.

TIPS:

When making left/right framing adjustments:

- Adjust the left edge with HBS – increase HBS moves image to left; decrease HBS moves image to right.
    - Use to clip the image's left side.
    - Use to define horizontal Area of Interest (AOI) position.
- Adjust the right edge with image width – increase width increases right edge; decrease width decreases the left edge.
    - Use to clip right side of image.
    - Use to define horizontal size of AOI.

AccuStream Auto-SYNC Wizard Step 3: Adjust Top/Bottom Framing for SDTV Connections

The next step is to adjust the top/bottom framing of the image. The top edge is set first and then the image height. The top edge is set by the value of the Vertical Back Porch (VBP), which represents the number of vertical blanking lines in the video signal from the trailing edge of the vertical sync to the start of active video. The image height is set as the number of lines in the image.

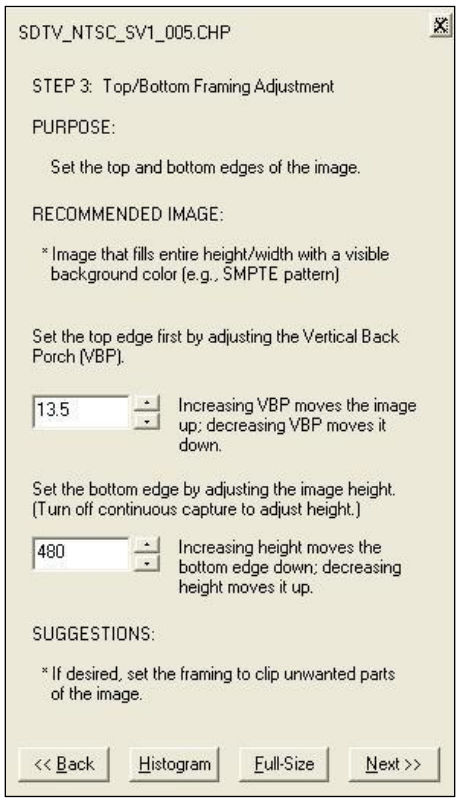


Figure 112: Auto-SYNC Wizard Step 4

Framing adjustments require an image that has a non-black background that extends image upward. Set the VBP so that the image's background extends fully to the top of the viewing window.

Once the VBP is set, the image width can be adjusted in the standard way until the full height of the image appears in the viewing window.

Examples

In this example, the video image is too large and extends beyond the top edge.

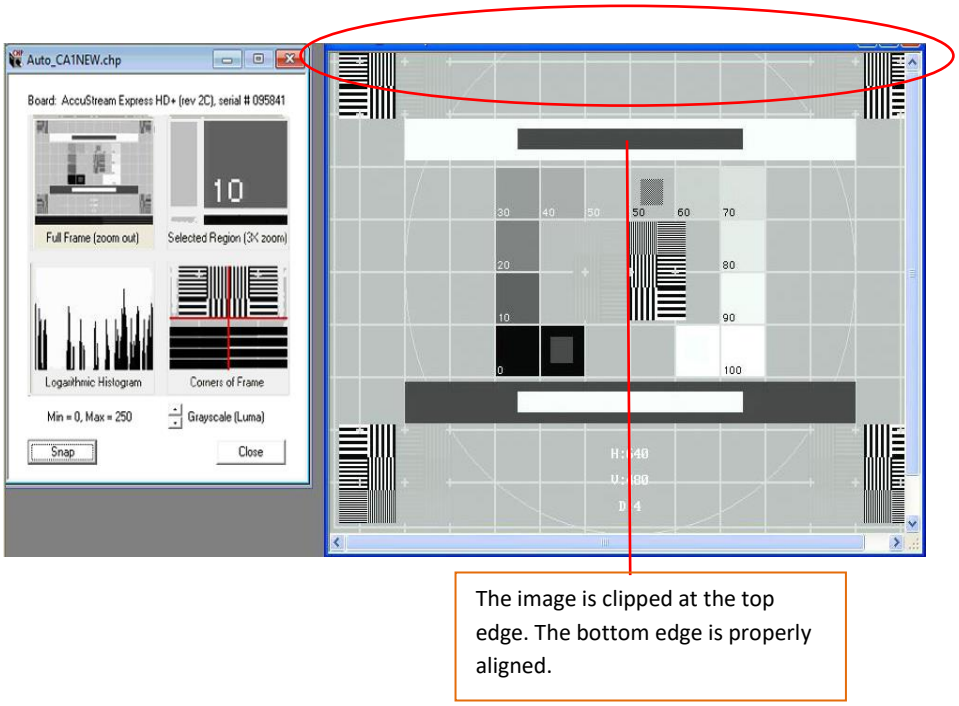


Figure 113: Example of video image that is clipped at the top edge

To adjust the image, decrease the VBP to move the image down. This will align the video image to the top edge.

In the next example, the video image is too small. The top edge is clipped and the bottom edge is above the bottom edge of the image.

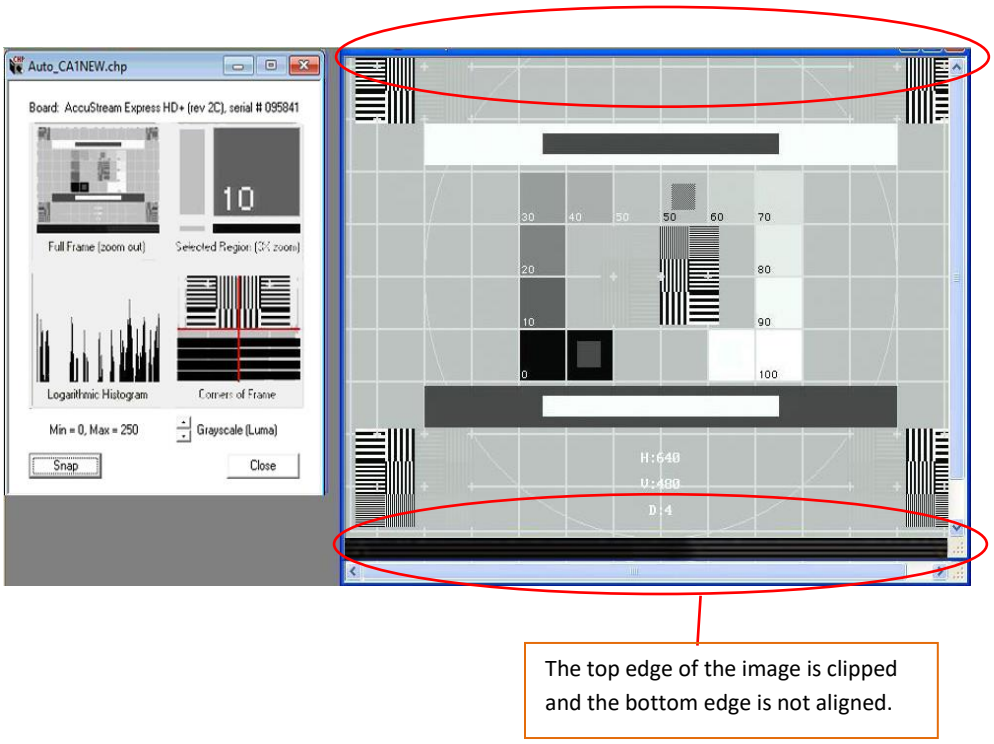


Figure 114: Example of video image that is clipped at the top edge and is not aligned with the bottom edge

To adjust the image, increase the VBP to increase the size of the image. This will align the video image to the top edge.

In the next example, the video image is too small and is not reaching the bottom edge.

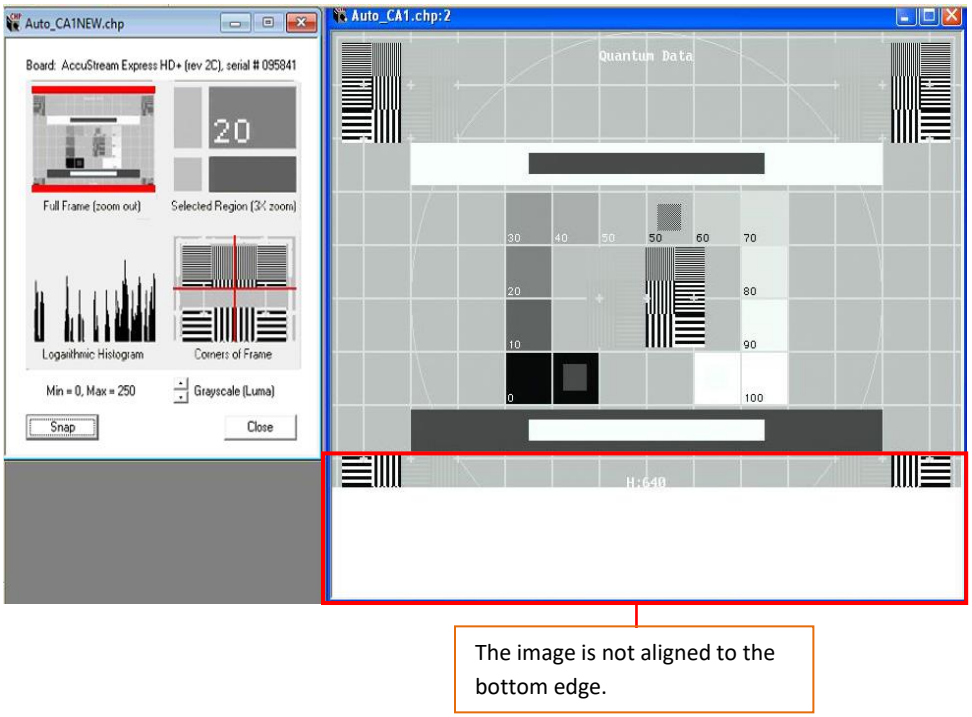


Figure 115: Example of image that is too far from the bottom edge

To adjust the image, increase the height to increase the bottom edge. This will align the video image to bottom edge.

In the next example, the video image is too large and is distorted at the bottom edge.

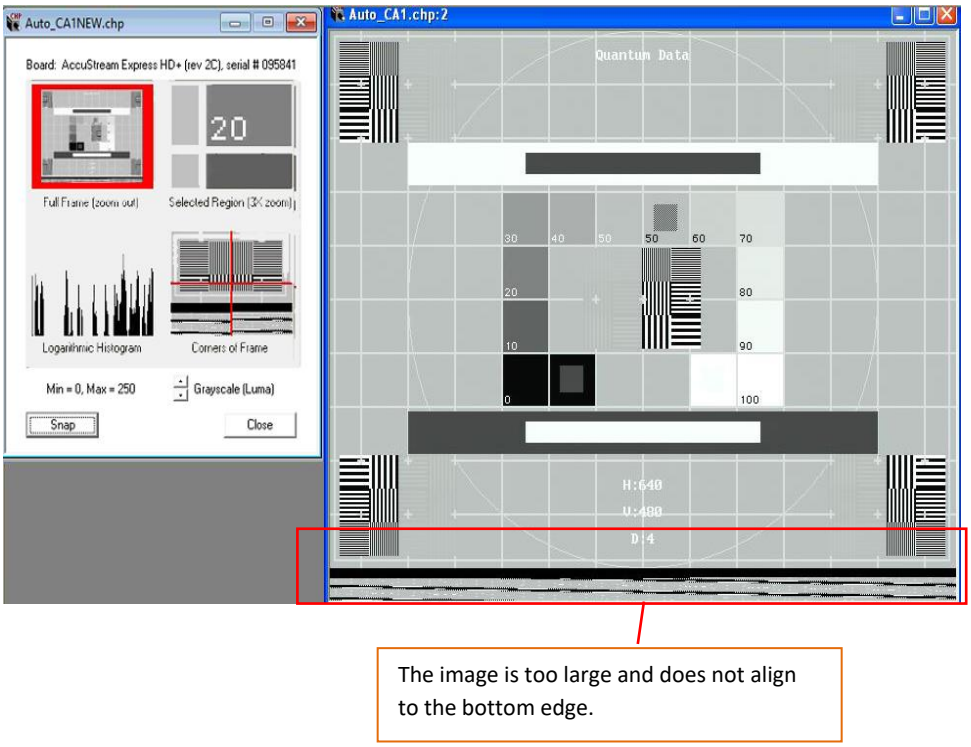


Figure 116: Example of video image that is not aligned to the bottom edge

To adjust the image, decrease the height to decrease the bottom edge. This will align the video image to bottom edge.

TIPS:

When making top/bottom framing adjustments:

- Adjust the top edge with VBP – increase VBP moves image up; decrease VBP moves image down.
    - Use to clip the top of image
    - Use to define vertical AOI position
- Adjust bottom edge with height – increase height increases bottom edge; decrease height decreases bottom edge.
    - Use to clip edge of image
    - Use to define vertical size of AOI

AccuStream Auto-SYNC Wizard Step 4: Adjust Brightness and Contrast for SDTV Connections

The next step is to adjust the brightness and contrast of the image. It is normal for the pixels to range from 0 to 255. Since the goal is for the image to be visually acceptable, other ranges may be desirable.

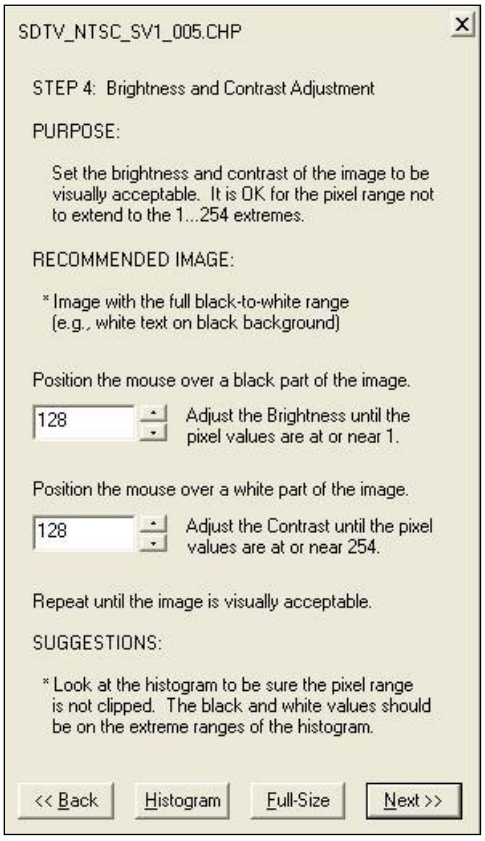


Figure 117: Auto-SYNC Wizard Step 5

Brightness and contrast adjustments require a video image that has the full black-to-white range. Images with a text pattern are recommended. The histogram is very useful for this step so the multi-view window is recommended.

Position the mouse over the blackest part of the image. Adjust the Brightness value in the standard way. Shifting the Brightness changes the pixel values; these changes are visible either in the pixel value reader (in the lower right of Auto-SYNC's status bar) or in the histogram. The goal is to have the black pixels correspond to pixel values near 1.

Once the Brightness is set, move the mouse to the whitest part of the image. Adjust the Contrast value until the white pixels correspond to values near 255.

Changing the Contrast may affect the results of the Brightness adjustment, so this process must be repeated iteratively until the desired brightness and contrast are achieved. Watch the histogram to be sure that the range of pixel values extends from 0 to 255 and that not too many pixels are being mapped to these extremes (i.e., near-black is mapped to total black).

Examples

In this first example, the video image has the correct settings for the brightness and contrast. In this image, the mouse is moved to the black part image to show the value is correct at the 0,0,0 setting. For contrast, you would move the cursor over the white part of the image where the correct setting would be 255,255,255.

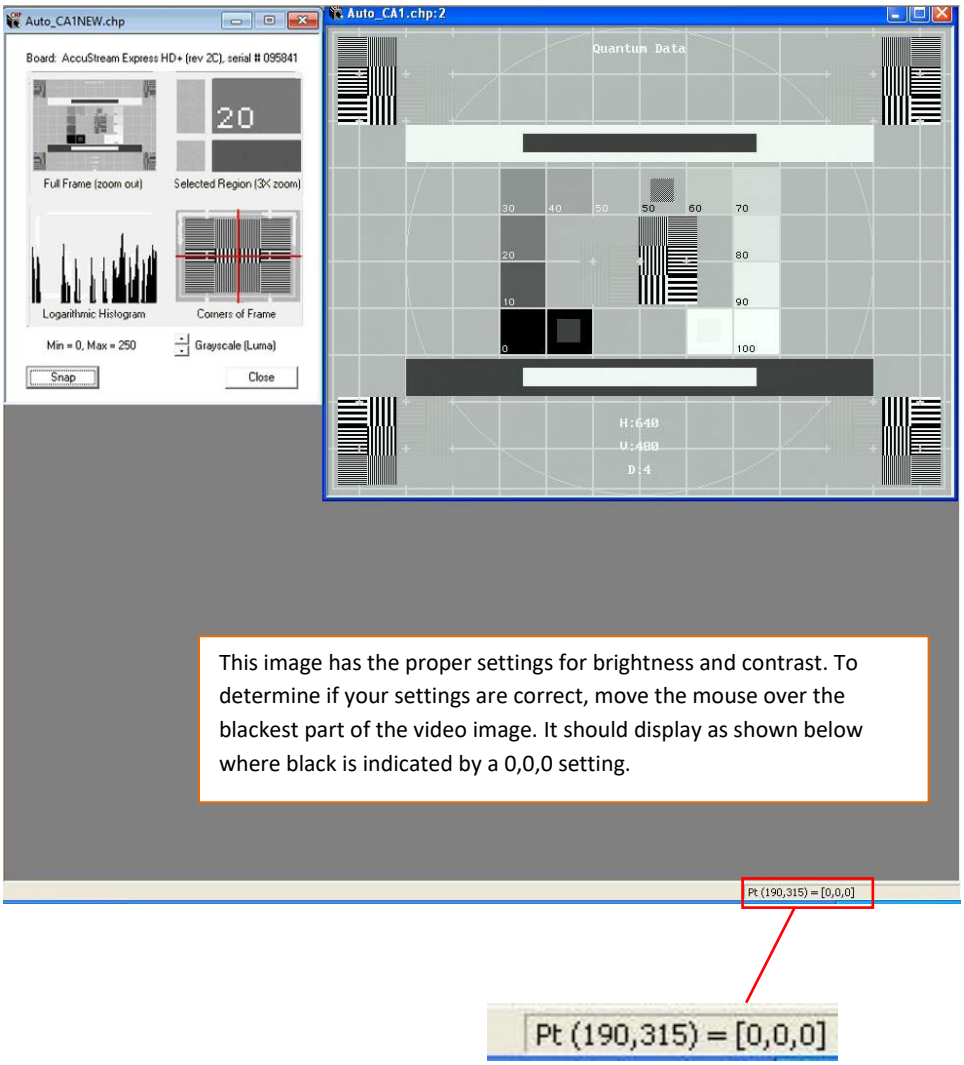


Figure 118: Example of video image with proper settings for brightness and contrast

Note: If you move the mouse over the black or white areas in the image, the values for the black or white portion always display in the lower right-hand corner.

In this next example, the black or brightness setting is set too low.

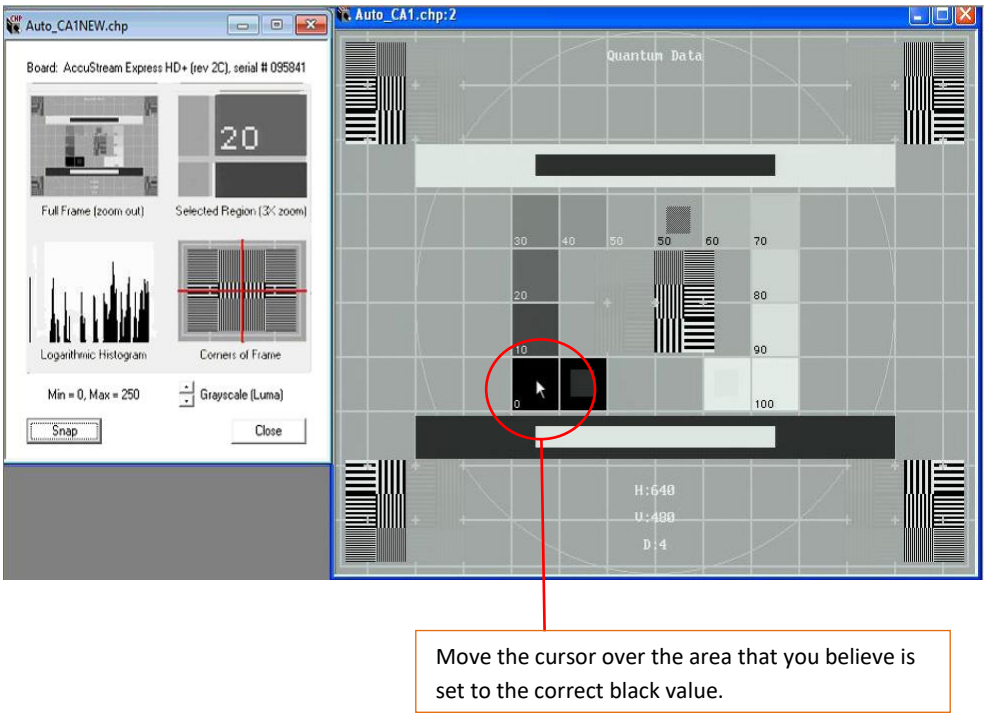


Figure 119: Example of video image where the brightness (Black Level) is too dark

In order to adjust the setting, do the following:

1. Click your mouse in the Brightness field.

2. Move your mouse over the black area of the image until you find the value 0,0,0 in the bottom right hand corner. For example, in the screen example below, move the mouse to the black box labeled.

3. Press the up arrow key once to see if the 0,0,0 value increases. If it does not increase above 0,0,0, then the black value is set too low. Keep pressing the up arrow until you reach the next value above 0,0,0.

4. Once you have reached the next value above 0,0,0, then use the down arrow to move back to the 0,0,0 value. The Brightness is now set properly

In this next example, the value for Brightness is set too high. This means when you move the mouse cursor over the area which you believe it is set to the correct Brightness value of 0,0,0, it is higher than that value. In this example, you can see the value is set to 0,3,9.

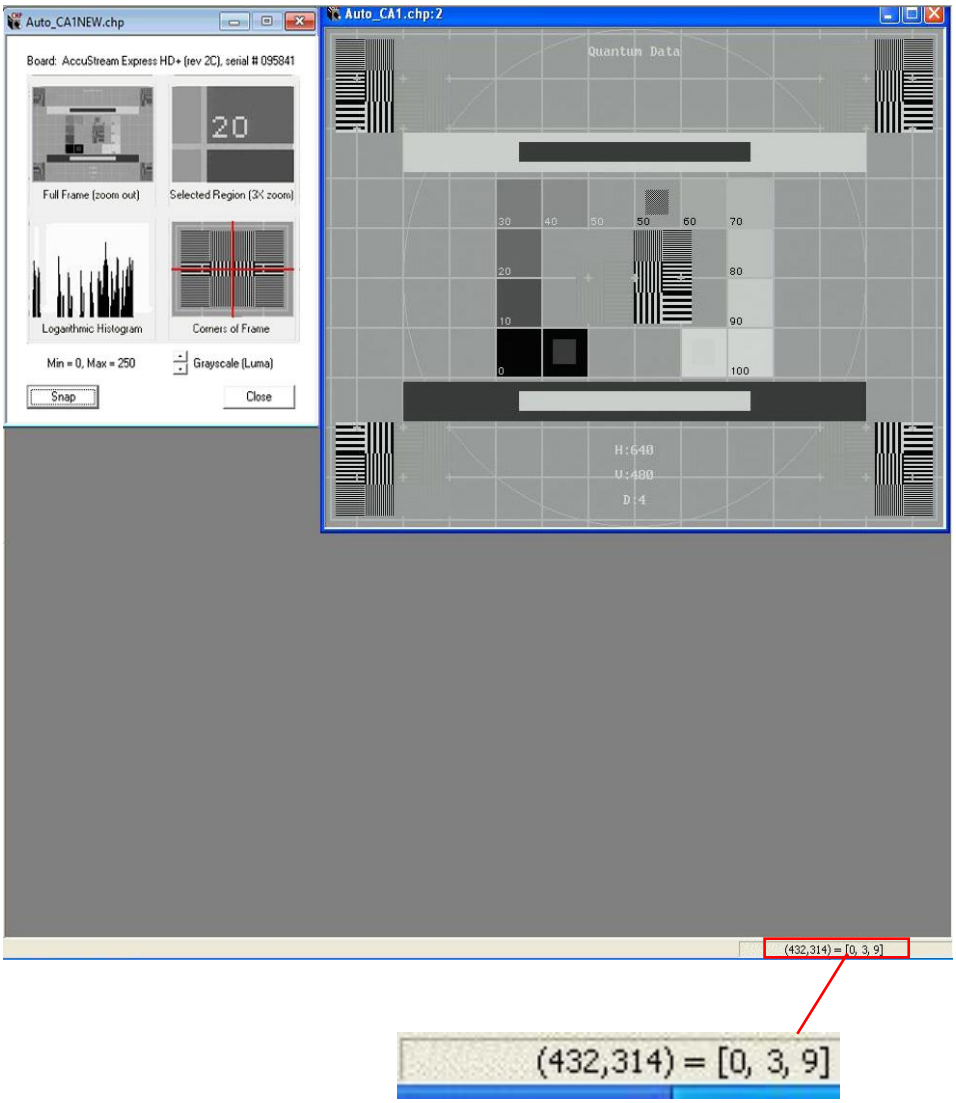


Figure 120: Example of video image where the brightness setting (Black Level) is too high

To adjust this value to the correct value for Brightness, do the following:

1. Click your mouse cursor over the Brightness field on the left hand side.
2. Move your mouse cursor over the lowest Contrast (Black) value on the video image.
3. Use the down arrow key to move the Brightness (for Black) setting to 0,0,0 which is displayed in the bottom right hand corner. Stop pressing the arrow key as soon as you reach the 0,0,0 level since if you continue to press the key, the Black Level value will be set too low.

The next example shows how to adjust the Contrast value when it is set too low. In this example, the Contrast is based on the white level should be set to 255,255,255.

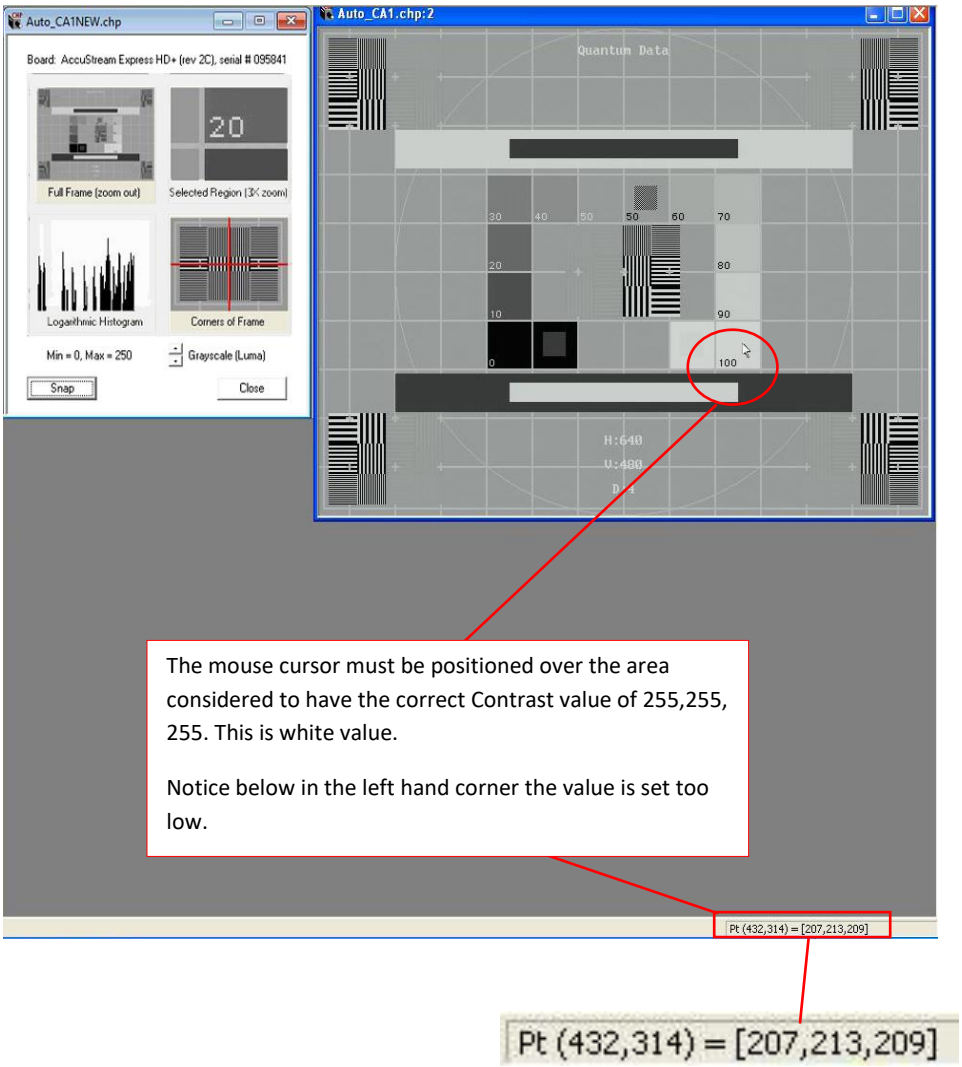


Figure 121: Example of video image where the contrast (White Level) is set too low

To adjust this value, do the following:

1. Click your mouse cursor over the Contrast field on the left hand side.
2. Move your mouse cursor over the lowest Contrast (White) value on the video image.
3. Use the up arrow key to move the Contrast setting to 255,255,255 which is displayed in the bottom right hand corner. Stop pressing the arrow key as soon as you reach the 255,255,255 level since if you continue to press the key, the Contrast value will be set too high for contrast.

In this final example, the Contrast value is set too high. This means that even though it appears that the value is set to 255,255,255, it is really set above that value due to the lack of contrast with the surrounding white squares.

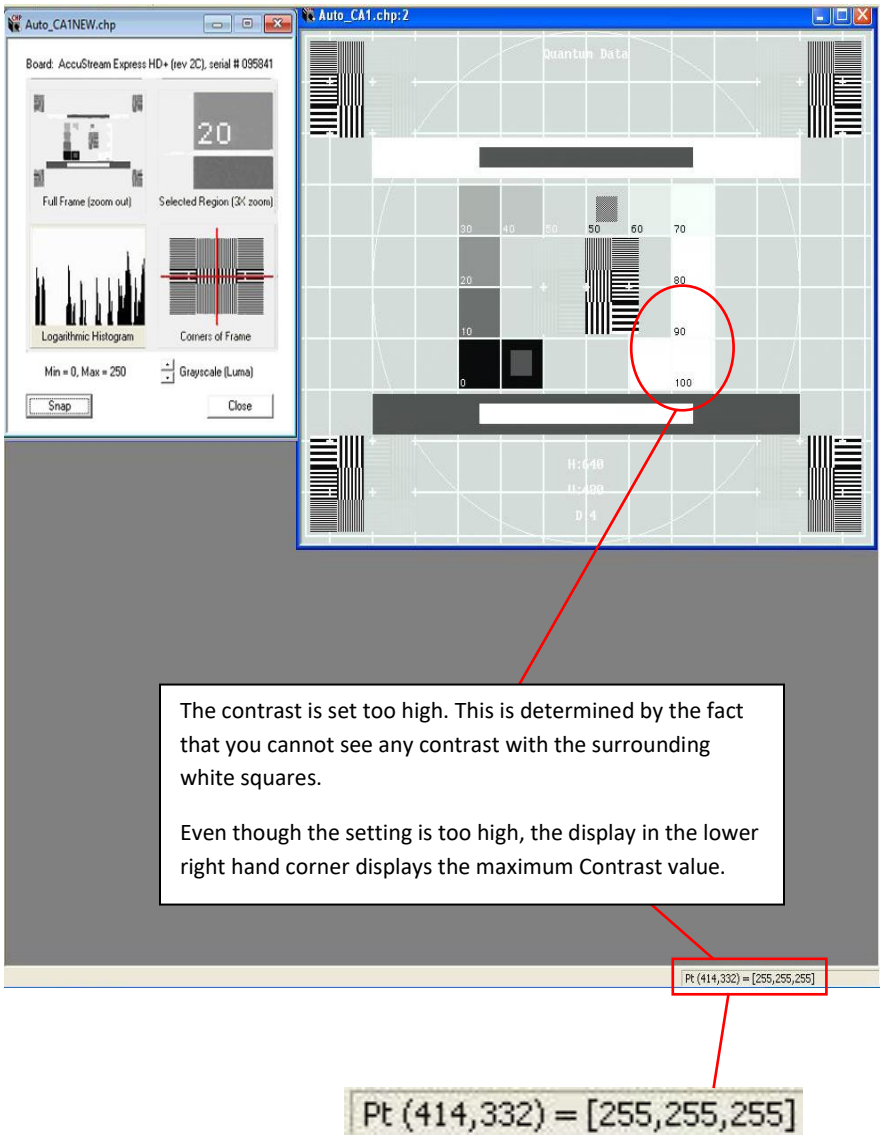


Figure 122: Example of video image where the Contrast (White Level) is set too high

To adjust the contrast value that is set too high, do the following:

1. Click your mouse cursor over the Contrast field on the left hand side.
2. Move your mouse cursor over the lowest Contrast (White) value on the video image which in this case is 255,255,255.
3. Use the down arrow key to move the Contrast setting to the next value below 255,255,255 which is displayed in the bottom right hand corner. Stop pressing the arrow key as soon as you reach the first value below 255,255,255.
4. Use the up arrow to return to the next value up, which should be 255,255,255. The Contrast is now properly set.

Tips:

When making Brightness/Contrast adjustments:

- Have the pixel reader in Full Window mode.
- Have the Histogram in Quad Window mode.
- Adjust Brightness for the level of Black.
- Adjust Contrast for level of White.
- Ensure Brightness/Contrast is not clipped.

AccuStream Auto-SYNC Wizard Step 5 for SDTV Connections

Click **Next**. If you need to adjust filters, go to the **SDTV Format** tab and click the **Advanced** button.

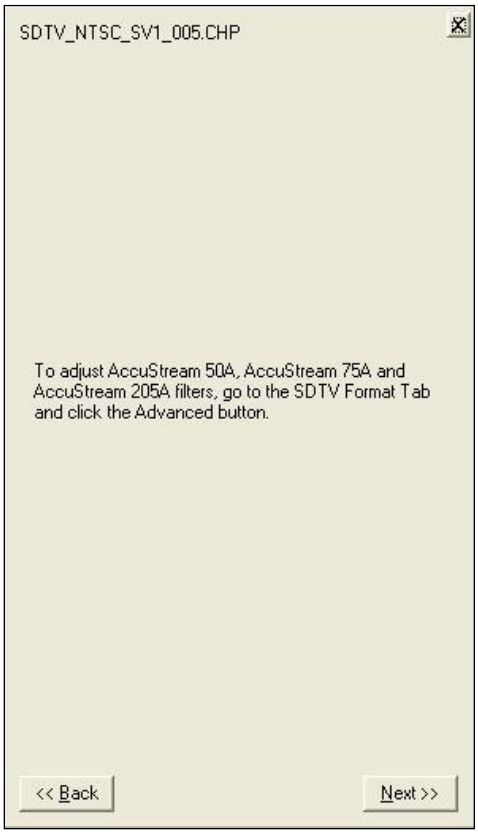


Figure 123: Auto-SYNC Wizard Step 5

AccuStream Auto-SYNC Wizard Step 6: Adjust Miscellaneous Settings for SDTV Connections

The final step of the Auto-SYNC Wizard attempts to correct some basic problems that can occur with some video signals.

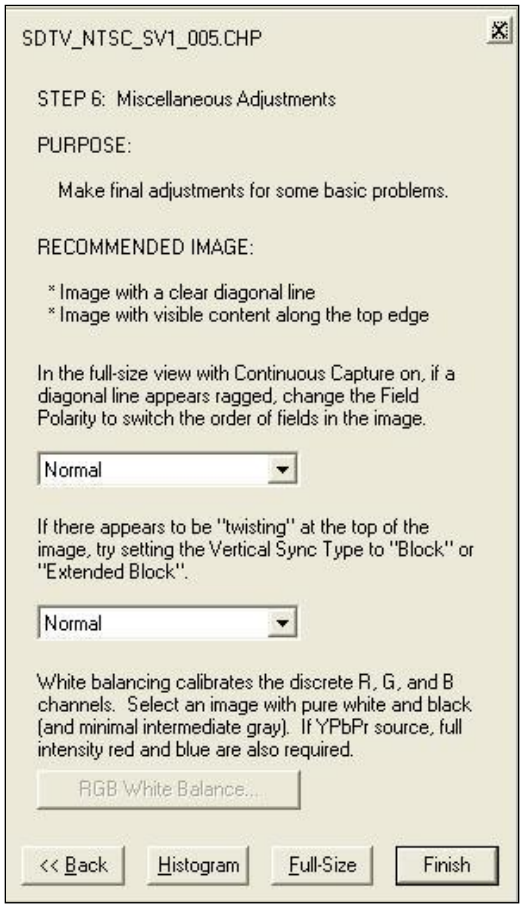


Figure 124: Auto-SYNC Wizard Step 6

A full-size view on an image that has content along the top edge and contains some diagonal lines or text is recommended; the SMPTE or linearity patterns are ideal.

If diagonal lines appear unusually ragged or text in the image appears broken (“shaken”), change the Field Polarity value. This adjusts the order in which the fields of the image are assembled and reverses the ordering of adjacent scan lines in the video.

If there appears to be some twisting at the top edge of the image, the Vertical Sync Type may need to be adjusted from “Normal” to “Block” or “Extended Block”.

The user can run the White Balance procedure to adjust the red, green, and blue channel gain and offset compensation values for the particular source to assure that pure white and pure black are properly calibrated. White balancing should be performed when the video source changes.

Click the Finish button to complete the Auto-SYNC Wizard process. You can restart the Auto-SYNC Wizard at anytime by selecting a CHP file and clicking the Auto-SYNC Wizard toolbar icon or by selecting the View **> Auto-SYNC Wizard** menu item.

Example

In this example, the first image shows a video image in motion. Notice there is no broken or distorted lines.

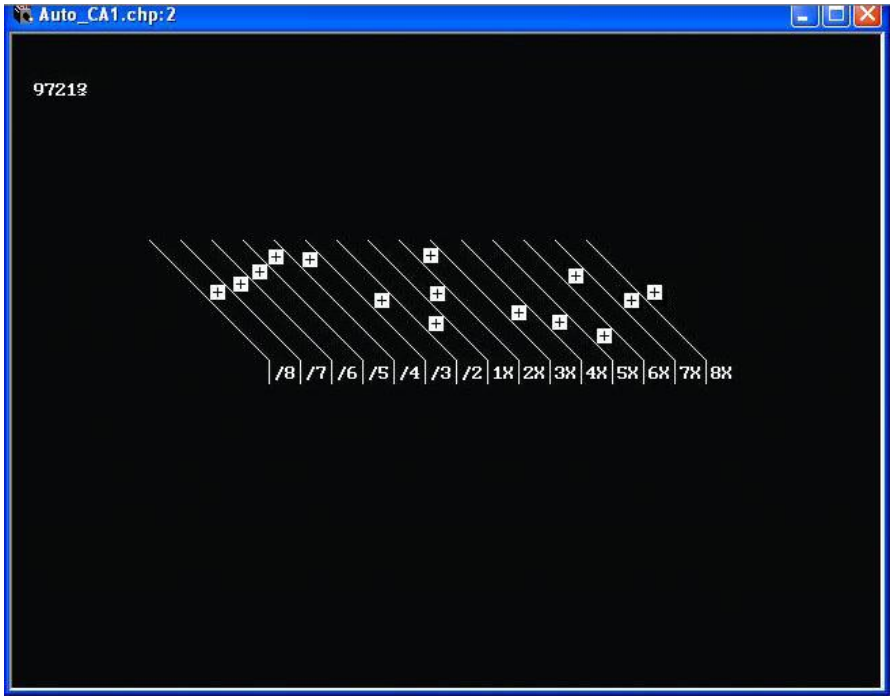


Figure 125: Example of video image with the proper Field Polarity setting

In the next example, the lines are broken and distorted. In order to adjust the image, change the Field Polarity.

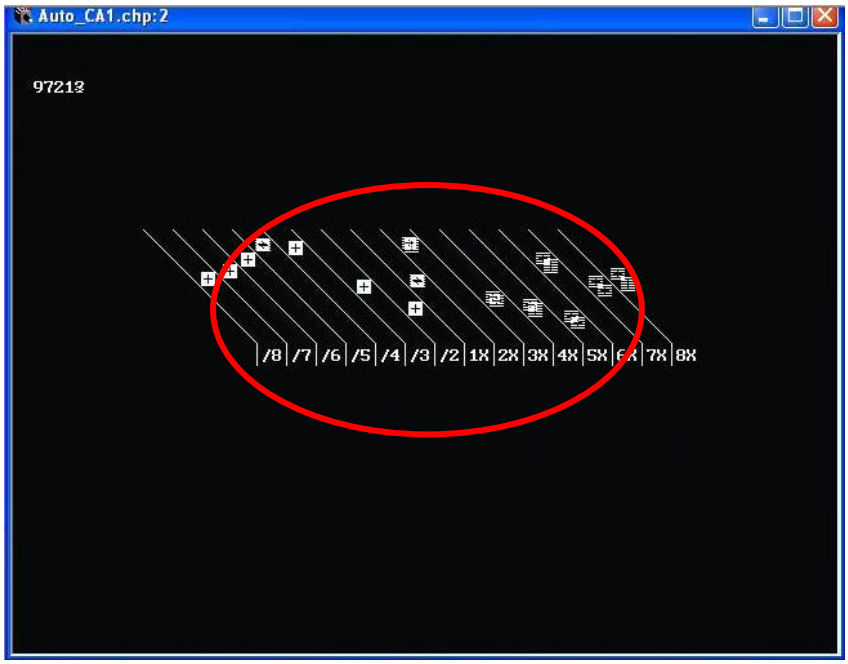


Figure 126: Example of video image with the improper Field Polarity setting

Tips:

Field Polarity

Fields are jagged in interlaced image – select Odd Field Up

Vertical Sync Type

Flagging at the top of the image – select Block as source

Miscellaneous Information

- One frame is one screen of visible data
- A frame of data contains visible AND non-displayed information, image blanking and synchronization
- Interlaced signals are comprised of an Odd and Even field of separate Odd and Even lines
- Two fields comprise a frame
- Non-interlaced, also called progressive scan, is one frame of sequential lines
- Fields must be paired properly and “ordered” properly

After the Auto-SYNC Wizard is Finished

Once you finish running the IDEA Auto-SYNC Wizard, the Video Setting controls are displayed.

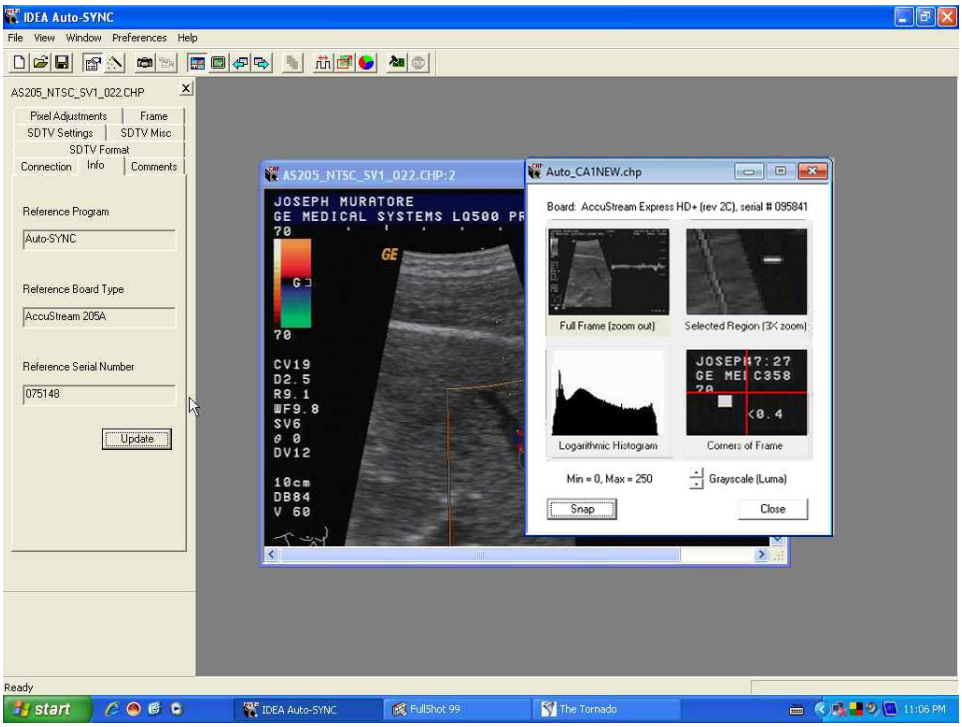


Figure 127: IDEA Auto-SYNC screen after completing Auto-SYNC Wizard.

The window on the right side is the same “Multi-view window” used by the Auto-SYNC Wizard. To open a new full-size window:

- click the “Full-size image window” icon from the toolbar or
- click View > Full-size image window (<F10>).

The Full-size image window will be RGB or Monochrome for DVI-Analog connections or NTSC/PAL Video composite for S-Video Composite connections.

Once you get to this point, you may now either make changes to your Video settings or exit IDEA Auto-SYNC and use a sample Example program.

Viewing the Info Setting

The **Info** options provide information concerning the application that created the current CHP file, the AccuStream board type and the serial number. Click **Update** for IDEA Auto-SYNC to verify and/or modify this information.

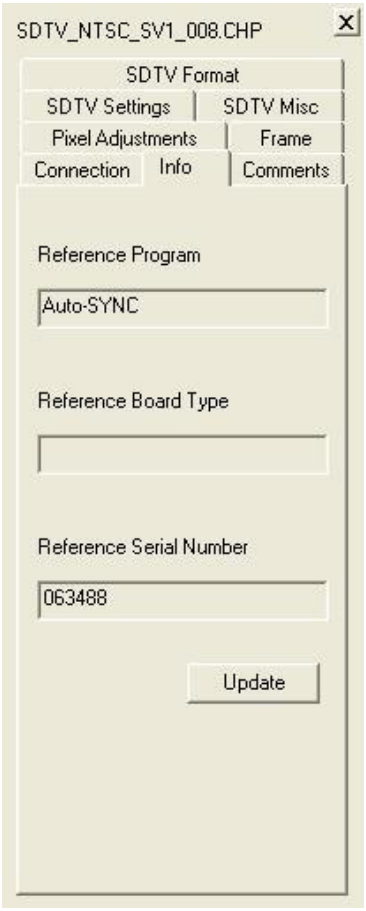


Figure 128: Info Settings

Changing the Comments

When you create a CHP file, you have the option to add your own personal comments to the file. The Comments option allows you to add additional comments at any time.

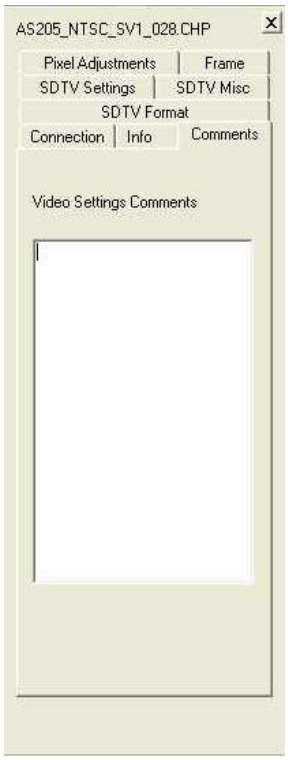


Figure 129: Comments for Video Settings

Changing Connection Settings

The options in the **Connection** tab concern the physical connection of the AccuStream board, as well as its channel and sync source. If there are multiple AccuStream boards installed in the current system or if you are setting up multiple channels, you should also have multiple CHP files.

Figure 130: Connection video settings

The **Connection** tab is used to select boards, but is not used to select the video source; those selections are grayed out.

Changing the SDTV Format

Use the **SDTV Format** tab to select a video source and output format.

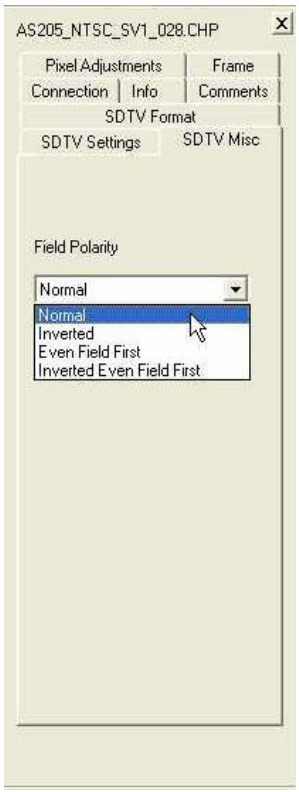
- The **Video Source** selections include NTSC, PAL, S-Video or Composite input.
- The **Output Format** selects the format for the selected video source.
- The **Advanced button** allows you to adjust these video settings.

IMPORTANT: If you want to use the **Advanced** button to adjust video settings, it is recommended that you contact Foresight Imaging using any of the methods listed on the back cover of this manual.

Figure 131: SDTV Format Settings

Changing the SDTV Miscellaneous Settings

Use the Miscellaneous tab to edit the following video setting:



Setting	Description
Field Polarity	Specifies the order of the signal fields.

Figure 132: Miscellaneous Settings

Changing SDTV Settings

Use the SDTV Settings tab to edit the following video settings:

Setting	Description
Brightness	The brightness adjustment determines the black level of the video processing.
Contrast	The contrast adjustment determines the luminance (proportional to intensity) produced for white.
Hue	Changes the phase offset of the chroma demodulator thus changing the tint of the image.
Saturation	Sets the amount of color in the image.

Figure 133: SDTV Settings

It is easiest to adjust these video settings when continuous capture is active. Updating the values in single snap mode can be slow.

Changing Pixel Adjustments Settings

The **Pixel Adjustments** settings are not adjustable in SDTV mode.

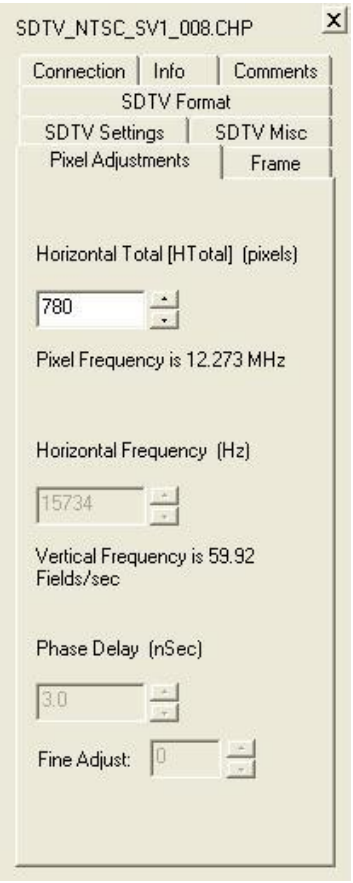
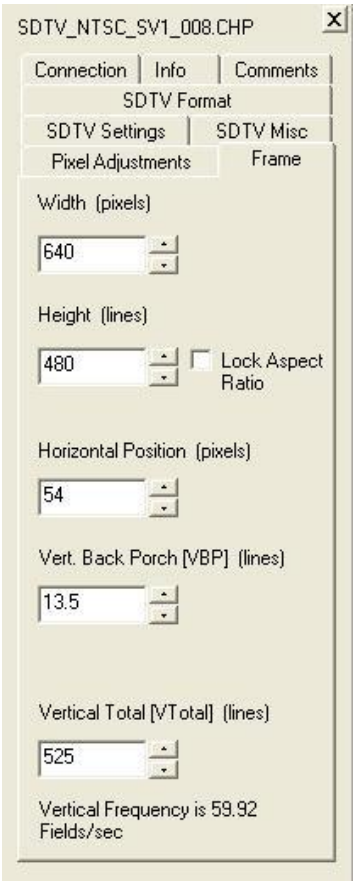


Figure 134: Pixel Adjustment video settings

Option	Default Value	Description
Horizontal Total	780 pixel	Total number of pixels in one video scan-line.
Horizontal Frequency	15734 Hz	Number of scan lines transmitted per second in the video signal.
Phase Delay	3.0 nSec	Phase of the sampling clock.
Fine Adjust	0.0	Sets fine phase adjustment value for AccuStream boards.

Changing Frame Video Settings

This option allows you to modify options that affect the video frame.



Option	Default Value	Description
Width	640	Number of pixels in a line in the image.
Height	480	Number of lines in the image.
Horizontal Position	54 pixels	Accounts and adjusts for board delays (due to electronics.
Vertical Back Porch	13.5 scan lines	Number of vertical blanking lines in the video signal that does not include any vertical sync information.
Vertical Total	0 scan lines	Total number of vertical lines in the video signal.

Figure 135: Frame Video Settings

The table defines some of the terms available under the **Frame** tab.

Saving and Undoing Changes to your Video Settings

If you make any changes to any of the settings, be sure to select **File > Save** or **File > Save As** to save these changes. Saving a combined RGB window saves all three of the component CHP files to disk.

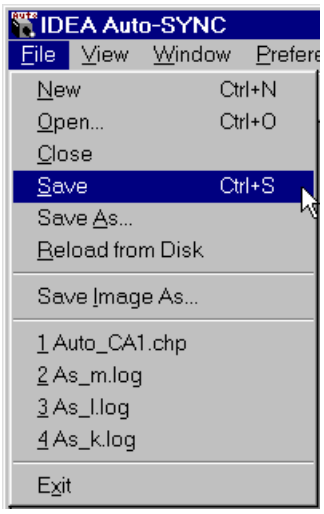


Figure 136: Saving your CHP file

If you want to undo any pending changes to your settings, you can restore the video settings by selecting **File > Reload from Disk**.

Saving an Image

Once you have an active CHP file, you may save a captured image as a bitmap (BMP) file. This BMP may be viewed with any graphics program. To perform the save, select **File > Save Image As**.

TIMS MVP System Maintenance

Scope

This guide describes recommended preventive maintenance to ensure TIMS MVP systems and TIMS Review stations run as smoothly as possible.

Since TIMS MVP and TIMS Review computers are Windows 10-based computers, preventive maintenance is typical of any Windows 10 operating system.

Maintenance consists of:

- checking and optimizing the hard drive
- verifying disk space
- deleting older TIMS MVP studies, and
- cleaning system airflow grills.

Notes

About the TIMS Review Software

TIMS Review software is loaded on site supplied computers. Third party utility programs may be installed, and menus depicted will differ. Please consult your IT group and the specific program documentation.

Maintenance Requirements

What You Need

You will need a canister of compressed air, a label, and familiarity with Windows 10 system administration.

Time Required

Maintenance can take from 30 minutes to several hours depending on the amount of disk fragmentation and amount of space used on the hard drive.

Maintenance Frequency

Maintenance is recommended once every three months.

Why Study Storage Maintenance is Required

TIMS MVP and TIMS Review application performance will degrade when the system hard drive is nearing capacity.

In addition, TIMS MVP and TIMS Review stations are designed for temporary, short-term study storage ONLY. Long term study storage is performed on PACS.

PACS systems contain standard disk backup and redundancy mechanisms for long term data storage.

Recommendation

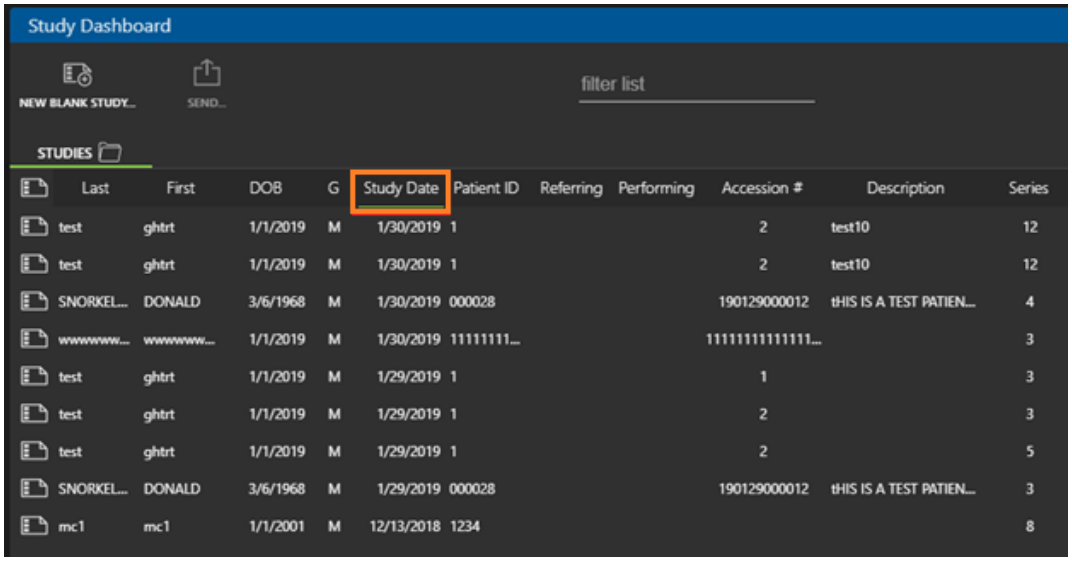
To preserve TIMS MVP and TIMS Review disk space, it is recommended that you delete any TIMS MVP studies over six (6) months old.

How Delete Studies in TIMS MVP

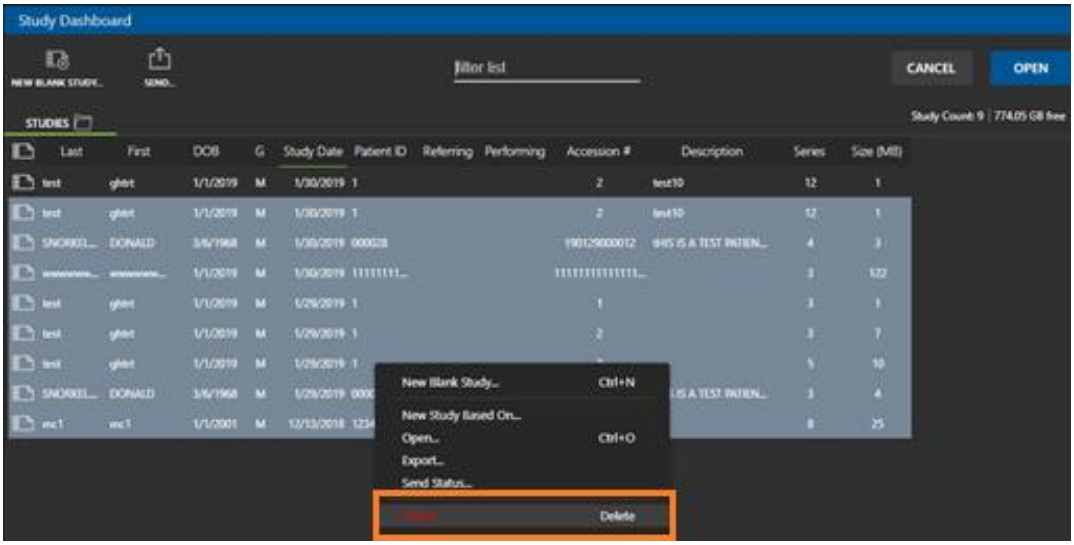
To delete studies:

1. First, verify that all TIMS MVP studies to be deleted are on PACS and are backed up.
2. In TIMS MVP or TIMS Review, click the **OPEN** icon to open the study list. When the study list opens, note the current study list sort selection.

3. Click on the Study Date column. If it is not in descending order, where the oldest studies are listed on the bottom, then click again.

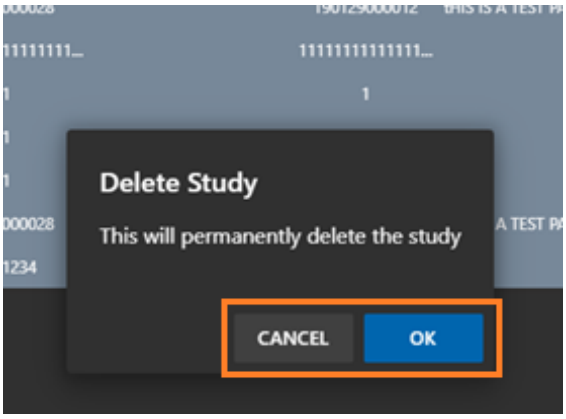


4. After verifying all the studies are on PACS:
    a. click on the oldest study located at the bottom of the list.
    b. Hold down the shift key and then use the Up Arrow ↑ key to highlight older studies.
    c. Right-click on the list and select **Delete**.



5. Click **Cancel** to stop the study deletions or click **OK** to delete the selected studies.

    IMPORTANT: This is a destructive delete. This means you will not be able to recover the studies in TIMS MVP or TIMS Review. However, you will be able to access studies that have been backed up in PACS or some other system.



6. Return the **Study Date** column sort to the original setting.

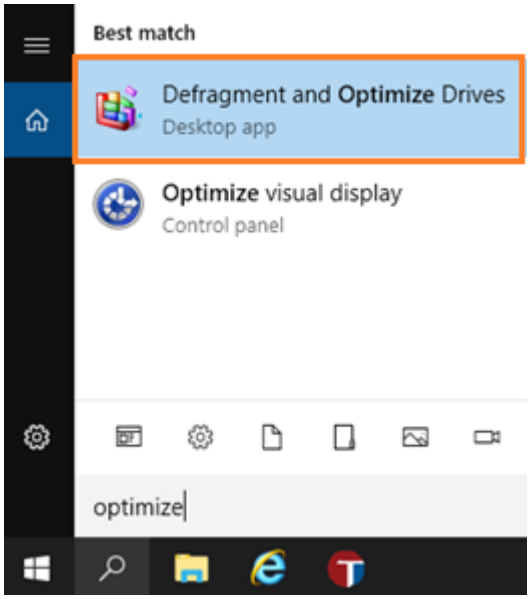
7. Reboot and restart the TIMS MVP or TIMS Review system.

Optimize (Defragment) the Hard Drive

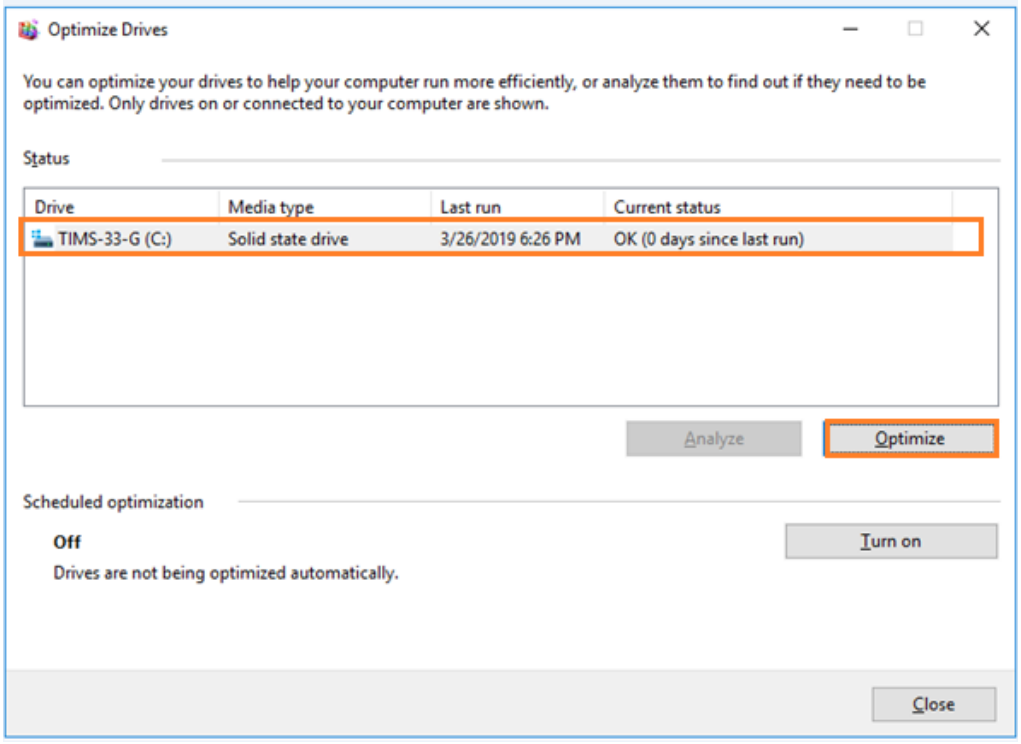
To check and optimize or defragment the hard drive:

1. Click the Windows Search bar in the bottom left-hand corner of the screen and type **optimize**.

   Click the **Defragment and Optimize Drives** selection.



2. Click to highlight the **C:** drive. Click the **Optimize** button.

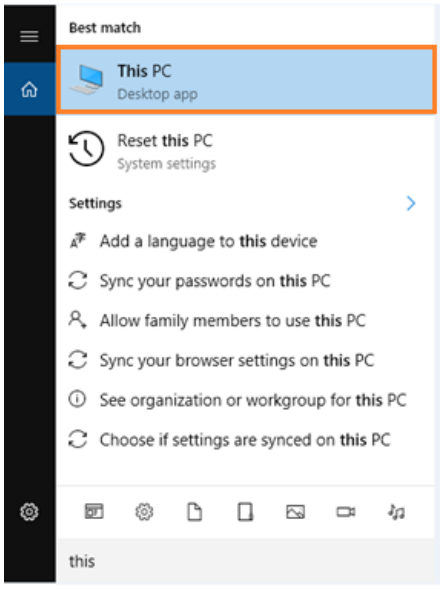


Result: Depending on the amount of fragmentation, it may take from 15 minutes to several hours to complete.

Verify Disk Space

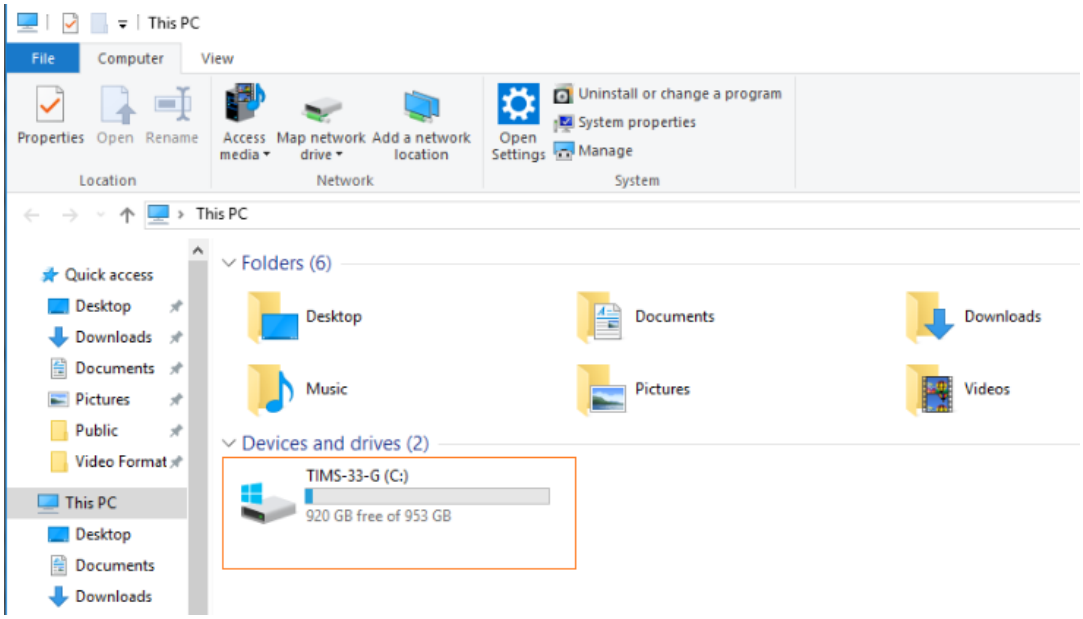
To verify the disk space:

1. Click the Windows Search bar in the bottom left-hand corner of the screen and type select **This PC.**



2. Select the **(C:)** drive and note the amount of free disk space.

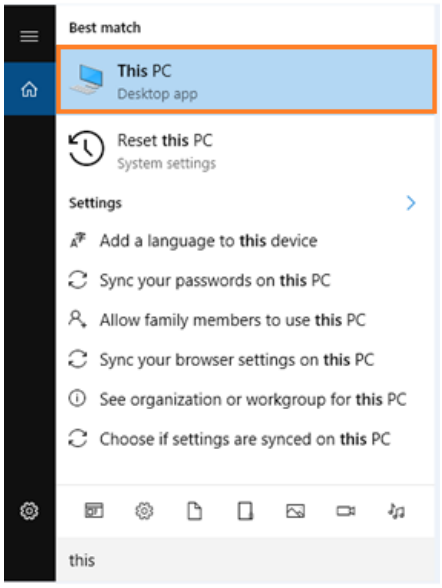
   It is recommended that if there is less than 30% free disk space, then you need to consider deleting files to keep the system running optimally.



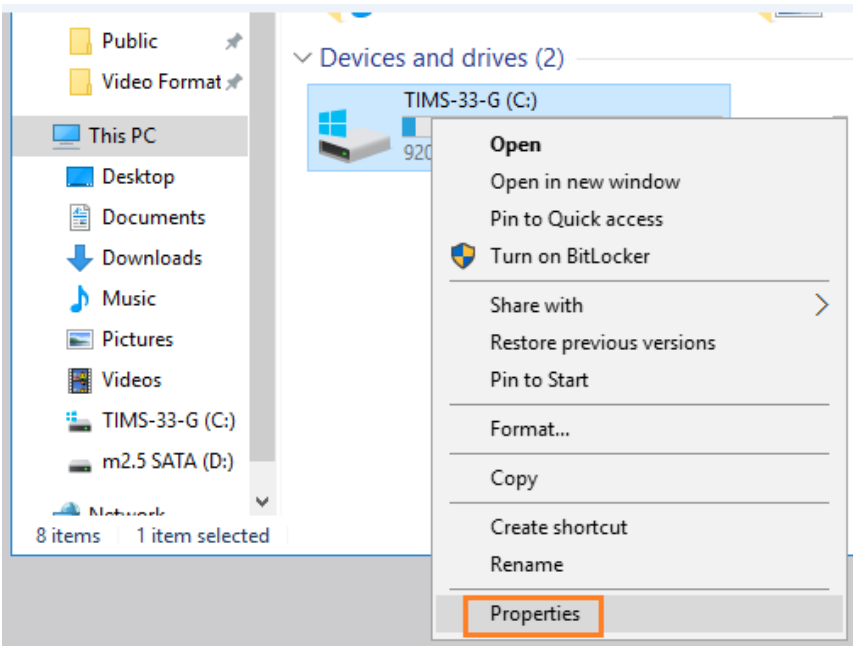
Run a Check Disk on the Hard Drive

To run a check disk on the hard drive:

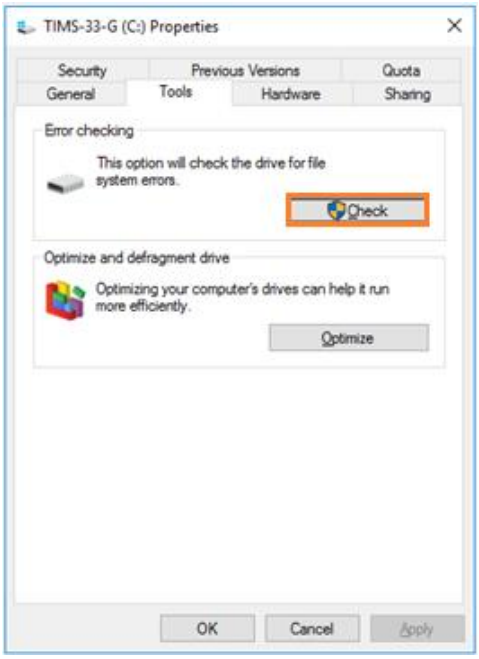
1. Click the Windows Search bar in the bottom left-hand corner of the screen and type select **This PC.**



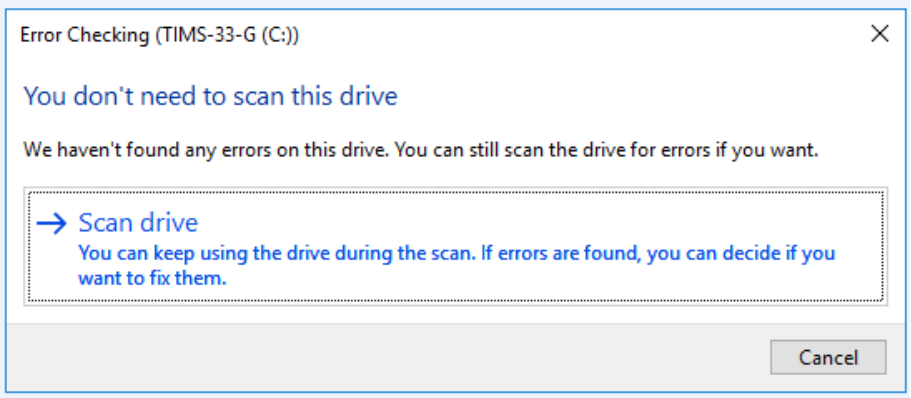
2. Right-click on the **C: Drive** and select **Properties** from the menu.



3. Click the **Tools** tab and under **Error-checking** click the **Check** button.



4. Select **Scan drive**.

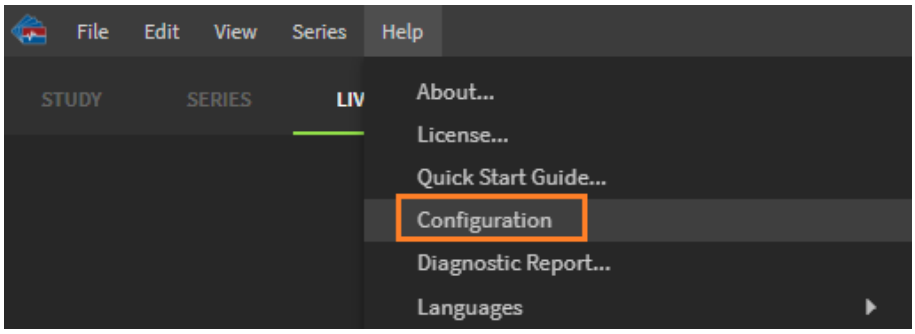


5. When the scan is completed, click **Close**.
6. Reboot the TIMS MVP or TIMS Review system.

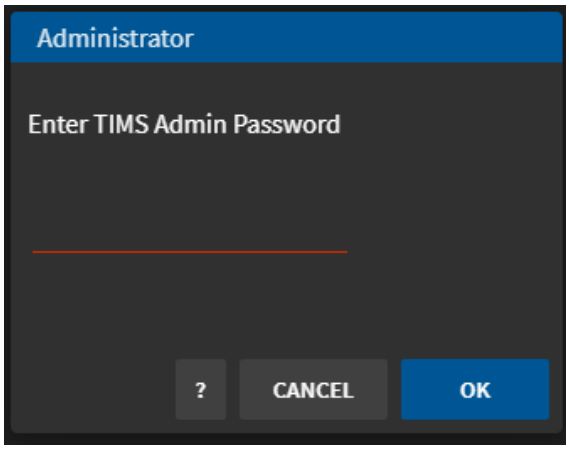
Verify TIMS MVP Disk Study Space Limit

To verify the TIMS MVP disk study space limit:

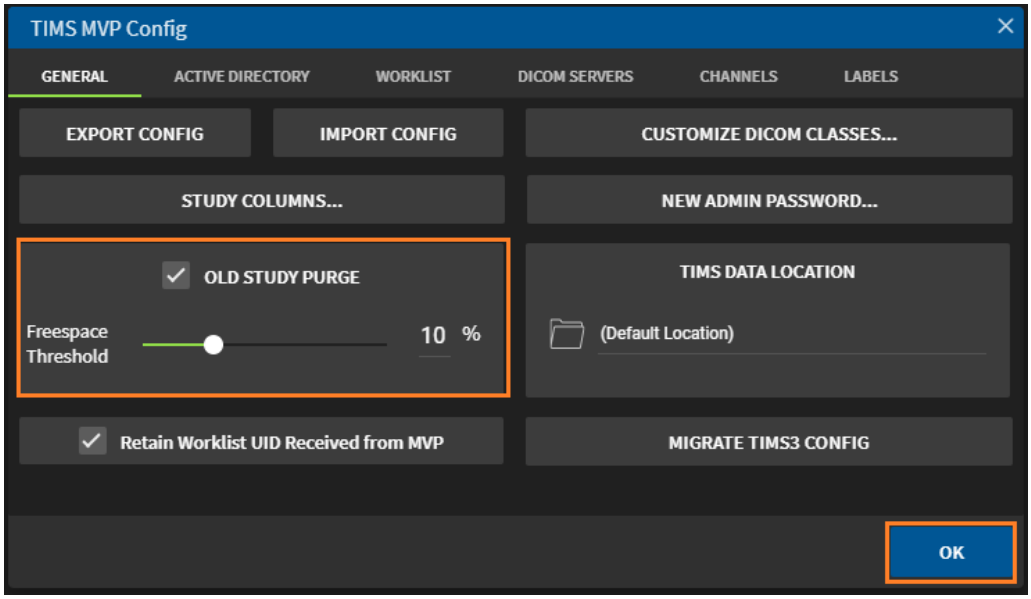
1. In TIMS MVP or TIMS Review, click **Help** and select **Configuration**.



2. Type in the administrator password and click **OK**.



3. On the **TIMS MVP Config** page, enable **OLD STUDY PURGE** and set it to **15%**. Click **OK**.



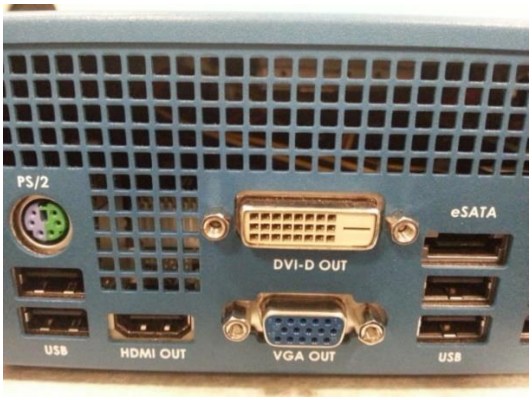
Clean TIMS Computer Air Grills

To clean the TIMS computer air grills:

IMPORTANT: Perform this step in three (3) intervals.

1. Ensure that the grill of the TIMS computer system is not blocked.
2. Shut down the TIMS computer system and then direct the compressed air (from the canister) towards the grill to remove dust particles.

   NOTE: TIMS computer shown. For TIMS Review computer, clean as per manufacturer's recommendations.



3. Upon completion of Preventive Maintenance, affix a label to the TIMS computer indicating date of preventative maintenance.

Revision History

Revision:	Date:	Comments:
1	09/01/20	Release

For additional information & assistance, contact: Support@tims.com, +978-458-4624 x204

TIMS MVP / Review Maintenance Checklist Log

TIMS MVP / REVIEW Maintenance Checklist / Log	
SITE:	
ADDRESS:	
TIMS MVP S/N:	
TIMS MVP Rev:	
Checklist:	**Comments:**
☐ **Delete old TIMS MVP Studies**	
☐ **Defragment hard drive**	
☐ **Verify hard drive space**	
☐ **Perform Check Disk**	
☐ **Verify / Set TIMS MVP drive space limit**	
☐ **Clean Air Grills**	
Performed Service:	
☐ **Name:**	
☐ **Date:**	
Performed Service:	
☐ **Name:**	
☐ **Date:**	
Performed Service:	
☐ **Name:**	
☐ **Date:**	
Performed Service:	
☐ **Name:**	
☐ **Date:**	

Appendix A:
Hazardous Substance Statement

The following table lists toxic or hazardous elements by product:

O: Indicates that this toxic or hazardous substance is contained in all of the homogeneous materials for this part is *below the limit requirement*.

X: Indicates that this toxic or hazardous substance is contained in at least one of the homogenous materials for this part is *above the limit requirement*.

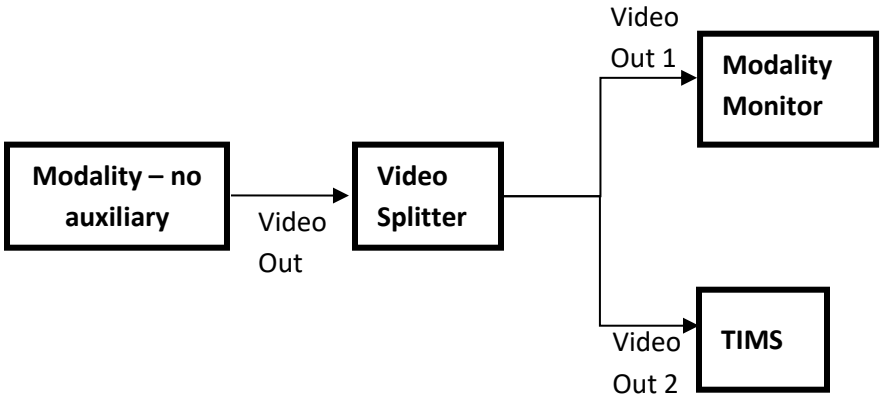
	TOXIC OR HAZARDOUS SUBSTANCES AND ELEMENTS					
PRODUCT				HEXAVALENT	POLYBROMINATED	POLYBROMINATED
	LEAD	MERCURY	CADMIUM	CHROMIUM	BIPHENYLS	DIPHENYL ETHERS
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBDE)
AccuStream Express HD+	O	O	O	O	O	O

Appendix B: Modalities Without an Auxiliary Video Output

When an imaging device does not have auxiliary video, two options are available for the TIMS connection.

Using a Video Splitter

Foresight Imaging's Active Video Splitter can be connected to the Video Out of the device with one cable going to TIMS and the other to the monitor of the device.



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Three easy ways to get support:

- Remote Conference
- Email
- Phone/Fax

TIMS Medical

a division of Foresight Imaging, LLC

1 Executive Drive

Suite 202

Chelmsford, MA 01824

Tel: (001) 978-458-4624 x204

Fax: (001) 978-458-5488

Email: support@tims.com

Web: www.tims.com