Keyence

CV-2100 Companion

PC Ethernet Interface

Software User's Guide

Keyence Solutions From
CONQUEST CONSULTING LLC
www.conquestsolutions.com

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1.0. Preface

The CV-2100 Companion PC Ethernet Interface Software User's Guide is not intended to replace the CV-2100 User's Manual. This guide assumes the user is familiar with the basic setup and operation of the CV-2100.

2.0. Overview of the CV-2100 Companion PC Ethernet Interface

2.1. About The CV-2100 Companion

The CV-2100 Companion PC Ethernet Interface is a Windows-based software program that connects to your Keyence CV-2100 High Speed Digital Machine Vision System to a PC through a TCP interface on your LAN (local area network).

The CV-2100 Companion features support for the following functionality:

- *Remote Console/Display* providing you a graphical interface to remotely control your CV from your PC
- CV data and imaging acquisition capabilities to log your CV measurements and part images
- Live data acquisition display window to display your measurement data and part images during your manufacturing run
- *Remote Terminal Interface* to provide you with the means to remotely interface with your CV via a Telnet-style interface.
- Run-time modification of limits and tolerances for any window
- COMM mode function interface to support:
    - Changing the current program
    - Changing the current window number
    - Saving/writing program data from/to the CV
    - Saving/writing environmental settings from/to the CV
    - Saving/writing image data from/to the CV
    - Image registration
    - Saving/writing registered images from/to the CV
    - Clearing the image buffer
    - CV screen captures
    - CV date/time setup

2.2. Minimum System Requirements

- Microsoft Windows 95, 98, Me, NT (SP4), 2000, and Windows XP [1]
- 256MB RAM
- Ethernet interface
- Screen resolution of 800 x 600 using Small Fonts
- MDAC (Microsoft Data Access Components 2.8 or greater) – available from CV-2100 Companion Setup Utility.
- Microsoft Jet 4.0 database engine – available from the CV-2100 Companion Setup Utility.

[1] Windows XP is recommended. Support for Windows 95, 98, Me, and NT is limited.

3.0. Getting Started

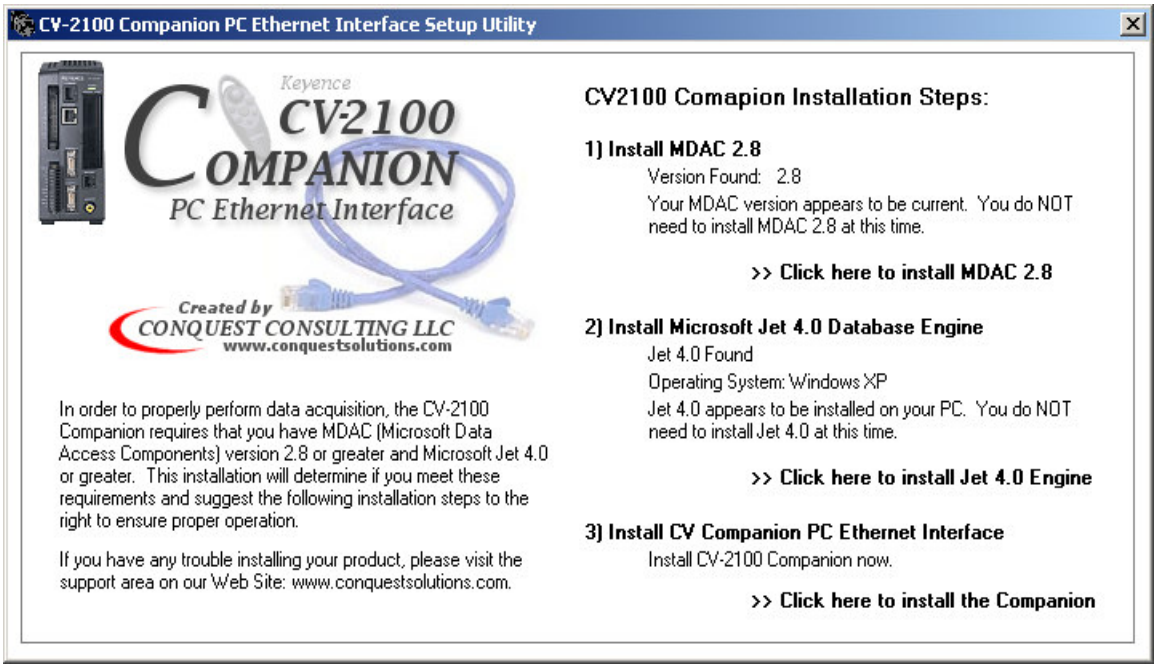
3.1. Installing the CV-2100 Companion Ethernet Interface Software

There are two methods of installing the CV-2100 Companion Software. The recommended method of installation.makes use of the CV-2100 Companion Setup Utility available from Conquest Consulting LLC (www.conquestsolutions.com). The CV-2100 Companion Setup Utility automatically detects the versions of MDAC and Jet installed on your PC and allows the user to install them prior to installing the CV-2100 Companion.

The second method requires that the user has already installed Microsoft Data Access Components (MDAC) version 2.8 or greater and the Microsoft Jet 4.0 database engine. These components are available from the Microsoft Web site (www.microsoft.com). After these components have been installed, you may install the CV-2100 Companion PC Ethernet Interface.

3.1.1. Using the CV-2100 Companion Setup Utility

The CV-2100 Companion Setup Utility can be downloaded from www.conquestsolutions.com. Once downloaded, unzip the file and run SETUP.EXE. You will be presented with a screen similar to the following:



To properly install the CV-2100 Companion, follow steps 1 -3:

Step 1 – Install MDAC 2.8
The CV-2100 Companion Setup Utility will show you the version of MDAC currently installed on your system. It will also instruct you whether or not you need to install MDAC 2.8.

If you are instructed to install MDAC 2.8, then install it by clicking on ***Click here to install MDAC 2.8***. Follow the screen instructions to install MDAC.

NOTE: If the set up utility finds MDAC 2.8 on your system, you can still re-install it to be sure MDAC is properly installed.

Step 2 – Install Microsoft Jet 4.0 Database Engine
The CV-2100 Companion Setup Utility will inform you if Jet 4.0 has been found in your registry. It will also show you the operating system it has detected. The setup utility will instruct you whether to install the Jet 4.0 database engine or not. If you are instructed to install Jet, click ***Click here to install Jet 4.0 Engine***.

NOTE 1: If the operating system displayed is NOT the operating system that you are using, do not install Jet 4.0 from the setup utility. Download and install the appropriate version of Jet 4.0 from the Microsoft Web site (www.microsoft.com).

NOTE 2: If you are told that you do not need to install Jet 4.0, you may wish to install it anyway to be sure it is properly installed.

Step 3 – Install the CV-2100 Companion PC Ethernet Interface
After you have properly installed MDAC and Jet 4.0, if required, install the CV-2100 Companion Software by clicking on ***Click here to install the Companion***. This will install a 30-day trial version on your PC.

After installation, you will be able to run the CV-2100 Companion by selecting from the Programs list under your Start Menu or from the icon on your desktop.

3.1.2. Installing the CV-2100 Software after Manually Installing MDAC and Jet 4.0

Download the CV-2100 Companion PC Ethernet Interface from www.conquestsolutions.com and unzip it. Run SETUP.EXE and follow the instructions to install the software. This will install a 30-day trial version on your PC.

3.2. Connecting Your CV-2100

You can communicate with your CV using the CV-2100 Companion software. You may connect your PC and the CV-2100 by:

1. directly connecting your PC to the CV-2100 without going through a local area network (LAN) . Use the OP-42275 cross cable available from Keyence.
2. connecting both your CV-2100 and your PC to a local area network (LAN). Please consult with the systems administrator or network administrator during this process to ensure proper setup.

To change or view the Ethernet settings from the CV-2100, select Environmental Settings from the *Setup Menu*:

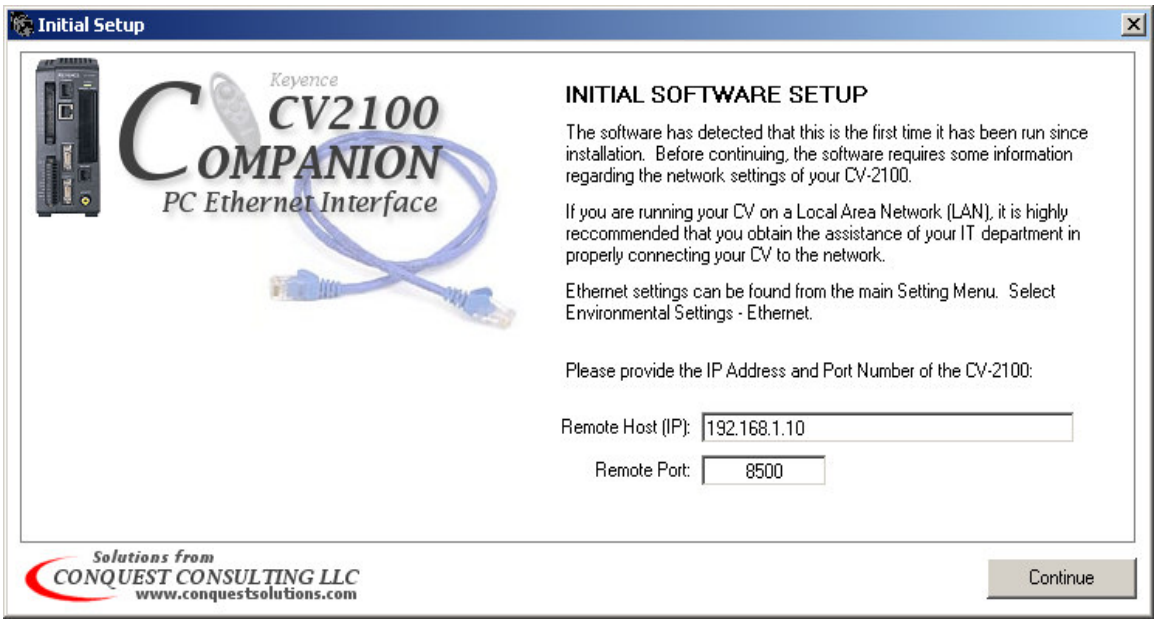
Select **Ethernet** from the *Environmental Settings* Menu:

You will be able to change or view the Ethernet IP address and/or port from here:

For more information on connecting your CV-2100 via Ethernet, reference your CV-2100 User's Manual.

3.3. Running the CV-2100 Companion Ethernet Interface Software the First Time

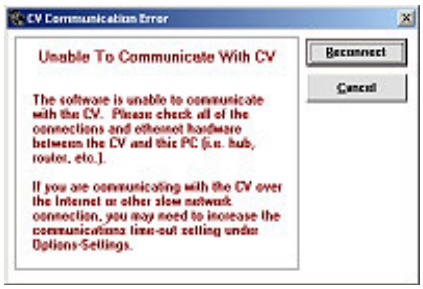
The CV-2100 Companion will detect the first time you are running the software on a machine and present you with a form similar to this:



This form will allow you to specify the IP address and port number the CV has been set to in the previous step. If you need to change these settings again in the future, you will be able to under the Options-Settings menu.

Once you have properly specified the remote host IP and port number, press the **Continue** button. The software will attempt to connect to your CV-2100. While the CV-2100 Companion tries to connect to the CV-2100, the user will see the following message box:

If the CV is unable to connect, you will be presented with the prompt shown to the right. Possible connection problems are:



- Incorrect Ethernet settings in the CV or the CV-2100 Companion
- A bad or unplugged Ethernet cable
- Another device is currently communicating with the CV-2100

If the CV-2100 Companion properly connects to your CV, it will be indicated in the title bar of the application.

4.0. Using the CV-2100 Companion PC Ethernet Interface

The CV-2100 Companion supports a diverse set of features to enhance the functionality of your CV-2100. Your CV-2100 operates in different modes (RUN, TRIAL, PROGRAM, COMM) . Not all features are available in all modes.

This section outlines each of these features and which modes they are available in.

4.1. Resetting Your CV-2100

Menu Location: File > Reset
Supported in Modes: RUN, TRIAL, COMM

This feature will reset the CV data counters and current measurements. The CV will be placed in a mode as if power was cycled.

4.2. Data Acquisition with the CV-2100 Companion PC Ethernet Interface

The CV-2100 is capable of transmitting part data and images on each trigger via the Ethernet connection.

One of the most useful features of the CV-2100 Companion is the capability of logging this measurement and image data from your CV-2100 to an Access database file. When the CV-2100 Companion is in data acquisition mode, most other features are disabled to ensure your data is reliably received.

4.2.1. Data Acquisition Setup

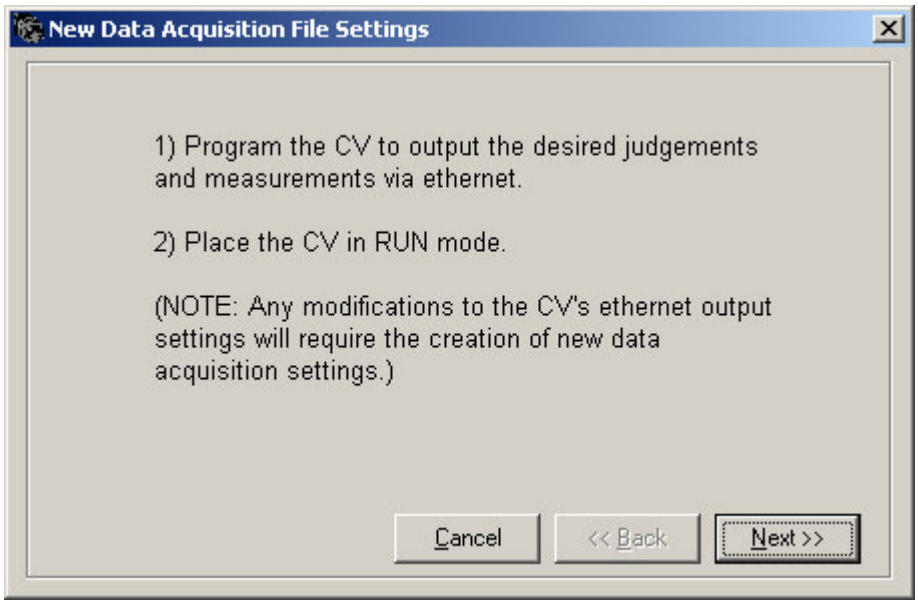
Setting up your CV to perform data acquisition is easy. The basic steps are:

1. Setup the CV-2100 to output data/images via the Ethernet connection.
2. Use the CV-2100's data acquisition setup wizard to detect the CV-2100's acquisition settings and create the data acquisition file.
3. Start data acquisition mode.

Reference the CV-2100 User's Manual to setup the CV to output data and images via the Ethernet connection.

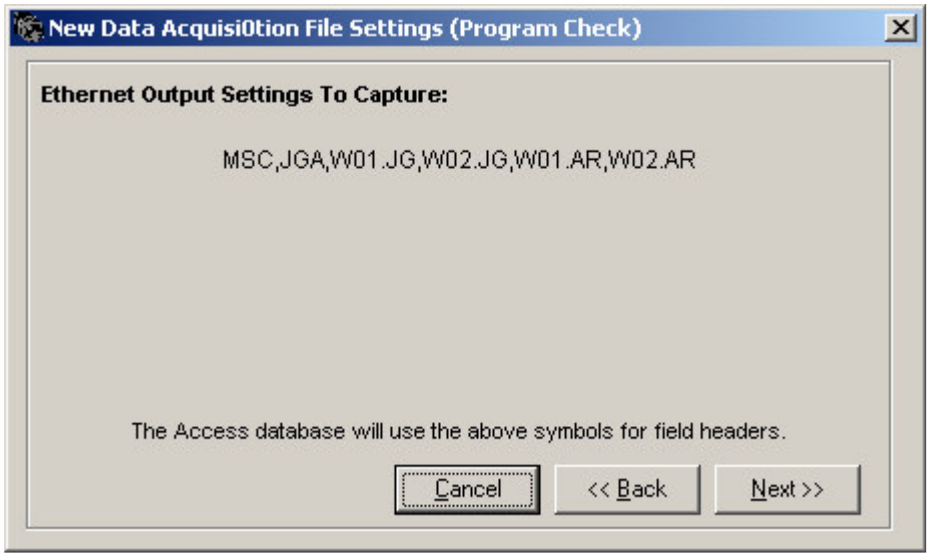
To setup the CV-2100 Companion for data acquisition, follow these steps:

1. Select *Create New Acquisition File* from the *Data Acquisition* menu. This will start the data acquisition wizard. Follow the instructions provided on the first screen of the wizard and click **Next**.

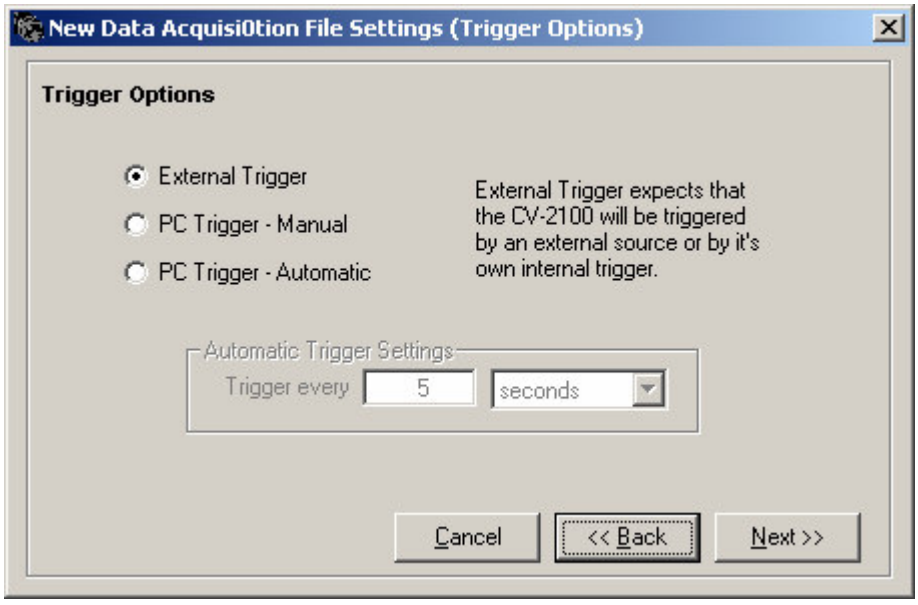


2. The next form in the wizard displays the output format of the data that the CV will transmit on subsequent triggers with the current configuration. After you have verified the settings, click the **Next** button to continue.

   IMPORTANT NOTE: The data acquisition file and settings you are creating will only be valid for this output format. If you make any changes to the CV-2100 that modifies this output format, you will need to create a new data acquisition file.



3. The next form in the wizard displays the trigger options available.

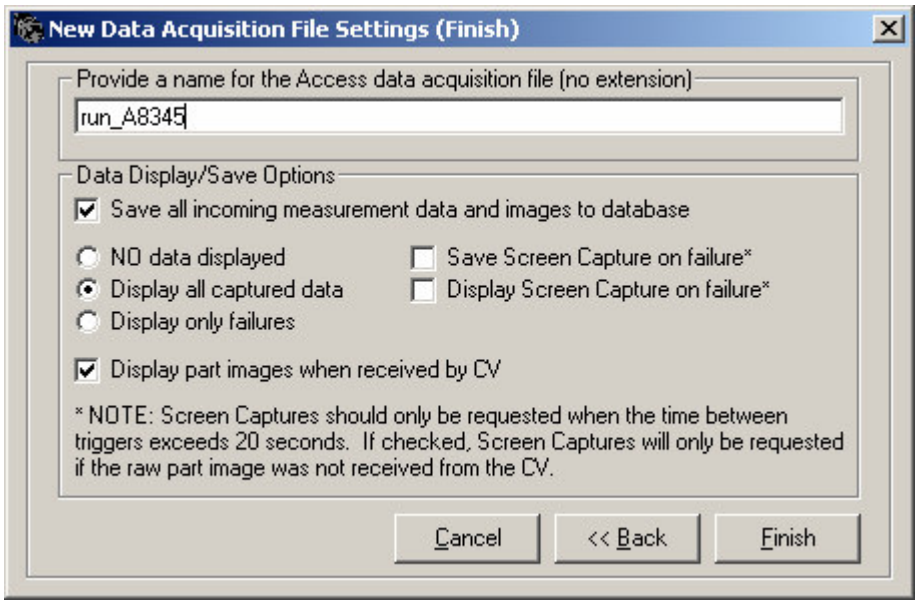


External Trigger: Select this option if the CV-2100 will be externally triggered OR if you will use the CV-2100's internal trigger feature.

PC Trigger - Manual: Select this option if the operator of the CV-2100 Companion software will use the manual trigger button in the program to prompt a trigger.

External Trigger: Select this option if the CV-2100 Companion should trigger the CV on a periodic basis automatically. After selecting this option, set the appropriate time base in the 'Automatic Trigger Settings' box.

4. The last form in the wizard requires a name for the Access database file and allows the user to specify what type of measurement and image data will be displayed/saved during data acquisition mode.



Access data acquisition file: Name given to the Access database and the settings files.

NOTE: Database files are found in the database directory. The database directory is located in the same folder where the software was installed.

Data Display/Save Options:

Save all incoming measurement data and images to database: (Checked by default)
- Unchecking this option will suppress saving any measurement data and images to the disk (database).

No data displayed: No data will be displayed during data acquisition mode.
Display all captured data: All data from the CV will be displayed to the user.
Display only failures: Only failed part data is displayed to the user.

NOTE: Regardless of the *Data Display Options* all data collected from the CV will be saved to the Access database file.

5. *Display part images when received by CV*:
   The CV can be configured to send part image data on each trigger or when a part has been given a 'NG' judgment. When checked, the CV will look for these part images to be sent from the CV and will display them to the user in a window.

   NOTE: Regardless of the status of this option, all part image data sent from the CV will be saved to disk and a pointer to the image will be inserted in the database associated with the corresponding measurement data.

   Save Screen Capture on Failure:
   Although the CV-2100 can be configured to send failed part image data, the sent images lack the measurement information that is displayed on the CV.
   In the instances where the user requires this information on the image, this option will request a screen capture from the CV whenever a failed part is detected. This image will be saved to disk and a pointer to the image will be inserted in the database to associate it to the correct part data. This option should only be used when the time between triggers exceeds 20 seconds.

   NOTE: When using this option, be sure to configure the CV so that NO part image data is sent.

   Display Screen Capture on Failure:
   When saving screen captures on part failures, the user can use this option to display the screen capture to the user when it is received. This option should only be used when the time between triggers exceeds 20 seconds.

   NOTE: When using this option, be sure to configure the CV so that NO part image data is sent.

6. After you press the **Finish** button, data acquisition mode must be stared before data is logged. The software will prompt for data acquisition mode to be started after the wizard has completed. If it is not started at that time, it can be started (and stopped) at any time from the *Data Acquisition* Menu.

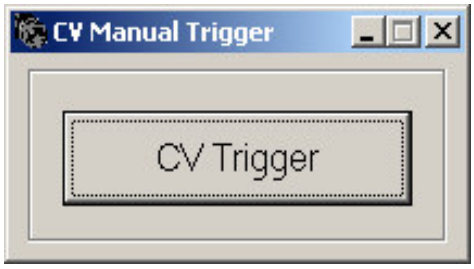
4.2.2. Using the CV-2100 Companion PC Ethernet Interface in Data Acquisition Mode

4.2.2.1. Manual Trigger

Menu Location: Data Acquisition > Manual Trigger Button
Supported in Modes: RUN, TRIAL

Allows the user to manually trigger the CV.

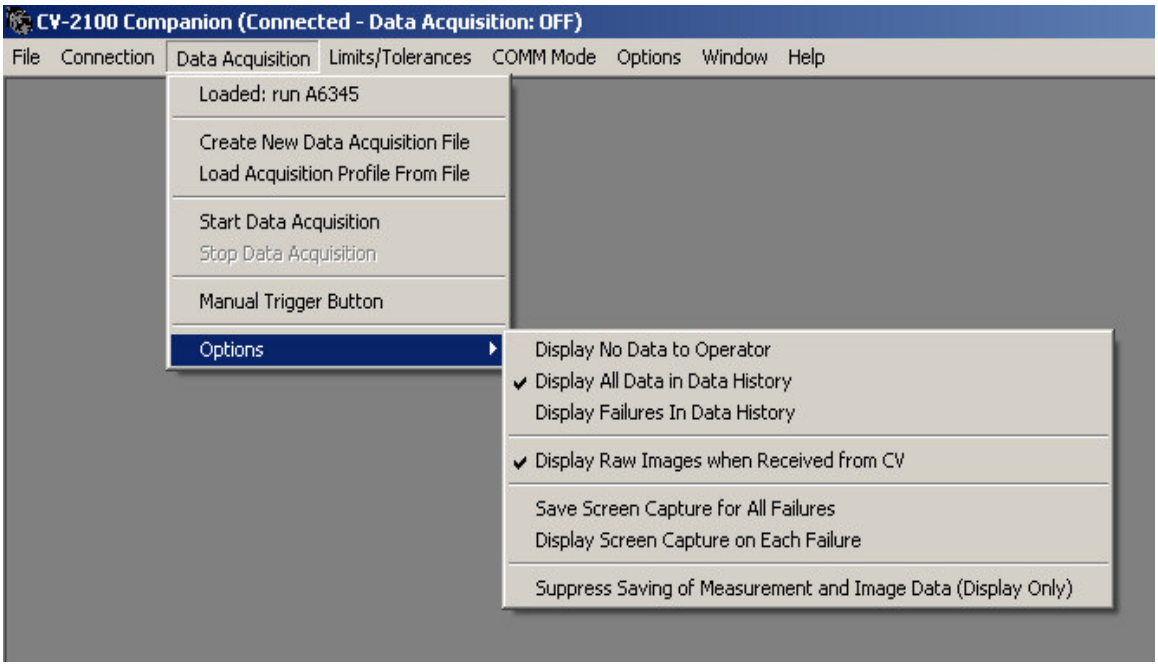
When selected, a form with a **Trigger** button is displayed. Each time the button is pressed a trigger command is sent to the CV.



4.2.2.2. Modifying the Data Acquisition Settings

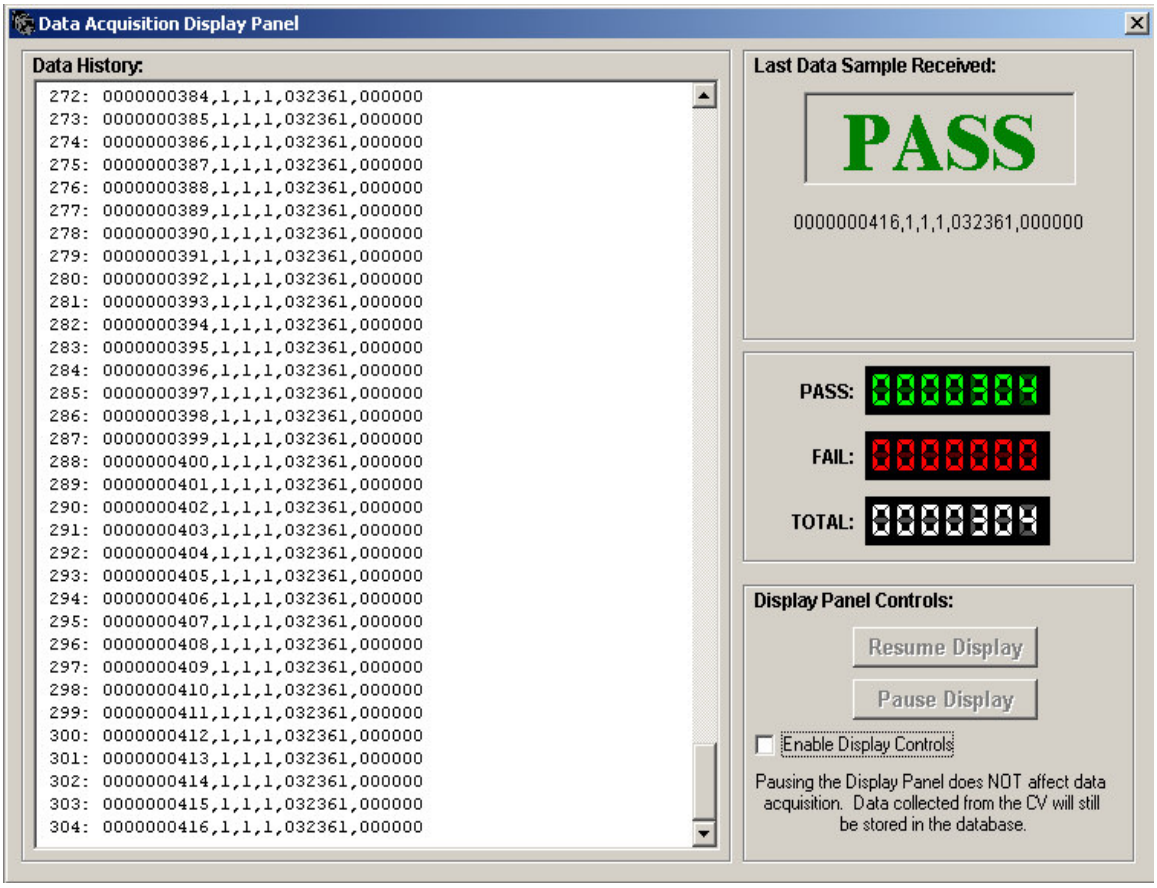
Menu Location: Data Acquisition > Options

Using the *Options* menu, the user can modify most of the data acquisition settings that were established in the final form of the data acquisition wizard (with the exception of trigger options).



4.2.2.3. Data Acquisition Display Panel

If the current display options specify that measurement data is to be displayed to the operator during data acquisition mode, it will be displayed in the *Data Acquisition Display Panel*. The panel will automatically become visible as soon as the first part measurements are sent from the CV-2100.



The *Data Acquisition Display Panel* is broken into four main sections.

Data History: This section is used to display the most recent raw data collected from the CV. This screen will automatically clear itself on a periodic so the buffer is not overrun.

Last Data Sample Received: This section is used to display the raw data for the last sample obtained from the CV along with its judgment (PASS/FAIL).

Counters: Display the number of parts that have passed and failed along with the total count.

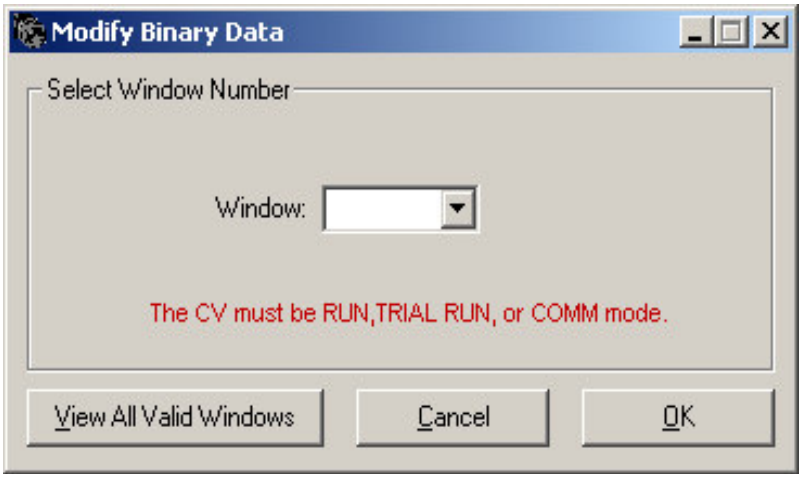
Display Panel Controls: When enabled, this section can be used to pause the display of incoming data so the current data set can be looked through by the operator. NOTE: Pausing the display does NOT pause incoming data from the CV from being stored in the database. This will continue in the background.

4.3. Change Binary Limits

Menu Location: Limits/Tolerances > Modify Binary Data Limits
Supported in Modes: RUN, TRIAL, COMM

This feature will allow you to view and change the binary limits for any valid window set up in the CV-2100.

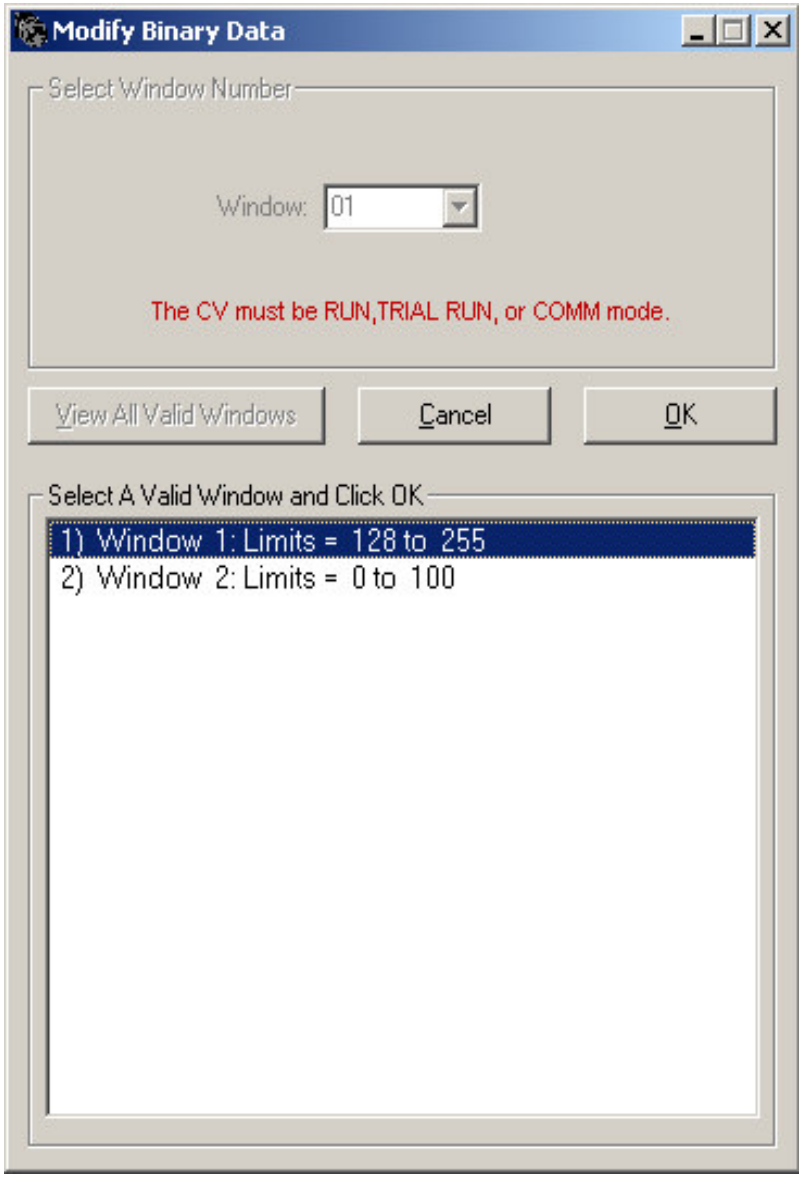
When selected, the following form is displayed:



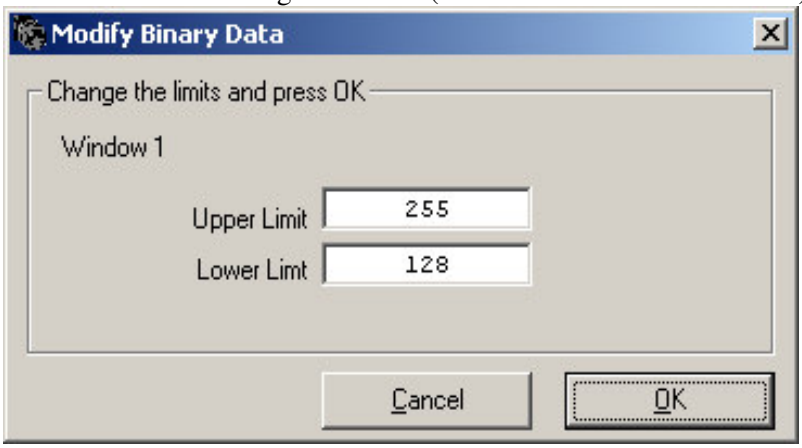
Either:

1. Select a valid Window from the drop-down list and click **OK** or
2. Click the **View ALL Valid Windows** button

Clicking the **View ALL Valid Windows** button will expand the form and display all of the valid Windows with limits that can be modified. Select a valid window and click **OK**:



After selecting a valid window, you will be shown the current limits. From here you may change any of the limits and click **OK** to change the limits (NOTE: valid limits: 000 – 255).

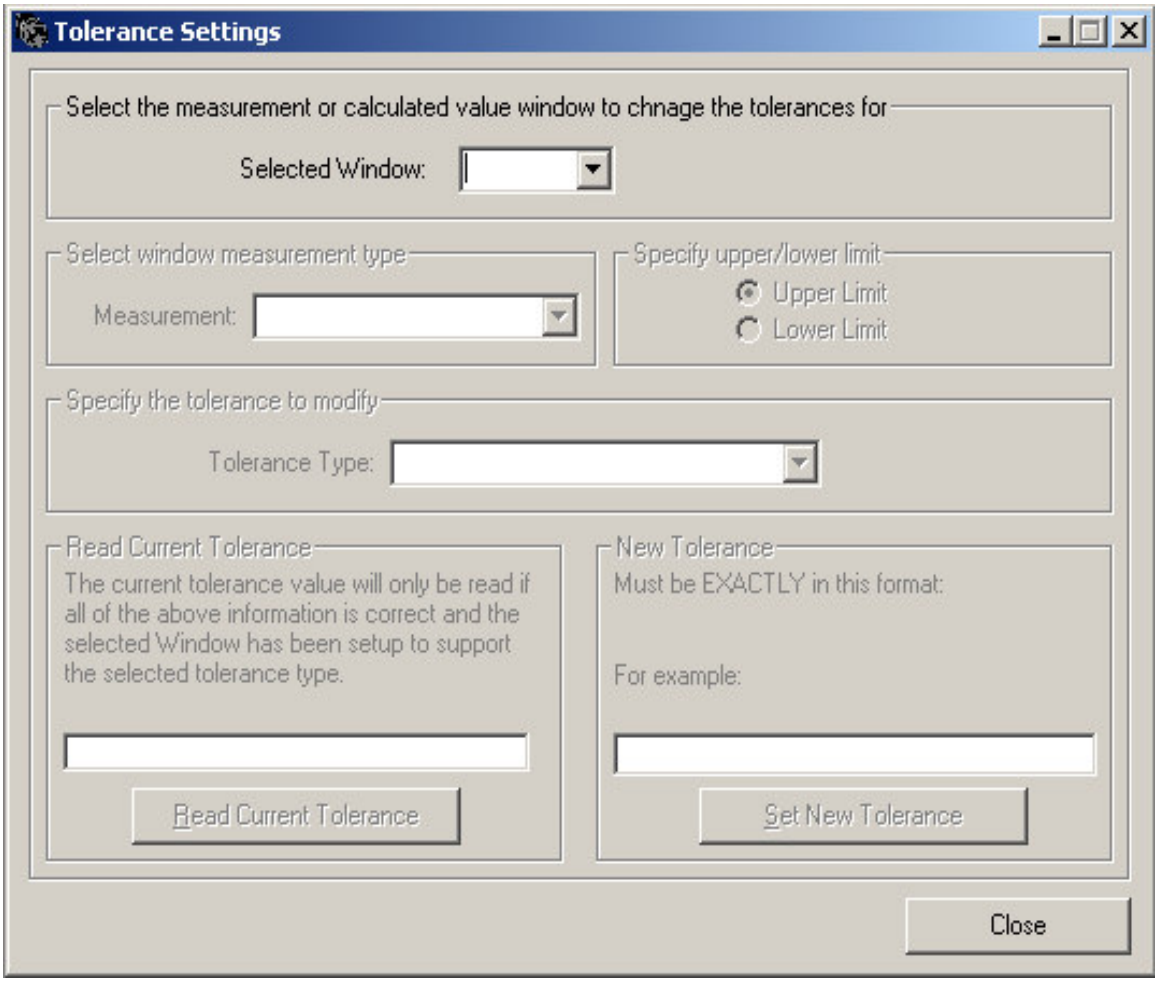


4.4. Modifying Tolerance Settings

Menu Location: Limits/Tolerances > Modify Tolerance Settings
Supported in Modes: RUN, TRIAL, COMM

This feature will allow you to view and alter the tolerance settings for a valid window or a measured value calculated window.

When selected, the following form is displayed:



First, select a valid measurement window (W01 – W64) or a valid measured value calculated window (C01-C32).

If a standard measurement window is selected, the user must also select a valid window *measurement type* and a *tolerance type*. Valid measurement types are:

- Area Measurement
- Pattern Position Measurement
- Pattern Mutli-Position Measurement
- Edge Position Measurement
- Edge Gap Measurement

- Edge Pitch Measurement
- No. Edges Measurement
- Stain Measurement
- Blob Measurement
- Trend Edge Position Measurement
- Trend Edge Gap Measurement
- Intensity Measurement

Valid tolerance settings are based on the *measurement type* selected. They are as follows:

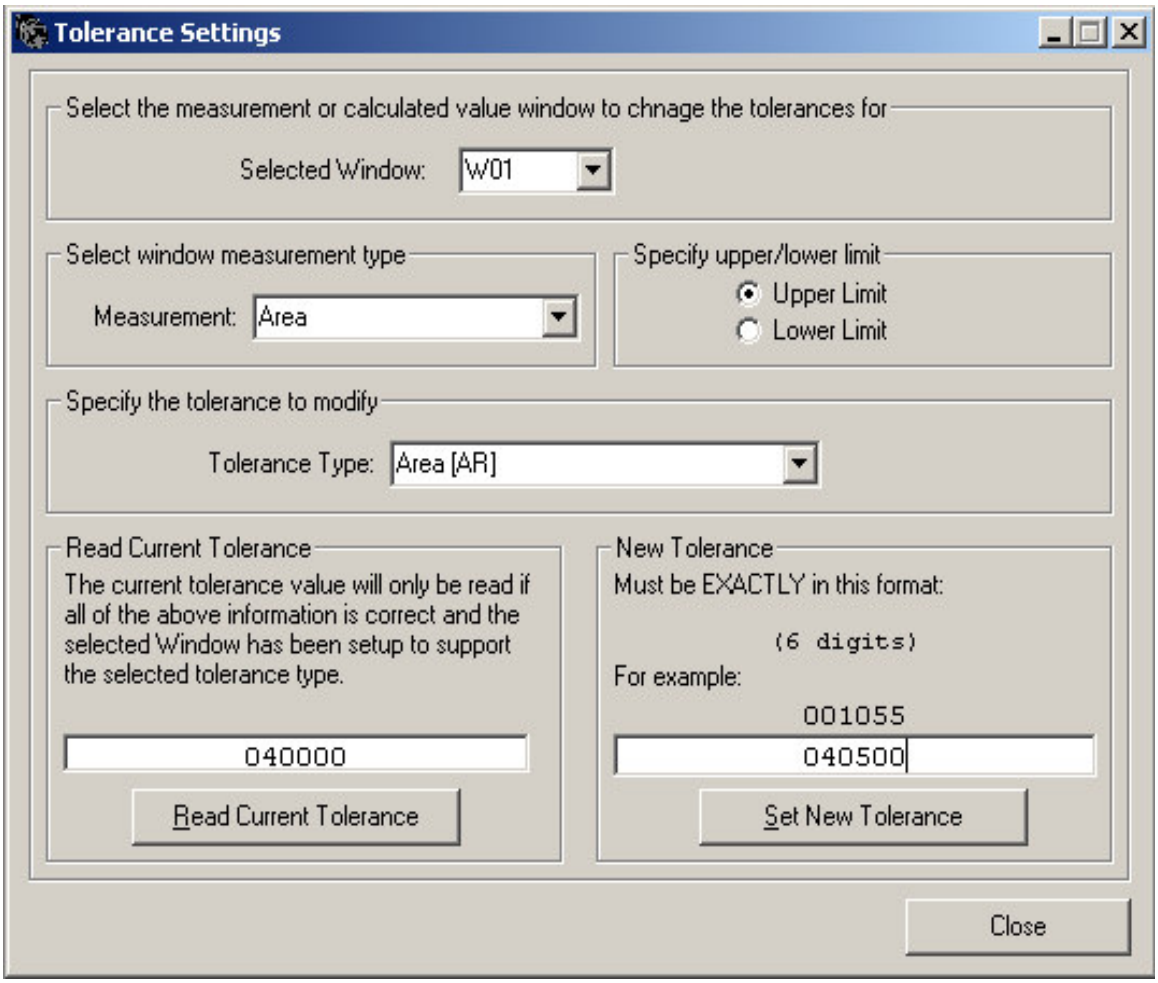
- For Area Measurement
  - Area
- For Pattern Position Measurement
  - X Pos
  - Y Pos
  - Angle
  - Corr.
- For Pattern Mutli-Position Measurement
  - Quantity
  - X Pos
  - Y Pos
  - Angle
  - Corr.
- For Edge Position Measurement
  - When measurement area is Rectangle
    - No. Edges
    - X Pos
    - Y Pos
  - When measurement area is Rectangle/Rot. Rect
    - No. Edges
    - Position
  - When measurement area is Ring/Arc
    - No. Edges
    - Gap
- For Edge Gap Measurement
  - When measurement area is Rectangle/Rot. Rect
    - No. Edges
    - Gap
  - When measurement area is Ring/Arc
    - No. Edges
    - Angle Gap
- For Edge Pitch Measurement
  - When measurement area is Rectangle
    - No. Pitches
    - Max Gap
    - Min Gap
  - When measurement area is Ring/Arc
    - No. Pitches
    - Max Angle Gap
    - Min Angle Gap

- For No. Edges Measurement
  - No. Edges
- For Stain Measurement
  - Number of Stains
- For Blob Measurement
  - No. Blobs
  - Area
  - Cent Grav. X
  - Cent Grav. Y
  - F. Dia. X
  - F. Dia. Y
  - Angle
  - Perimeter
  - Roundness
- For Trend Edge Position Measurement
  - When measurement area is Rectangle
    - No. Edges - Max
    - No. Edges - Min
    - No. Edges - Average
    - Max Pos
    - Min Pos
  - When measurement area is Rot. Rect
    - No. Edges
    - Max Pos
    - Min Pos
  - When measurement area is Ring/Arc
    - No. Edges
    - Max Rad Gap
    - Min Rad Gap
- For Trend Edge Gap Measurement
  - When measurement area is Rectangle/Rot. Rect
    - No. Edges
    - Max Gap
    - Min Gap
  - When measurement area is Ring/Arc
    - No. Edges
    - Max Rad Gap
    - Min Rad Gap
- For Intensity Measurement
  - Avg. Intensity
  - Intensity Dev.
  - Max Intensity
  - Min Intensity

NOTE: If a measured value calculated window is selected, *measurement type* and *tolerance type* selections do not apply and will be disabled.

To view the current tolerance, be sure you specify to look at the upper or lower tolerance and click the **Read Current Tolerance** button.

To modify the tolerance, enter the new tolerance value in the appropriate location and click the **Set New Tolerance** button. The new tolerance value will be verified for proper format before being sent to the CV-2100.



4.5. COMM Mode Commands

4.5.1. Enter COMM Mode

Menu Location: COMM Mode > Enter COMM Mode (from RUN mode)
Supported in Modes: RUN

Before any "COMM-mode" commands can be executed, the CV-2100 must be placed in COMM mode.

You must be in RUN mode to enter COMM mode.

4.5.2. Exit COMM Mode

Menu Location: COMM Mode > Exit COMM Mode (to RUN mode)
Supported in Modes: COMM

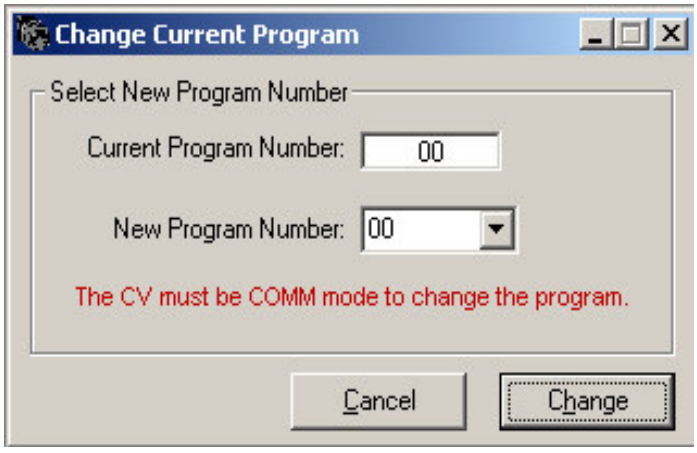
Use this feature to exit COMM mode. The CV-2100 will be returned to RUN mode.

You must be in COMM mode to execute this command successfully.

4.5.3. Change Current Program Number

Menu Location: COMM Mode > Change Current Program
Supported in Modes: COMM

The CV supports up to 32 different programs (00 - 31). Through COMM mode, the user can change the current program.



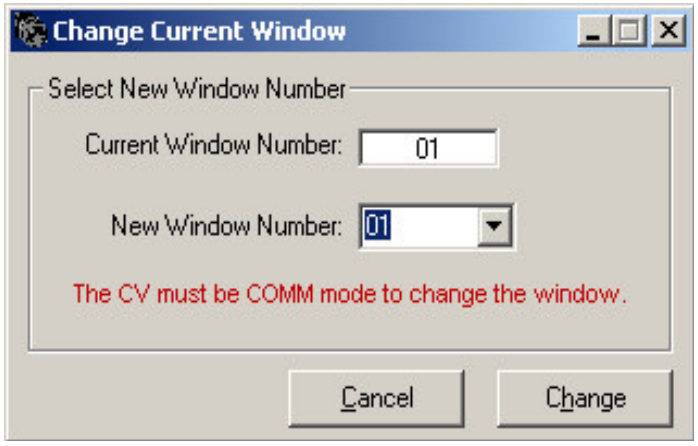
Select a new program number from the list and click **Change**.

You must be in COMM mode to execute this command successfully.

4.5.4. Change Current Window Number

Menu Location: COMM Mode > Change Current Window Number
Supported in Modes: COMM

The CV supports up to 64 different windows (01 - 64). Through COMM mode, the user can change the active window.



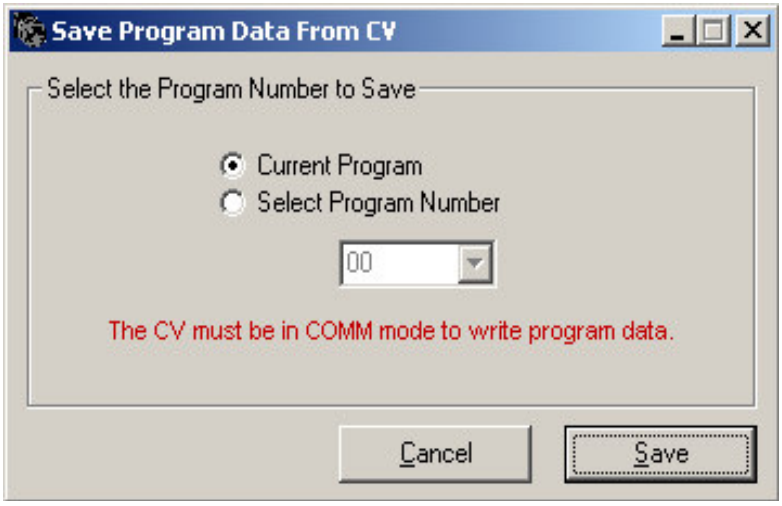
Select a new window number from the list and click **Change**.

You must be in COMM mode to execute this command successfully.

4.5.5. Save Program Data from CV

Menu Location: COMM Mode > Save Program Data From CV
Supported in Modes: COMM

It is important to backup your programs from the CV-2100 in the event they are modified or erased. Saving your programs will also allow users to copy programs to other CV-2100's.



Select either the current program that is active or select a program number from the drop down list. Once the program data has been read from the CV, the user will be prompted for a file name to save the program to.

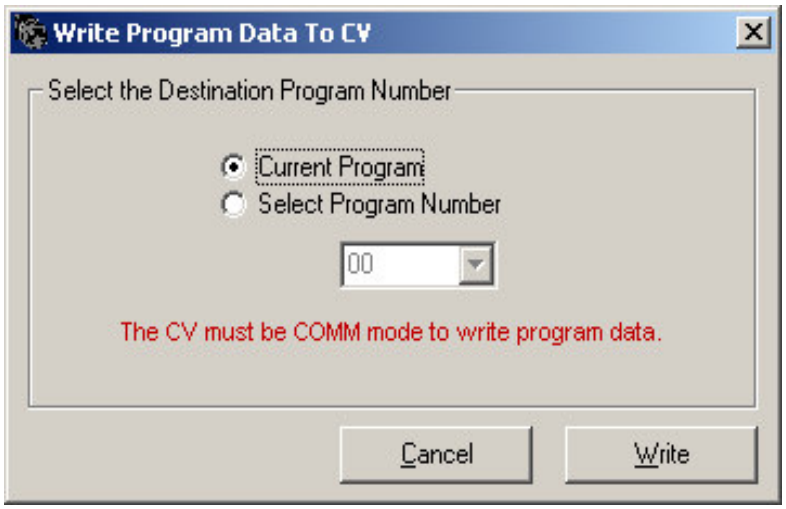
You must be in COMM mode to execute this command successfully.

NOTE: The CV does not distinguish between program slots that have been configured and ones that have not been configured. The program will successfully back-up an un-configured slot, but when the program is written back to a CV, it will fail the CV's checksum check and the user will be presented with an error.

4.5.6. Write Program Data to CV

Menu Location: COMM Mode > Write Program To CV
Supported in Modes: COMM

After saving a program from the CV, a user can write that program back to the CV.



After selecting this menu option, the user will be prompted for the file to load and then will be shown the form above. Select either the current program that is active or select a program number from the drop down list to write the program data to.

You must be in COMM mode to execute this command successfully.

NOTE: The CV does not distinguish between program slots that have been configured and ones that have not been configured. The program will successfully back-up an un-configured slot, but when the program is written back to a CV, it will fail the CV's checksum check and the user will be presented with an error.

4.5.7. Saving Environmental Settings from the CV

Menu Location: COMM Mode > Save Environmental Setting From CV
Supported in Modes: COMM

Saves the CV's environmental settings data to disk. Selecting this menu option will prompt the user to enter the file name to save the environmental settings to.

You must be in COMM mode to execute this command successfully.

4.5.8. Writing Environmental Settings to the CV

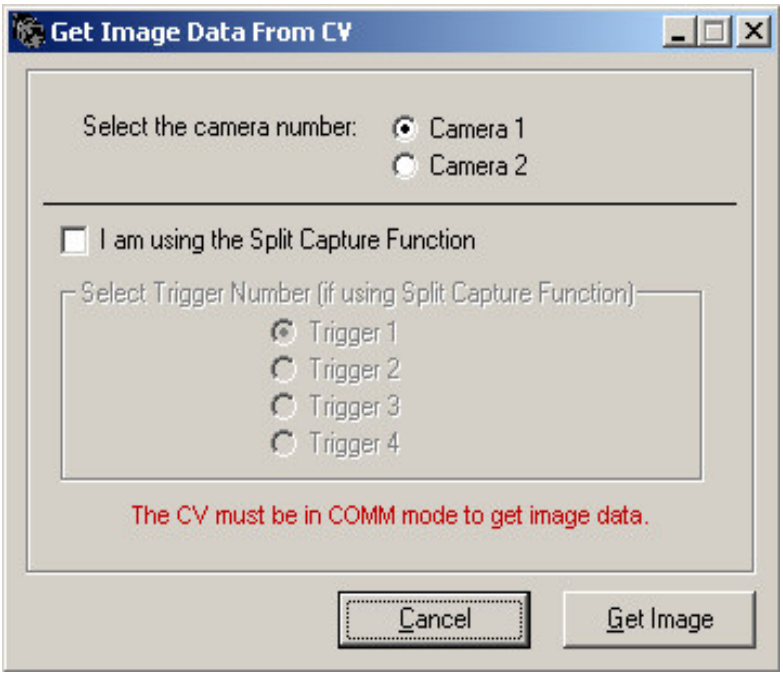
Menu Location: COMM Mode > Write Environmental Setting To CV
Supported in Modes: COMM

Writes environmental settings from disk to the CV. The user will be prompted for the file containing the saved environmental settings.

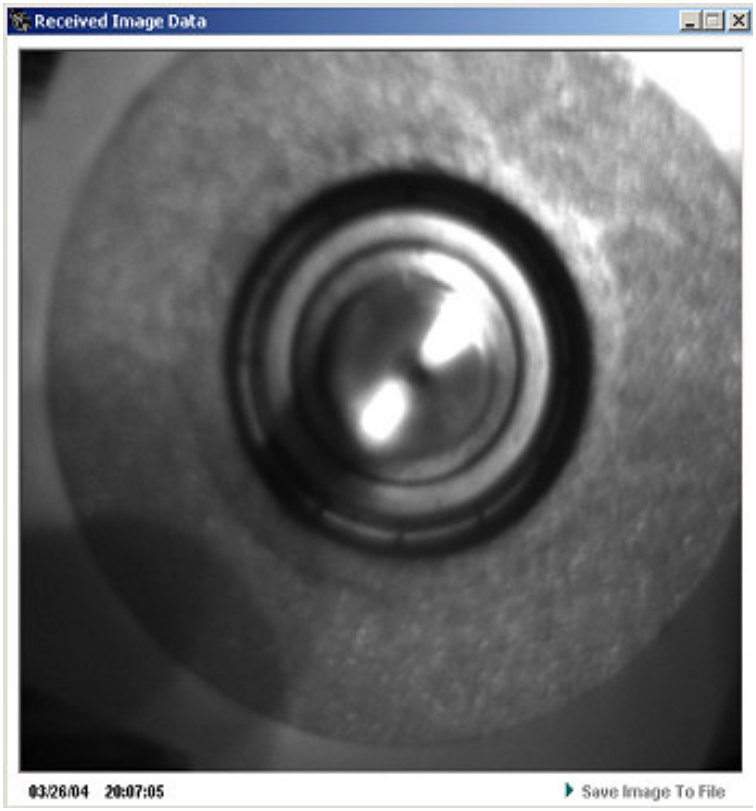
You must be in COMM mode to execute this command successfully.

4.5.9. Get/Save Image Data from the CV

Menu Location: COMM Mode > Get/Save Image Data From CV
Supported in Modes: COMM



Allows the user to retrieve and save the last image taken to disk. Specify the camera number, whether or not *Split Capture* is being used, and click the **Get Image** button. The image will be loaded from the CV and displayed to the user as shown below:



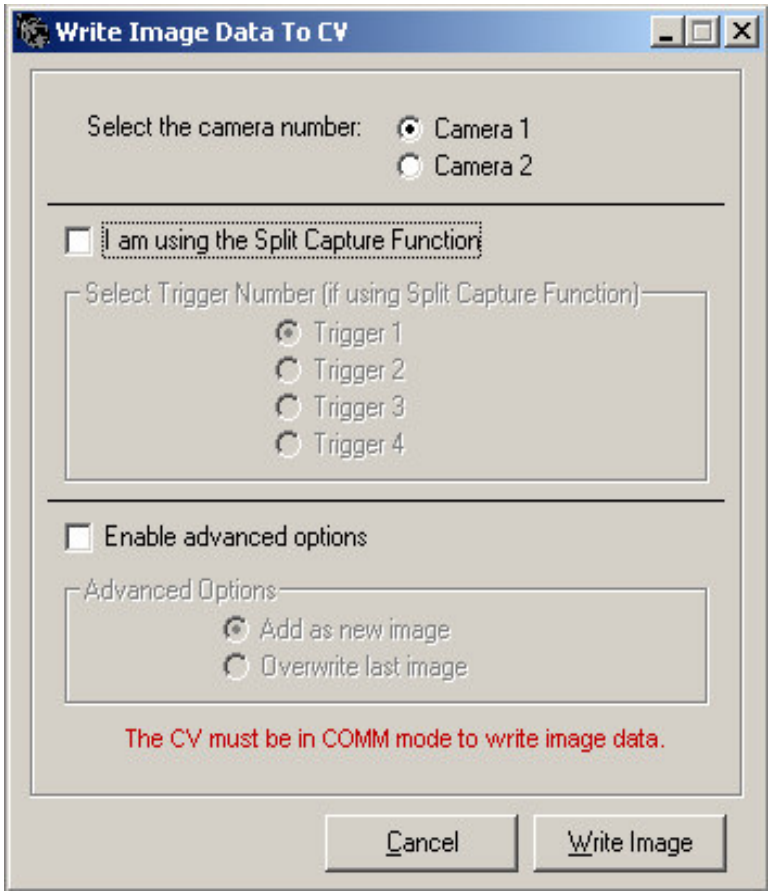
From this screen, the user may save the image to a BMP file by clicking the **Save Image To File** link.

You must be in COMM mode to execute this command successfully.

4.5.10. Write Saved Image Data to the CV Image Buffer

Menu Location: COMM Mode > Write Saved Image Data To CV Image Buffer
Supported in Modes: COMM

Allows the user to save a previously saved image to the CV-2100 image buffer. Prompts the user to select an image from disk that will be written to the CV image buffer. After an image is selected, user is prompted with the following form:



Specify the camera number to assign the image to. If using the split capture function of the CV-2100, check this option and the appropriate trigger.

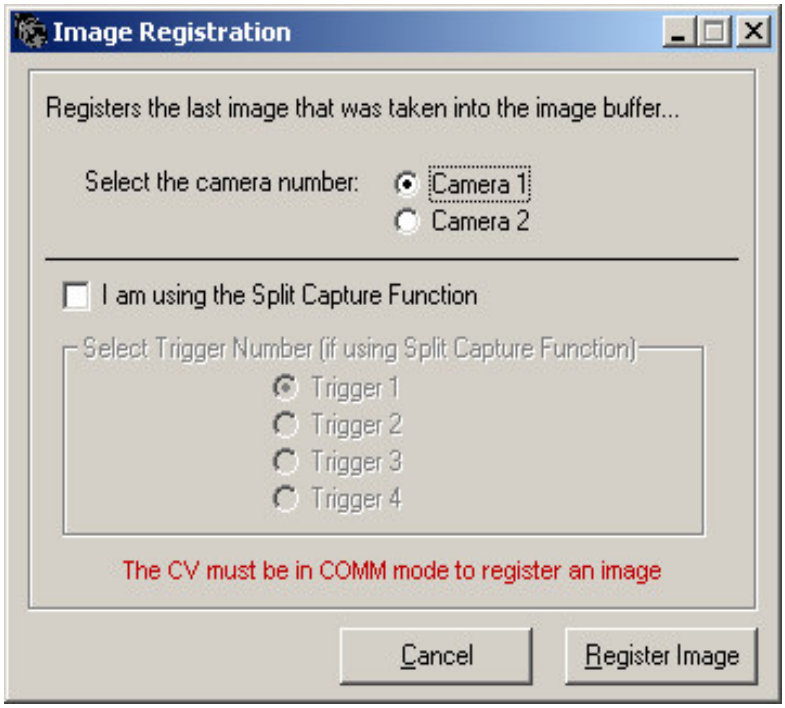
The advanced options allow the user to select whether this image is to be added as a new image into the image buffer or if it is to overwrite the last image that was stored in the buffer. The default is to add this image as a new image.

You must be in COMM mode to execute this command successfully.

4.5.11. Image Registration

Menu Location: COMM Mode > Image Registration
Supported in Modes: COMM

Forces the last image stored in the CV-2100's image buffer to become the registered image.

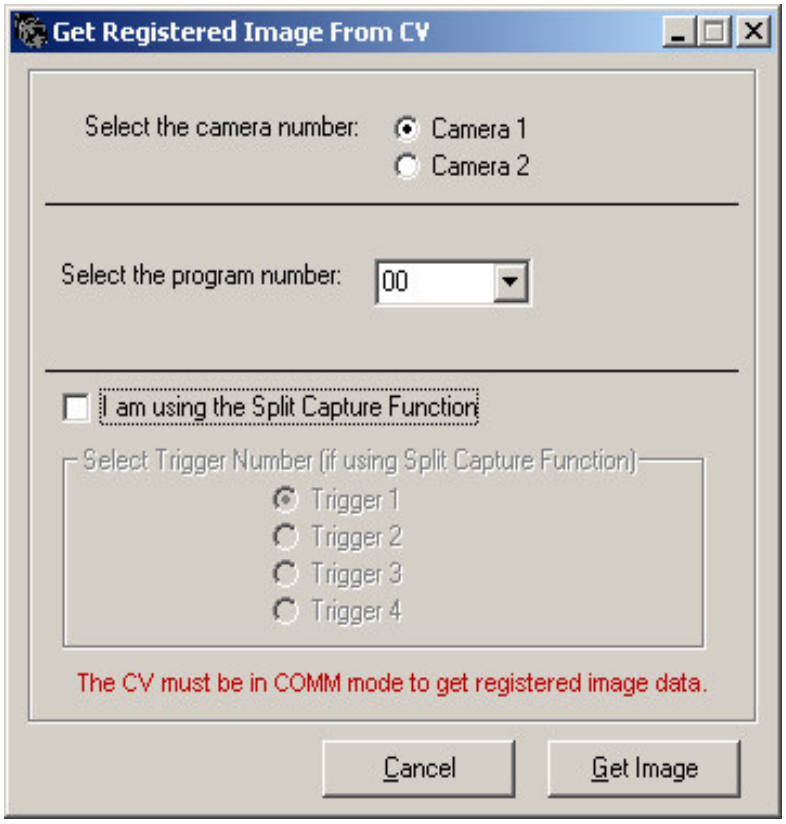


Select the appropriate camera to register and if the split capture function is being used, check this option and select the correct trigger.

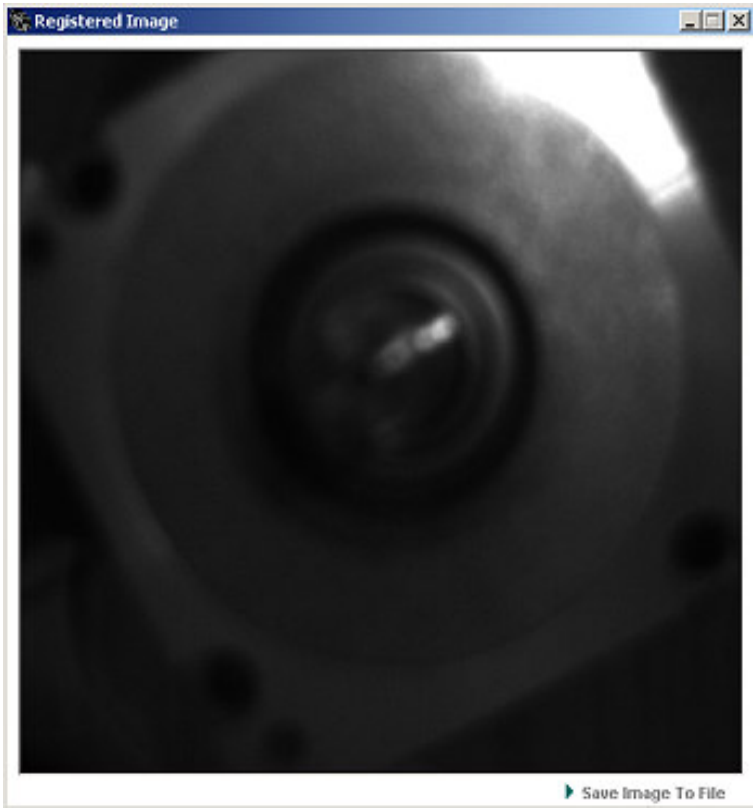
You must be in COMM mode to execute this command successfully.

4.5.12. Get/Save Registered Image from the CV

Menu Location: COMM Mode > Get/Save Registered Image From CV
Supported in Modes: COMM



Allows the user to retrieve and save the registered image for the selected camera and program number. The image is retrieved from the CV when the **Get Image** button is clicked. It will be displayed to the user as follows:



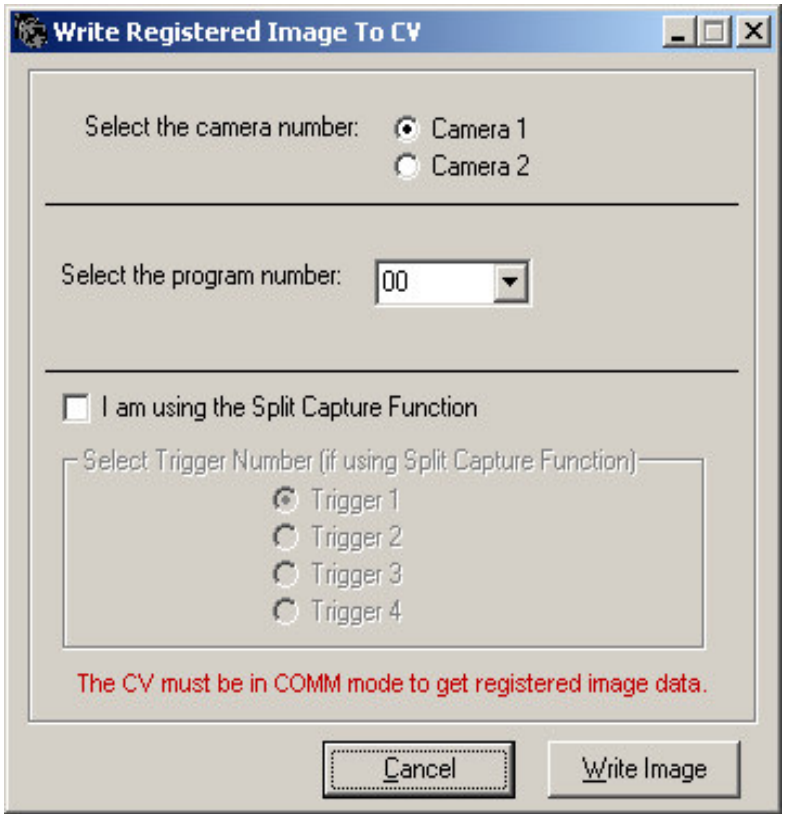
From this screen, the user may save the image to a BMP file by clicking the **Save Image To File** link.

You must be in COMM mode to execute this command successfully.

4.5.13. Write Registered Image To CV

Menu Location: COMM Mode > Write Registered Image Data To CV
Supported in Modes: COMM

Writes a previously saved image into the CV as the registered image for the selected camera and program number. Prompts the user to select an image from disk that will be written to the CV image buffer. After an image is selected, user is prompted with the following form:



Specify the camera number and the appropriate program number. If using the split capture function of the CV-2100, check this option and the appropriate trigger.

You must be in COMM mode to execute this command successfully.

4.5.14. Clear Image Buffer

Menu Location: COMM Mode > Clear Image Buffer
Supported in Modes: COMM

Clears the CV-2100's image buffer.

4.5.15. Screen Capture (via Remote Console/Display)

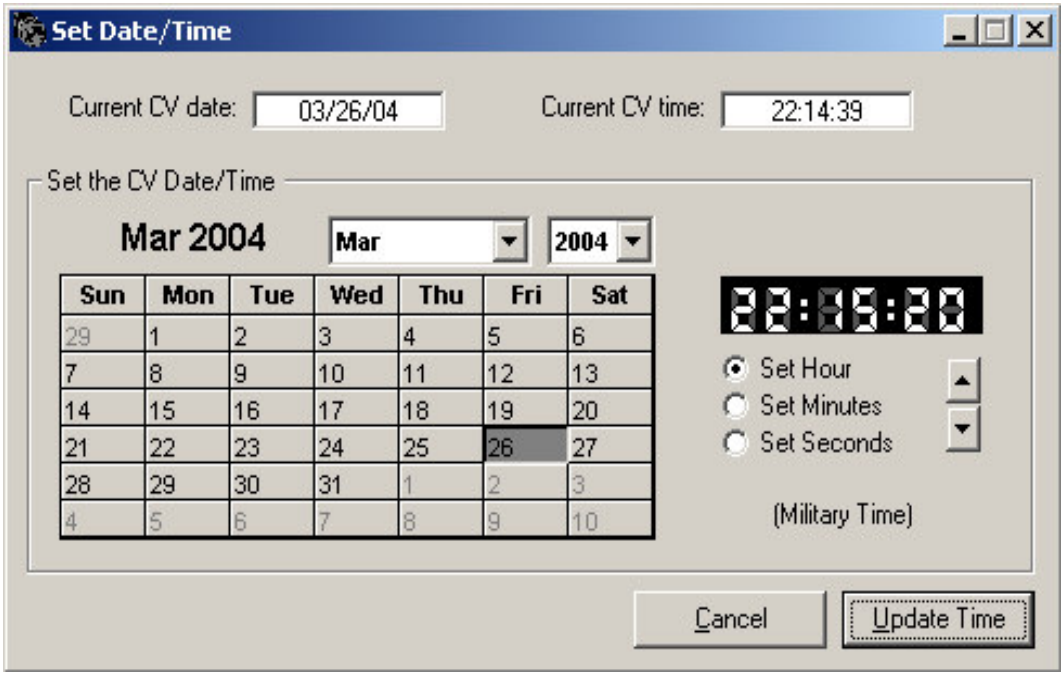
Menu Location: COMM Mode > Screen Capture (via Remote Console)
Supported in Modes: RUN, TRIAL, PROGRAM, COMM

Retrieves a BMP image of the CV-2100's current screen. This function uses the **Remote Console/Display** window. Please refer to the **Remote Console/Display** section for more information on this feature.

4.5.16. Set Date/Time

Menu Location: COMM Mode > Set Date/Time
Supported in Modes: COMM

Allows the user to set the date/time in the CV-2100.



The current date/time of the CV will be displayed at the top of this form. The calendar and the time control will be initialized to the PC's current date/time.

To set the date, select the month and year from the drop-down lists. Select the day of the month by clicking on the day in the calendar.

To set the time: set the hours, minutes, and seconds separately by selecting the “Set Hour”, “Set Minutes”, or “Set Seconds” respectively. Use the up/down arrows to increase or decrease the settings.

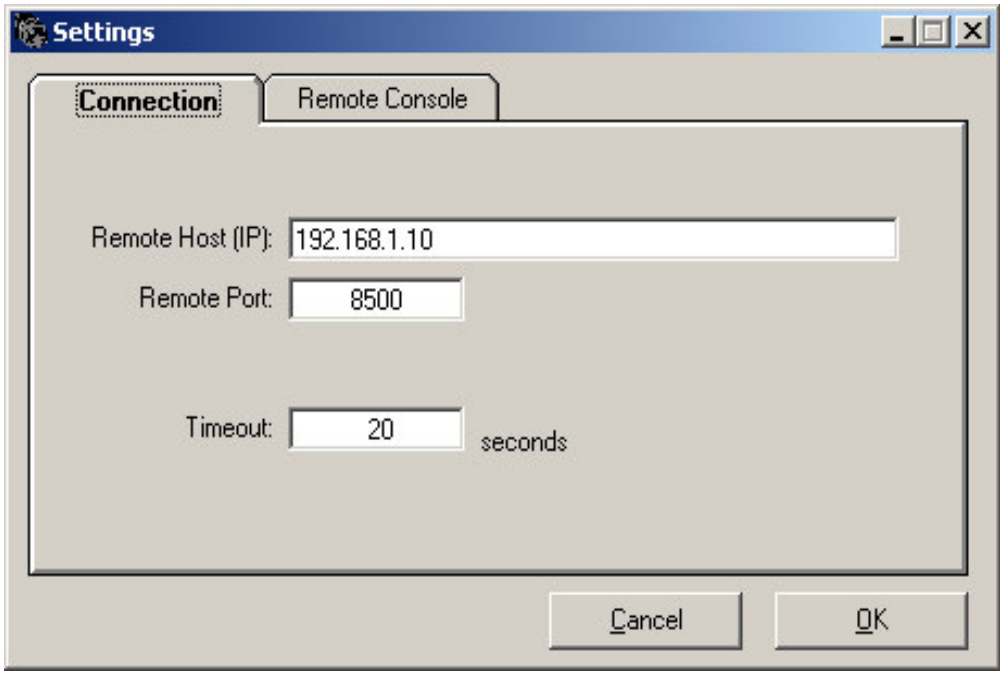
Click the **Update Time** button to update the CV-2100’s current date/time.

4.6. Options

The options menu allows the user to set options and preferences related to the operation of the CV-2100 Companion.

4.6.1. Connection Options

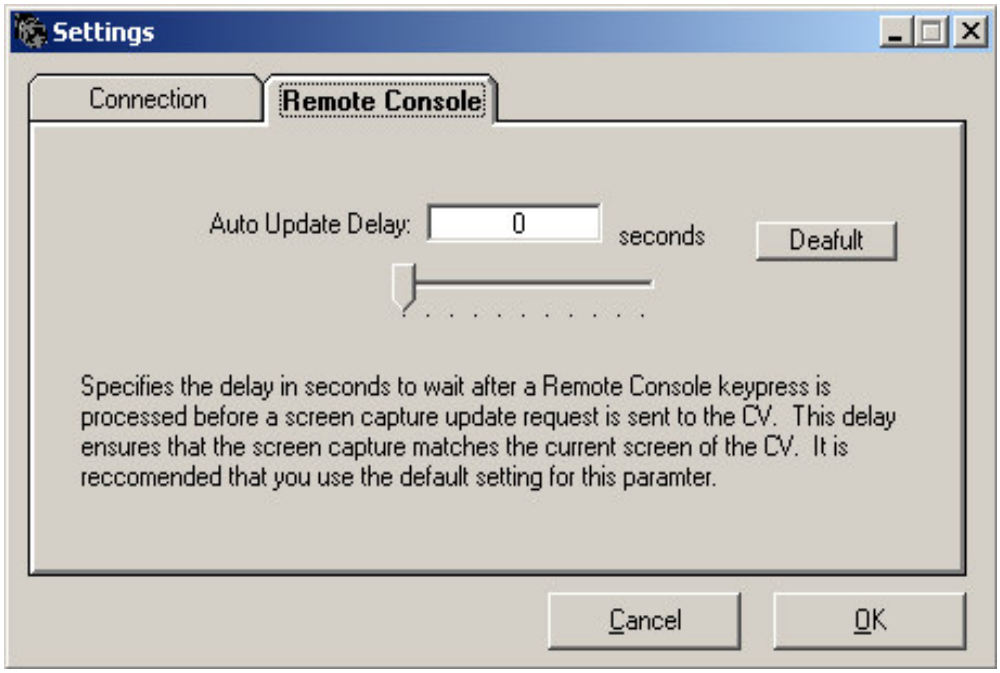
Menu Location: Options > Settings > Connection Tab
Supported in Modes: N/A



Remote Host (IP): The IP address of the CV-2100.
Remote Port: The port number of the CV-2100.
Timeout: The number of seconds the CV-2100 Companion will wait for requests to the CV to be completed.

4.6.2. Remote Console Options

Menu Location: Options > Settings > Remote Console Tab
Supported in Modes: N/A



The **Remote Console/Display** window has an option on the display window marked as **Auto-update**. When this option is selected a screen capture is requested from the CV to update the **Remote Console/Display** window's display each time the pseudo-remote console is used to send a command to the CV-2100. Due to limitations in the CV-2100, there are certain situations where the CV will send a screen capture before the CV is done updating the screen. This will cause the screen image viewed from the CV-2100 Companion to be different than the actual screen of the CV.

Although, this situation is not common and not serious, to assure the CV-2100 Companion's screen image matches the CV's, a time delay can be used to wait for the CV to complete screen updates so the CV-2100 Companion will accurately portrait the image on the CV.

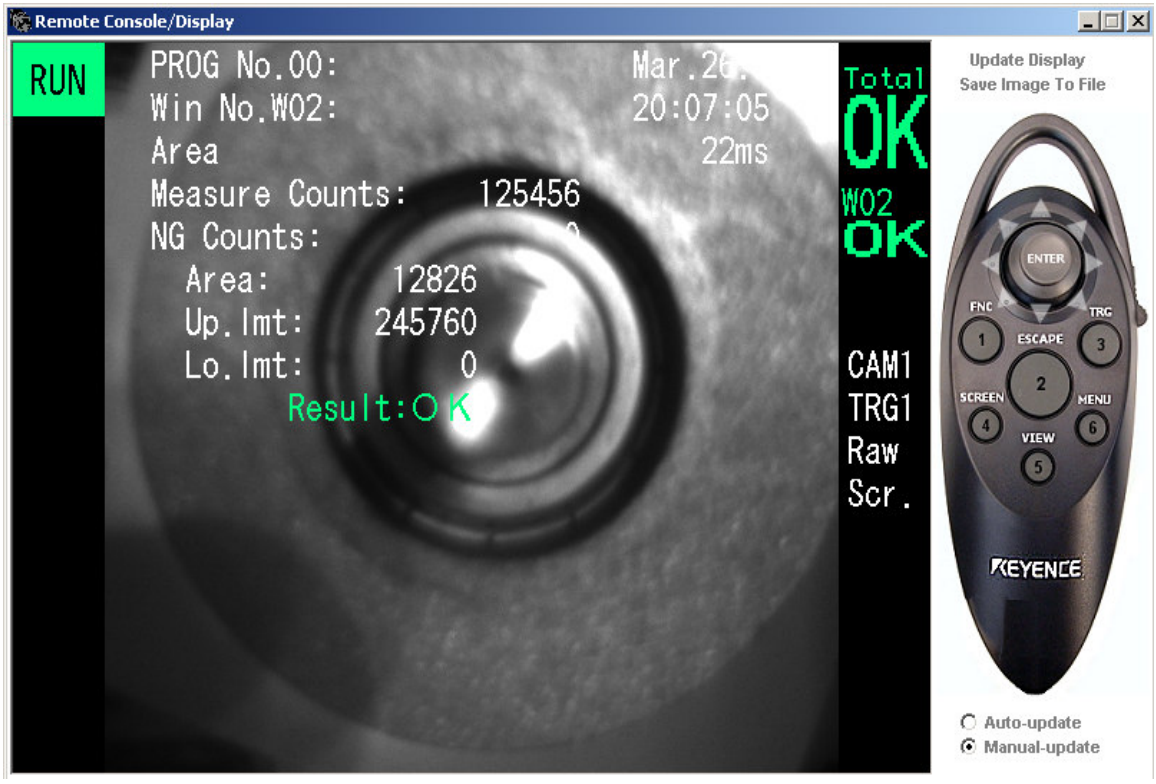
Testing performed by Conquest Consulting has shown that 5 seconds appears to be an adequate time delay to resolve this issue. This setting can change based on specific network conditions. Therefore, the user is allowed to change this delay from 0 to 10 seconds. The software is shipped using a delay of 0 seconds, however the **Default** button will set the delay to 5 seconds.

4.7. Windows

The Windows menu contains interactive windows used to remotely control the CV-2100.

4.7.1. Remote Console/Display

Menu Location: Windows > Remote Console/Display
Supported in Modes: ALL



The Remote Console/Display window allows the user a graphical remote interface to the CV-2100. The left hand area of this window is used to display a BMP image representing the current CV-2100 display. The right hand area of this window contains a pseudo-remote console (A.K.A. pendent) along with some options and command links.

The image can be updated in two ways. The first is to click the **Update Display** link. The second is to select the **Auto-update** option. When using the **Auto-update** option, the display will be updated each time the pseudo-remote control is used to send a command to the CV.

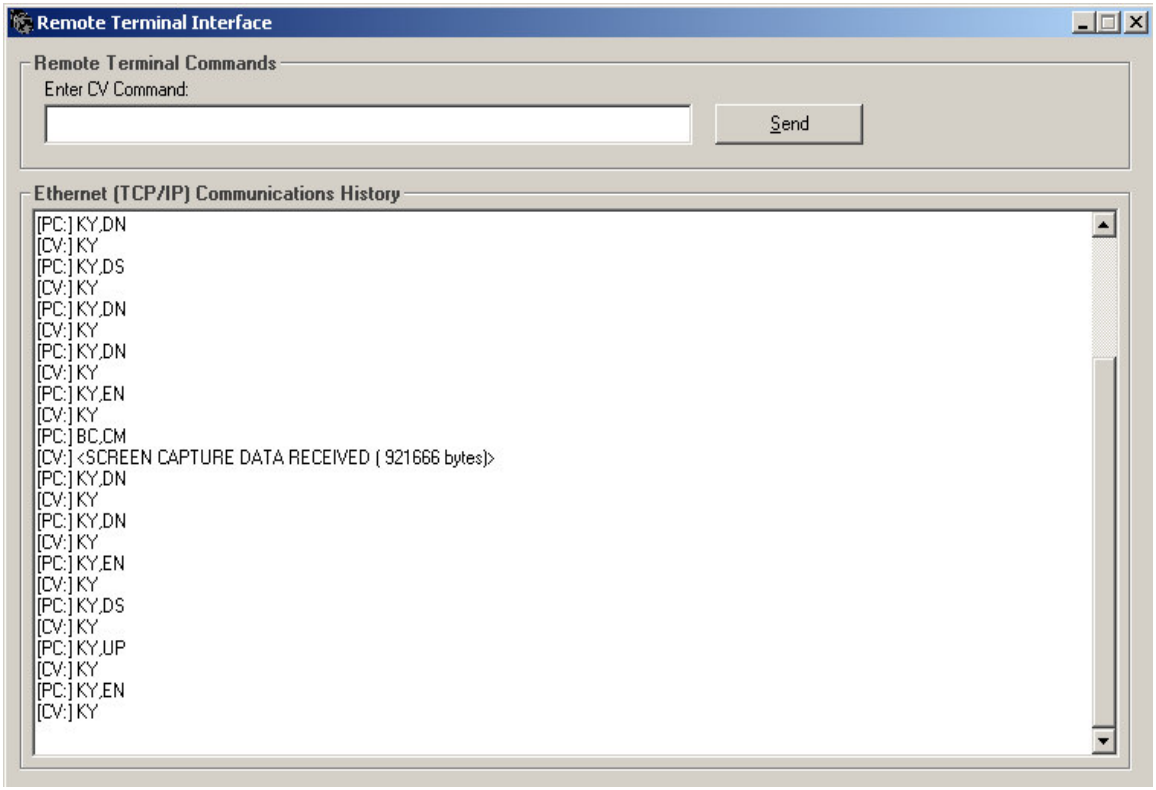
The pseudo-remote console operates the same as the actual remote control and is operated by clicking with the mouse over each button or arrow (arrows are used to simulate the movement of the joystick). For more information on the operation of the remote console, please refer to the CV-2100 User's Manual.

To save the BMP image currently displayed by the **Remote Console/Display**, click the **Save Image To File** link. The user will be prompted to select a file name to save the image.

NOTE: When using the **Auto-update** option, a screen capture is requested from the CV to update the **Remote Console/Display** window's each time the pseudo-remote console is used to send a command to the CV-2100. Due to limitations in the CV, there are certain situations where the CV will send a screen capture before the CV is done updating the screen. This will cause the screen image viewed from the CV-2100 Companion to be different than the actual screen of the CV. To resolve this, increase the delay time in under the *Options* > *Settings* > *Remote Console* menu.

4.7.2. Remote Terminal Interface

Menu Location: Windows/Remote Terminal Interface
Supported in Modes: ALL



The **Remote Terminal Interface** provides a text-based interface for users to control the CV-2100 by manually entering CV commands. The communications history window shows a history of communication to and from the CV.

To send a command enter it in the text box at the top and click the **Send** button or hit the **Enter** key on the keyboard.

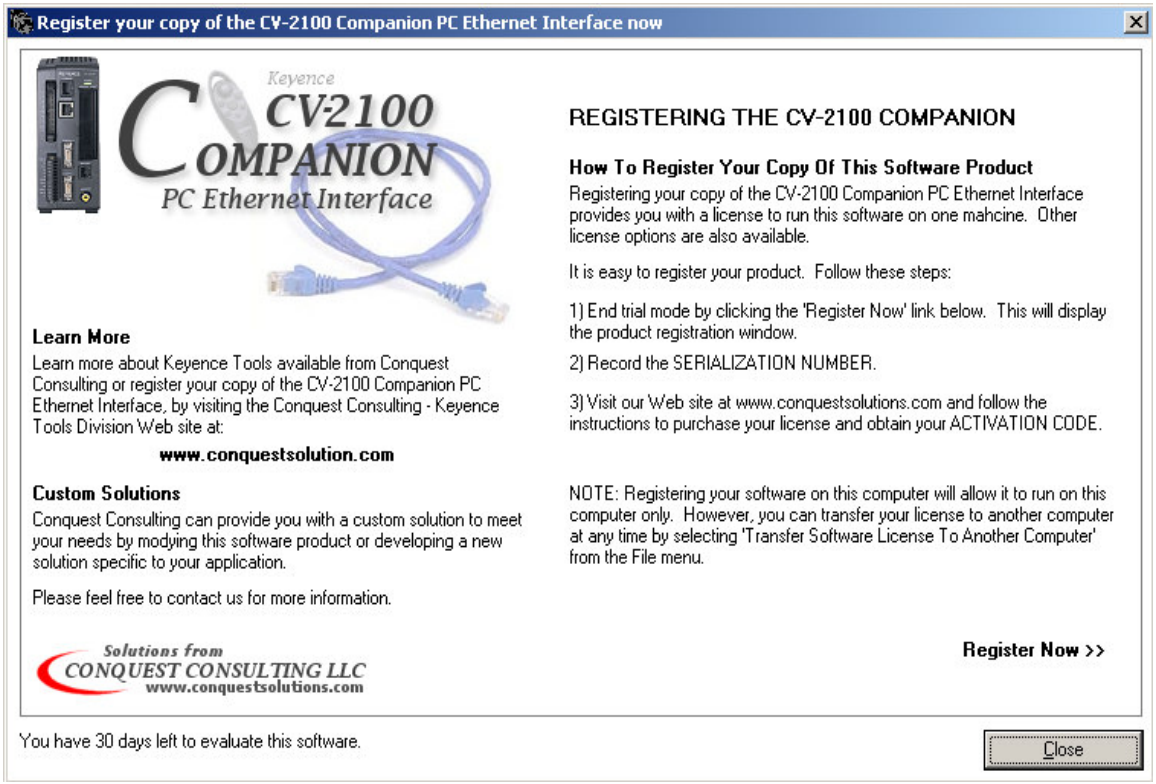
5.0. Registering the CV-2100 Companion Ethernet Interface

When installed on a new computer, the CV-2100 Companion runs on a free 30 day trial license. The software is fully functional during this period. After the 30 day trial period has expired, the software will no longer function until it is registered.

Registering the software will provide the user with a license to allow the software to run on the PC it is installed with no time limitations. The license that is used by the software is specific to the computer it is running on. It is generated from the serial numbers of specific hardware components installed on this PC, thus rendering it useless on any other computer. If the user wishes to install and use the software on another computer, the license can be transferred from one computer to another using a floppy disk.

5.1. How to Register the CV-2100 Companion

If the CV-2100 Companion is not registered, each time the software is run, the following registration form will be displayed (NOTE: This form can be also displayed by selecting File/Register This Copy of the CV-2100 Companion.):

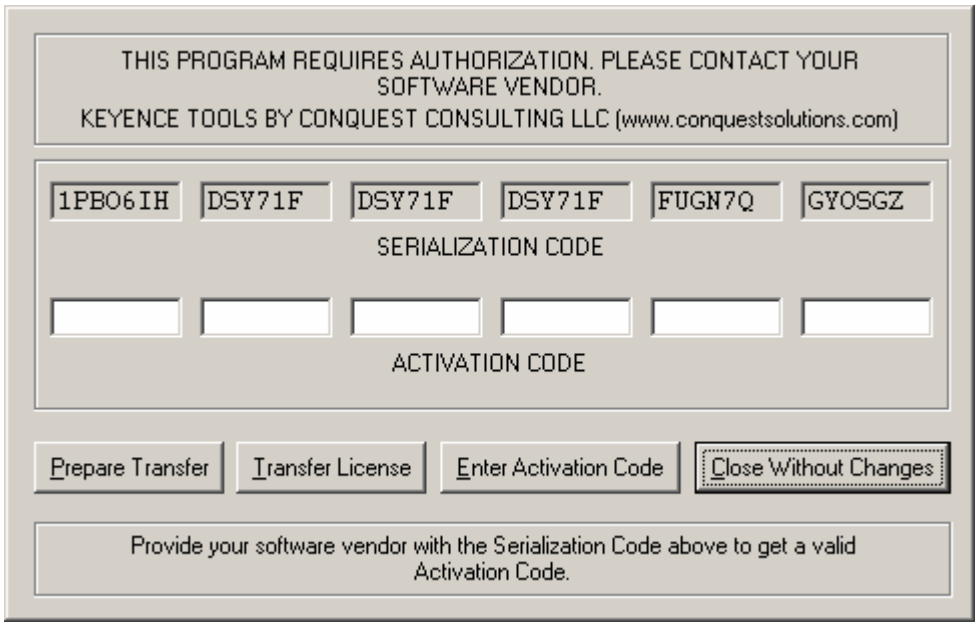


This form provides the user with instructions on registering this copy of the CV-2100 Companion. To register, follow the instructions shown on the form. (NOTE: As part of the registration process, the software's trial mode will end. Therefore, be sure you are ready to register the software when starting the process.)

The registration process is as follows:

1. End trial mode by clicking the 'Register Now' link found at the bottom of the form. You will be asked to confirm you wish to start the registration process.

2. Record the SERIALIZATION NUMBER that you are provided with. This number is created from the serial numbers of specific hardware on this PC.



3. Visit the Conquest Consulting (Keyence solutions division) Web site at

   www.conquestsolutions.com

   Click on the appropriate link to register your software and follow the instructions to purchase a license. Once you have purchased your license, you will be able to enter the SERIALIZATION NUMBER for your software and obtain the ACTIVATION CODE.

4. Enter this ACTIVATION code in the registration form and click the **Enter Activation Code** button.

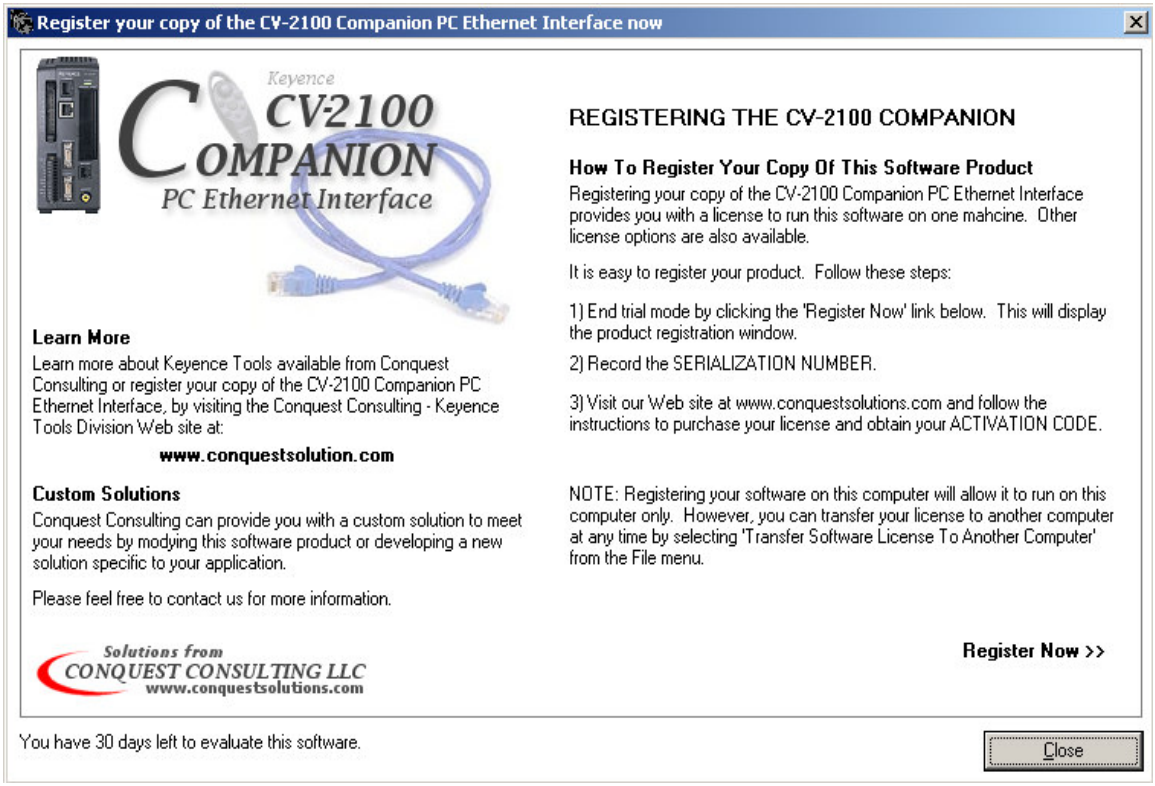
5.2. How to Transfer the CV-2100 License to another Computer

Once a copy of the CV-2100 has been registered, the license can be transferred from one computer to another. To transfer the license, select File > Transfer Software License To Another Computer:

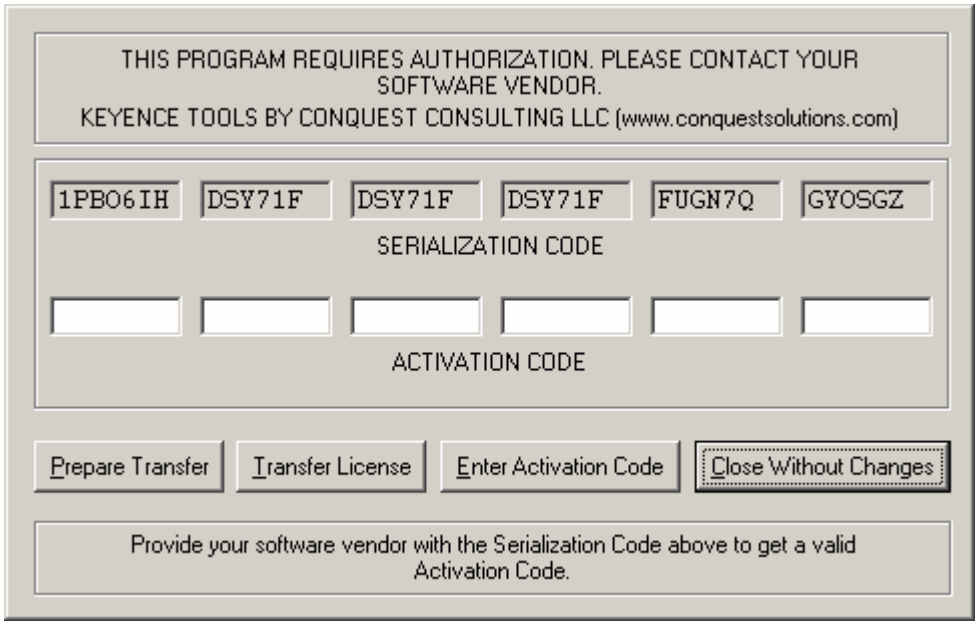
This form provides the user with instructions on transferring the license from the original computer to the new one.

The details of this process are as follows:

1. Install the CV-2100 Companion PC Ethernet Interface on the NEW computer and run it in trial mode.
2. If not already displayed on the new computer, display the Registration Form by selecting the *File/Register This Copy of the CV-2100 Companion* menu option:



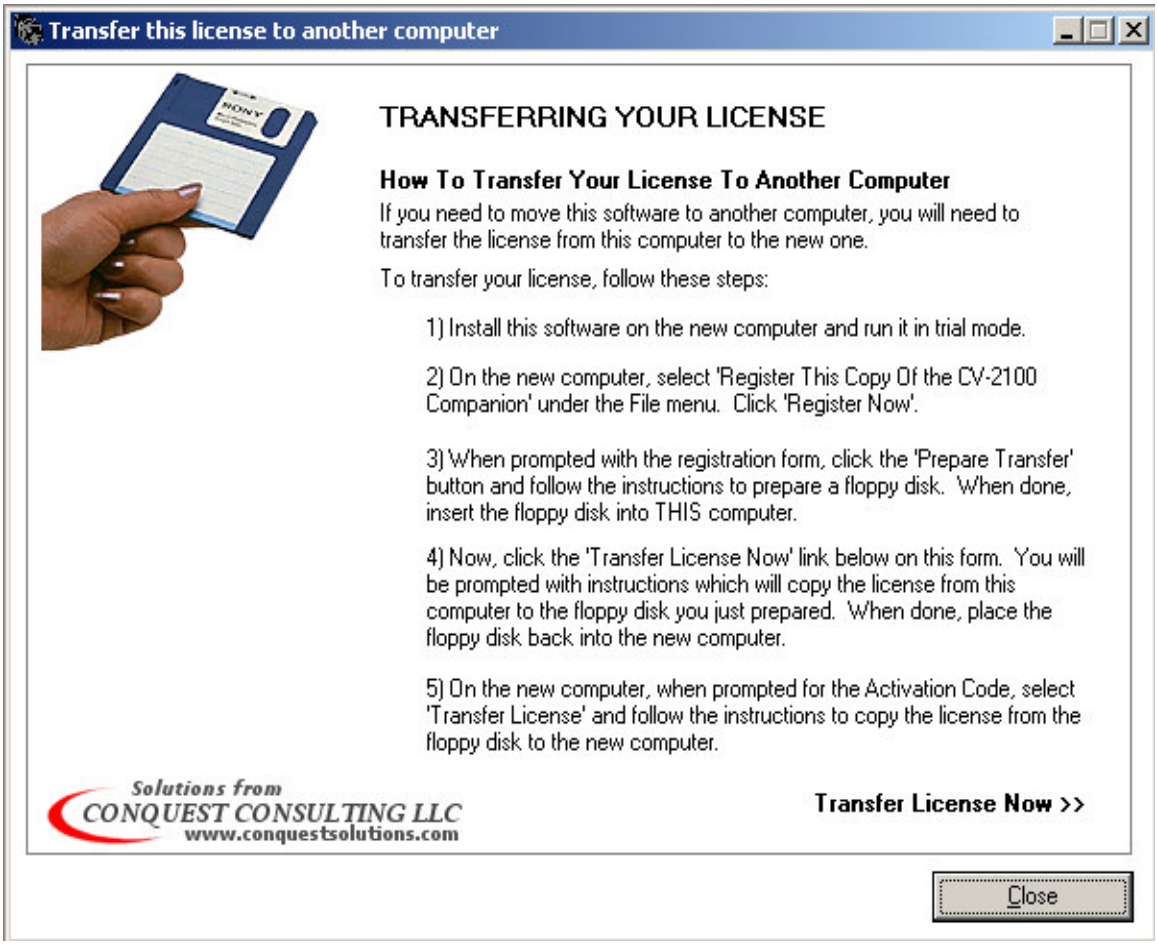
3. Click on the **Register Now** link. The user will be warned that the registration process will end trial mode. Accept the warning. The activation form will be displayed:



4. Prepare a floppy disk for the license transfer by clicking on the **Prepare Transfer** button. The user will be prompted to insert a floppy disk into the disk drive.

Place a blank floppy disk into the drive of the NEW PC and click **OK**. Wait a few seconds for the disk to be written to. The user will be s a message box indicating the disk is prepared:

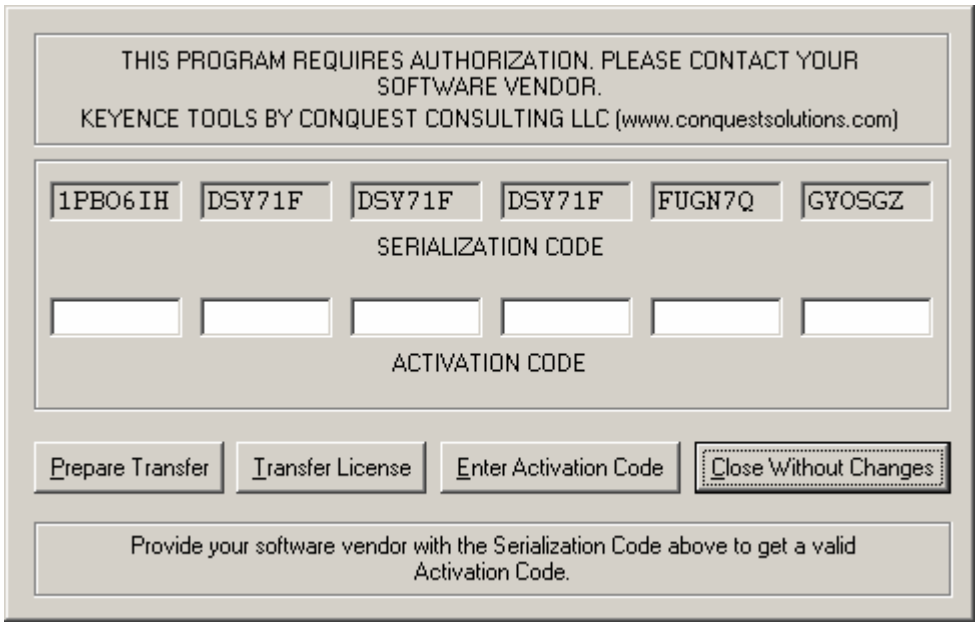
5. Click **OK** and remove the floppy disk from the drive. Place the floppy disk in the ORIGINAL computer and run the CV-2100 Companion (currently still licensed). Select *File/Transfer Software License To Another Computer*:



6. Click the **Transfer License Now** link. Click **Yes** when asked, "Are you sure you wish to transfer your license to another PC?" The user will be prompted to insert the floppy disk (the prepared transfer disk should be in the computer at this point):

7. Click the **OK** button. Wait a few seconds for the license to be transferred to the floppy disk. When the license has been transferred to the disk, the user will be prompted with the following message box:

8. The software will end because it no longer owns a valid license. Remove the floppy disk and insert it into the NEW computer once again. If not already displayed on the NEW computer, bring up the activation form by running the software:



9. Click the **Transfer License** button. The user will be prompted for the disk containing the license (it should be in the floppy disk drive at this point):

10. Click **OK**. Wait a few seconds for the license to be transferred to the NEW computer. After the license has been transferred, the user will be prompted with the following message box:

11. The NEW computer now owns the license to use the CV-2100 Companion software in unlimited mode.

6.0. Support

For all support options, please visit www.conquestsolutions.com.