



Optima MPS Vision System

User Manual
Software Version 5.1

Disclaimer

RealTime Technologies has taken every precaution necessary to ensure this documentation accurately describes the operation and use of the OPTIMA MPS Vision System, however, RealTime Technologies cannot guarantee the accuracy of printed material or accept responsibility for any errors or omissions.

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All drawings, illustrations and photographs are incorporated to help make this manual user-friendly and to expand the text.

Contact Information

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Optima MPS Vision System Overview

The OPTIMA Mold Protection Vision System is designed specifically for the injection molding industry. The main three molding inspection functions are empty mold inspection for the purpose of mold protection, mold inspection for the presence of inserts, and finished parts inspection for defects.

The finished parts inspection can be performed during the molding process or at a specialized downstream auxiliary station. Images are automatically captured when switching from Manual to Automatic mode. For example, when a mold empty inspection is performed and no parts are detected an inspection passed signal is sent to the molding machine, and the mold is signaled that it is clear to close. If the inspection fails an alarm is sounded, and an error is generated.



Features

- 24-bit color inspection, utilizing high resolution color/IR GigE camera
- 1024h x 600v pixel resolution
- Standard system equipped with four-camera capability
- 12" slim-line touch controller
- Intel based processor < 50ms inspection times
- SPI digital robot interface to molding machine
- 64-inspection window capacity

Note: The vision system uses a CS mount 5-60mm manual vari-focus lens. For replacement or a change in focal length, a CS mount lens must be used.



Interfacing with an Injection Molding Machine

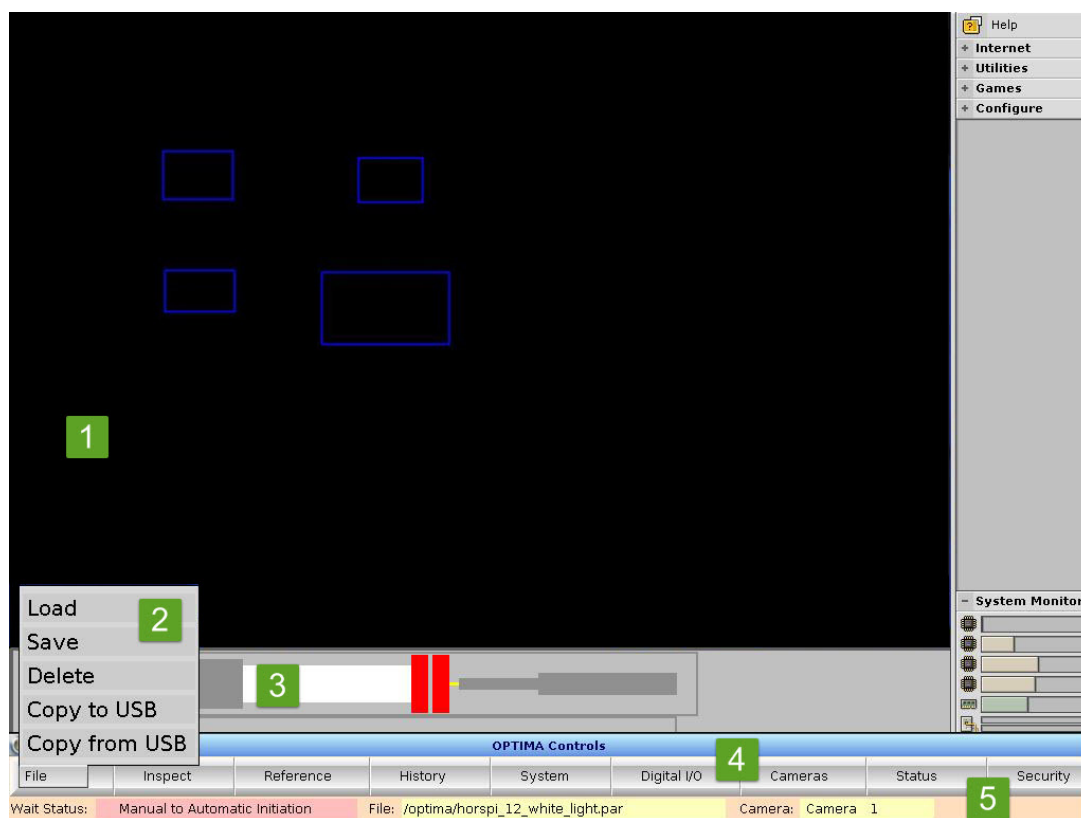
There are two methods you can use to interface to a molding machine. The first method uses a standard SPI/EUROMAP robot interface, which allows the vision system to quickly and easily connect to any molding machine. This type of interface uses straight digital interfaces, which enable the molding machine to send signals to the vision system. The vision system interlocks certain functions, such as mold closing and ejector forward/back.

The second method uses a stripped down version of the first, where only the minimum required signals are wired. For example, for simple mold protection, the Mold Open, and the IMM is in Auto signals are required to be passed to the vision system. In return, the vision system interlocks the mold close permissive on the molding machine. If an inspection for a full parts check is also required then the ejector signals must also be wired. For details, see [IMM/Optima Interface \(Horizontal Machine\)](#).

Operator Interface

Main Window

The Main window is what you see when the vision system is initially powered On. It will display the current image of the first camera. If a manual reference has not already been made the vision system takes a reference image when the molding machine initially goes into Automatic mode. When the molding machine is switched from Automatic to Manual mode, the vision failure alarm is cancelled. When the molding machine is switched from Manual to Automatic mode, the vision system initiates a mold close inspection before allowing the mold to close.



1	Video Window
2	File Management
3	Machine Simulation
4	Menu Selection
5	Status

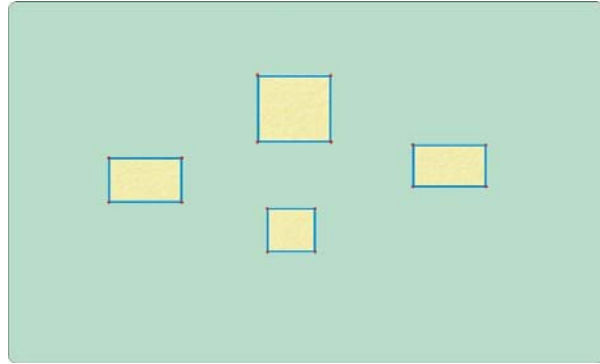
Video Window

The Video window displays the current image and each of the inspection windows assigned to the camera.

To select an inspection window:

1. With the Inspection dialog active, touch the center of the inspection window.
2. Use the + / - touchscreen buttons from the keypad, or use the up and down arrows beside the **Inspection #** field on the Inspection Parameters screen.

When an inspection window is selected it turns yellow and the Inspection Parameters screen variables change to display the settings for the selected window. The inspection windows turn red when they are in a failed state. For details, see [Modifying Inspection Parameters](#).



To resize an inspection window:

Press the **Size** touchscreen button from the keypad and use the yellow arrows to change the dimensions. You can also resize by dragging the lower right-hand corner of the inspection window.

To move an inspection window:

Press the **Move** touchscreen button from the keypad and use the yellow arrows to reposition it. You can also touch the center of the window and drag it to the desired position.

File Management

To access the File menu, press **File** from the menu selection on the Main window.

To load parameters:

1. Press **Load** from the File menu.
2. Select a file from the Load Parameters dialog.
3. Press **Load** to upload the file.

To save parameters to existing vision files:

1. Press **Save** from the File menu.
2. Select a file from the Save Parameters dialog.
3. Press **Save** to store the updates.

To setup a new file, use the keypad to enter the new filename and press **Save**.

To delete parameters:

1. Press **Delete** from the File menu.
2. Select a file from the Delete Parameters dialog.
3. Press **Delete** to erase the file.

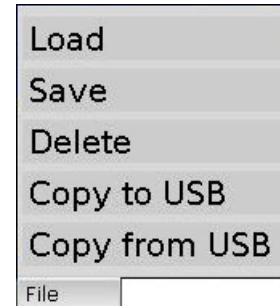
A level 3 password is required to delete parameters.

To copy to USB:

1. Insert a Windows formatted USB drive.
2. Press **Copy to USB** from the File menu.
3. From the USB dialog, press **copy to**. All .par (setup) files will be copied to the USB drive from the vision system.

To copy from USB:

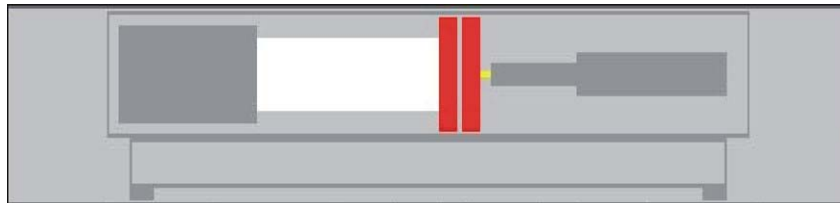
1. Insert a Windows formatted USB drive with the previously stored parameters.
2. Press **Copy from USB** from the File menu.
3. From the USB dialog, press **copy from**. All .par (setup) files will be copied to the vision system from the USB drive.



Machine Simulation

The machine simulation on the Main window displays the operating status of the molding machine. It simulates mold movement, ejector movement, and uses color indicators to display the operating status of the machine. When Automatic mode is initiated the platens on the machine simulation turn green. When operating in Manual mode the platens turn red. When available, a touchscreen keypad is displayed.

When **Automatic Signal Override** is enabled from the System Configuration screen, the touchscreen buttons that signal the machine to go into Manual or Automatic mode appear. And, when **Allow MC Override** is enabled the touchscreen button for this option appears. For details, see [Setting Injection Molding Machine Sequence Parameters](#).



Menu Selection

The menu selection on the Main window provides access to each menu option to setup and troubleshoot the vision system.

File	Inspect	Reference	History	System	Digital I/O	Cameras	Status	Security
------	---------	-----------	---------	--------	-------------	---------	--------	----------

System Status

The system status on the Main window displays the current status of the vision system, the molding machine, and the downstream inspection process. It also displays the current waiting point of the vision system, the current camera, and the current file loaded into the system.

Wait Status:	Manual to Automatic Initiation	File: /optima/horspi_12_white_light.par	Camera: Camera 1
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Modifying Inspection Parameters

Important!

It is highly recommended you reference images after making any changes to the inspection parameters. Inspection integrity must also be checked to make sure that failures are happening as expected. This is done by referencing the image and presenting the failed condition. For example, when completing a mold close check, reference the mold close, and place a part in the cavity you are checking. The window should indicate a failure.

The Inspection Parameters screen enables you to initialize and modify up to 64 different inspection windows. These inspection windows are displayed on the Video window. For details, see [Video Window](#). When you select **Inspect** to open the Inspection Parameters window you will notice that **Pixel Fail** and **Touch Move** appear in the main window. The color highlighted around **Pixel Fail** represents the color of the failed pixels in the pixel based inspection windows (e.g. Compare Fine). If you need to change the color, press **Pixel Fail** until you find the desired color. When **Touch Move** is red, you cannot select, move, or modify the inspection windows. To unlock the screen press **Touch Move**. When it turns green you are clear to use the inspection windows.



Note: To quickly select a particular inspection window and display the information associated with it, press **Quick Select**. For details, see [Selecting an Inspection Window](#).

To initialize and modify inspection windows:

1. Select **Inspect** to open the Inspection Parameters window.
2. Use the up and down arrows beside the **Inspection #** field to scroll through the list. The inspection window assigned to the selected number turns yellow in the Video window.
3. Select the type of inspection window from the **Type** field. You can select from the following:
 - **No Inspection:** Window is inactive.
 - **Lock on Object:** Select and track a specific object.
 - **Vertical Edge:** Track the edge of an object in the X-direction.
 - **Horizontal Edge:** Track the edge of an object in the Y-direction.

Compare Inspection Techniques



Failure conditions for the **Compare** inspection techniques, outlined below, are based on the number of pixels failing in the window. The **Set Pixel Cnt** field should be set to accommodate the actual pixel count when the failed window is active (parts remain in the cavity after referencing the empty mold).

For example, if the **Act Pixel Cnt** is 200, set the **Set Pixel Cnt** to 20. If false failures are generated increase the **Set Pixel Cnt**.

- **Compare-Exact:** Performs an all pixel comparison. Typically, this is used to inspect for flash and short shot.
- **Compare-Fine:** Compares the highest number of pixels. Typically, this is used for general mold protection and to inspect insert placement.
- **Compare-Medium:** Compares the lowest number of pixels. Typically, this is used for general mold protection and to inspect insert placement.
- **Compare-Course:** Performs a rough comparison of the pixels in the selected window. Typically, this is used to inspect for runner presence.
- **Compare-Block:** Uses a variable block size (noise elimination).

Shading Inspection Techniques



The **Shading** inspection techniques, outlined below, are window based routines, typically used to verify mold sliders or for inspecting inserts. Each of these routines inspects the entire window. Typically, a smaller window is set up when using these types of inspections.

Failure conditions for the **Shading** inspection techniques are based on the total window failing. The **Set Deviation** field should be set to accommodate the actual deviation when the failed window is active (parts remain in the cavity after referencing the empty mold).

For example, if the **Act Deviation** is 50, set the **Set Deviation** to 20. If false failures occur, increase the **Set Deviation**.

- **Color/Shading:** Compares the color/shade tones in a window.
 - **Color/Shading 2:** Ignores object rotation when comparing the color/shade tones in a window.
 - **Color/Shading +B:** Compares the blue color/shade tones in a window.
 - **Color/Shading +G:** Compares the green color/shade tones in a window.
 - **Color/Shading +R:** Compares the red color/shade tones in a window.
 - **Shading Positive:** Compares the shading in the positive direction of a window (brighter).
 - **Shading Negative:** Compares the shading in the negative direction of a window (darker).
 - **Target Method:** When this inspection method is selected, press **More Parameters** to access the Additional Inspection Parameters screen. For details, see [Modifying Inspection Parameters](#).
4. To select an event, use the up and down arrows beside the **Event** field to access the following options:
 - **Mold Close:** The inspection is performed before the machine cycles. This is used to confirm the mold is empty before mold close is permitted.
 - **Full Parts:** The inspection is performed after the machine has cycled and the mold has opened. This is used to check for short shot/flash, and to make sure parts are not remaining on the stationary mold. If the inspection fails the ejector is not permitted to move forward.
 - **Mold Close and Full:** The inspection for mold close and full parts is assigned to one window.
 - **Downstream I/O 0-7:** Used for downstream parts inspection.
 5. Use the up and down arrows beside the **Camera** field to select the camera to use for the inspection process.
 6. In the **Set Deviation** field, enter the expected deviation count. Expected deviation represents the sensitivity to light, shadows, grease, and other disturbances during normal operation. If each pixel is out of range the pixel fails. The **Act Deviation** field displays the highest deviated pixel of all the pixels failing within the selected inspection window. The value in this field must be lower than the **Act Deviation** or a failure occurs.
 7. In the **Set Pixel Count** field, enter the expected pixel count (allowable reject pixels). When using either the Vertical Edge or Horizontal Edge inspection windows, set this field between 5 or 10 to detect a

blurry edge. Set to 1 to detect a fine edge. The **Act Pixel Count** field displays the actual number of failed pixels detected.

8. In the **X-Reference** and **Y-Reference** fields, enter the inspection window number to use to reposition the current window in the XY directions. The reference window must either be a Lock on Object, Horizontal Edge or Vertical Edge type.
9. In the **X-Subtract** and **Y-Subtract** fields, enter the size of the subtraction window. This is displayed as a green window inside the center of the current window. The area inside this window is not part of the inspection.
10. To logically invert the inspection windows, set the **Invert Inspection** field to **Yes**. This should only be done for special insert molding applications.
11. To exit, press **Done**.

Setting the Target Method Inspection

You can use the Additional Inspection Parameters screen when you want to set up the target method inspection. This is the only inspection technique that does not require referencing on start-up. Use the upper and lower limit fields to enter the limits of the target window.

The **Target Actual Value** field will display the actual value of the inspection window. To access this screen press **More Parameters** from the Inspection Parameters screen. For information about the Inspection Parameters screen, see [Modifying Inspection Parameters](#).



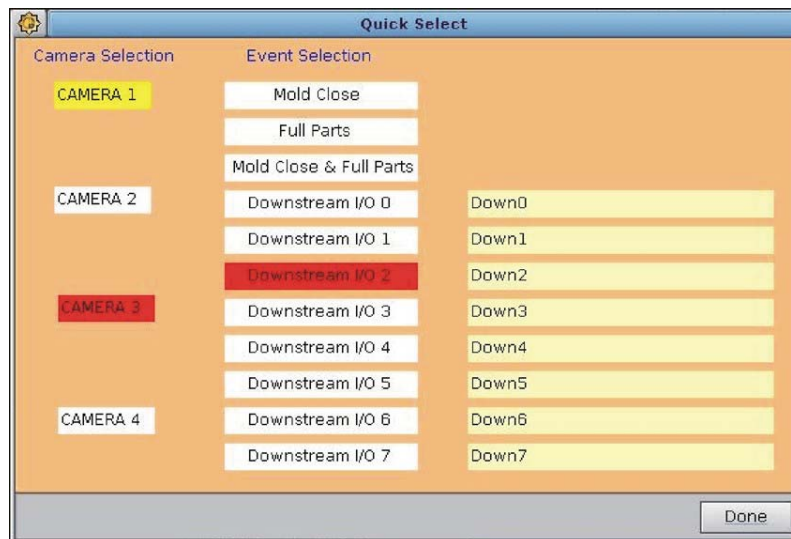
Additional Inspection Parameters	
Target Upper Limit	15
Target Actual Value	0
Target Lower Limit	5
Done	

Selecting an Inspection Window

The Quick Select screen enables you to quickly select an inspection window and display the information associated with it on the Inspection Parameters screen. For information about the Inspection Parameters screen, see [Modifying Inspection Parameters](#).

From the **Event Selector** fields you can access the specific inspection associated with the camera/event. When the event is selected, the first active inspection window of the event becomes the currently edited window. The parameters associated with the selected event are displayed on the Inspection Parameters screen.

You can use the onscreen keypad to enter a description for the specific inspection.



The screenshot shows the 'Quick Select' screen with a blue header bar. Below the header, there are two main sections: 'Camera Selection' and 'Event Selection'. Under 'Camera Selection', there are four buttons labeled 'CAMERA 1', 'CAMERA 2', 'CAMERA 3', and 'CAMERA 4'. Under 'Event Selection', there are three buttons labeled 'Mold Close', 'Full Parts', and 'Mold Close & Full Parts'. Below these, there are eight buttons labeled 'Downstream I/O 0' through 'Downstream I/O 7'. To the right of these buttons, there are eight yellow rectangular buttons labeled 'Down0' through 'Down7'. A 'Done' button is located at the bottom right of the screen.

Camera Selection	Event Selection	
CAMERA 1	Mold Close	
	Full Parts	
	Mold Close & Full Parts	
CAMERA 2	Downstream I/O 0	Down0
	Downstream I/O 1	Down1
	Downstream I/O 2	Down2
CAMERA 3	Downstream I/O 3	Down3
	Downstream I/O 4	Down4
	Downstream I/O 5	Down5
CAMERA 4	Downstream I/O 6	Down6
	Downstream I/O 7	Down7

Done

Selecting and Referencing an Event

Warning!

If **Reset IMM Reference Pictures** is reset, it is extremely important to make sure good images are referenced during the first machine cycle. Failure to do this could result in mold or equipment damage

Reset IMM Reference Pictures is used to activate referencing during the machine cycle. After resetting, the event is referenced the first time it appears in the machine cycle. For example, when the machine is set to Automatic mode, the mold close reference image is taken.

The Reference screen enables you to select and reference an event. Events should be referenced any time the molding machine is powered On.

For example, if you are inspecting a mold for part hang-up, place a part in front of the camera after the inspection window is setup and referenced. The selected window will display yellow pixels to indicate where the failure is.

To access this screen press **Reference** from the menu selection on the Main window.

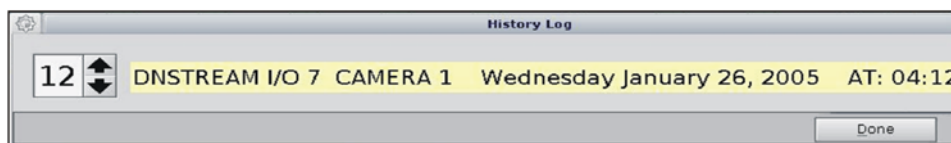
Mold Close/Inserts Loaded
Full Parts
Downstream 0
Downstream 1
Downstream 2
Downstream 3
Downstream 4
Downstream 5
Downstream 6
Downstream 7
Reset IMM Reference Pictures

Checking Vision Failures

The History Log screen displays the last 50 recorded vision failures.

To check vision failures:

1. Press **History** to access the History Log screen.
2. Press the up and down arrows to scroll through the failure list. The failed image and camera window will be displayed on the Video window.
3. To exit, press **Done**.



Setting Injection Molding Machine Sequence Parameters

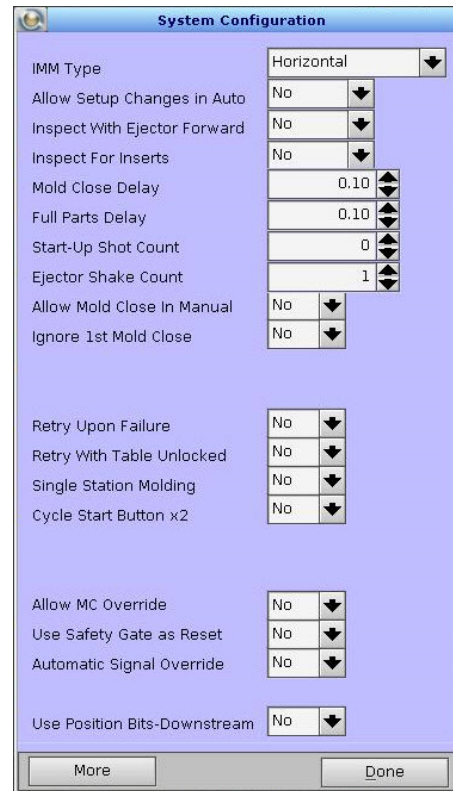
The System Configuration screen contains the settable sequence parameters of the molding machine.

To set up sequence parameters:

1. Press **System** to access the System Configuration screen.
2. To select the type of molding machine, select **Horizontal** or **Vertical Rotary** from the **IMM Type** field. When **Horizontal** is selected, the mold close inspection is triggered when the mold opens and the ejector retracts. When **Vertical Rotary** is selected, the inspection is triggered when the **Cycle Start** pushbutton is activated.
3. If you want to make changes to the fields while the molding machine is cycling, set the **Allow Setup Changes in Auto** field to **Yes**. For details, see [Modifying Inspection Parameters](#).
4. If you want to inspect the mold when the ejector is forward, set the **Inspect with Ejector Forward** field to **Yes**. Typically, this is used when the cycle ends with the ejector forward.

Or:

5. If you want to inspect the mold for inserts, set the **Inspect for Inserts** field to **Yes**. Typically, this is used to make sure the inserts are present and positioned properly before the mold is permitted to close. On a rotary machine, the inspection is performed when the **Cycle Start** pushbutton is activated. On a horizontal machine, the inspection is performed when the **Cycle Start** pushbutton is activated, or when the robot cycle start is activated.
6. Use the up and down arrows beside the **Mold Close Delay** field to set a delay time to make sure final ejector movement is reached or that the robot has exited the molding area before the image is captured.
7. Use the arrows beside the **Full Parts Delay** field to set a delay time. Typically, this is used to make sure the mold has completely opened before the image is captured.
8. To perform a full parts inspection, use the up and down arrows beside the **Start-Up Shot Count** field to set the number of cycles the molding machine must complete before the image is captured. This allows the molding machine to warm-up before performing a parts inspection.
9. Set a value in the **Ejector Shake Count** field to specify the number of ejector shakes to complete before the image is captured. This setting should be identical to the setting on the molding machine.
10. Set the **Allow Mold Close in Manual** field to **Yes** if you need to close the mold when operating in Manual mode.



The screenshot shows the 'System Configuration' window with the following parameters and their current values:

Parameter	Value
IMM Type	Horizontal
Allow Setup Changes in Auto	No
Inspect With Ejector Forward	No
Inspect For Inserts	No
Mold Close Delay	0.10
Full Parts Delay	0.10
Start-Up Shot Count	0
Ejector Shake Count	1
Allow Mold Close in Manual	No
Ignore 1st Mold Close	No
Retry Upon Failure	No
Retry With Table Unlocked	No
Single Station Molding	No
Cycle Start Button x2	No
Allow MC Override	No
Use Safety Gate as Reset	No
Automatic Signal Override	No
Use Position Bits-Downstream	No

Buttons at the bottom: More, Done

**Warning!**

To avoid damaging the mold, use extreme caution when you set the **Allow Mold Close in Manual** field to **Yes**.

11. Set the **Ignore 1st Mold Close** field to **Yes** if you want the vision system to avoid taking an image at the beginning of the molding machine cycle, and instead wait for the second mold close/open.
12. If you need to override mold close in Manual, set the **Allow MC Override** field to **Yes**.
13. If inserts are manually placed into the mold, set the **Use Safety Gate as Reset** field to **Yes**. This will trigger the vision system when the front safety gate of the molding machine is closed.
14. To manually control the vision system, set the **Automatic Signal Override** field to **Yes**. When enabled, the **Man/Auto** touchscreen buttons are displayed on the machine simulation on the Main window. When **Auto** is pressed the vision system cycles with the machine.
15. If you are inspecting multiple table positions, set the **Use Position Bits-Downstream** field to **Yes**. This enables you to track which camera is triggered, using downstream inspection.
16. Press **More** to open the Additional System Parameters screen. For details, see [Modifying Inspection Parameters](#).
17. To exit, press **Done**.

Rotary Machines Only

1. If you need to retry the inspection cycle, set the **Retry Upon Failure** field to **Yes**. When this field is enabled, the vision system automatically performs an inspection after a failure is detected. This lets you correct insert placement. To restart the molding machine, and perform another inspection, press the **Cycle Start** pushbutton.
2. If you need to retry an inspection with the rotary table unlocked (shot pin retracted), set the **Retry with Table Unlocked** field to **Yes**.
3. For inspection on a single station rotary molding machine, set the **Single Station Molding** field to **Yes**.
4. To trigger the vision system using the **Cycle Start** pushbutton, set the **Cycle Start Button x2** field to **Yes**. The first time you press the **Cycle Start** pushbutton the ejector retracts. The second time you press it the molding machine begins to cycle, and the vision system is triggered. This option is also available from the molding machine control panel.

Setting Additional System Parameters

When you press **More** from the System Configuration screen, it takes you to the Additional System Parameters screen.

To set up additional system parameters:

1. Use the **Table Bits X-Offset** and **Y-Offset** fields to set the offsets on a rotary molding machine. This accommodates for small position deviations due to the shot pin pulling the table into position.
2. Use the up and down arrows beside the **Retry Mold Close Counter** field to set how many inspections the vision system reattempts after a failure. For example, if a robot remains in the mold area too long, the vision system will retry the inspections based on the value set here. The **Retry Mold Close Actual** field increments each time an inspection occurs.
3. Use the up and down arrows beside the **Retry Full Parts Counter** field to set how many full inspections to reattempt after a failure. For example, if sliders are not in position immediately upon mold opening, the vision system will retry the inspections based on the value set here. The **Retry Full Parts Actual** field increments each time an inspection occurs.
4. Use the up and down arrows beside the **Retry Downstream Counter** field to set how many downstream inspections to reattempt after a failure. The **Retry Downstream Actual** field increments each time a downstream inspection occurs.

GigE Performance

5. Use the up and down arrows beside the **Stream (Bytes/s) Set** field to set the GigE transmission speed. Depending on the number of cameras the speed may not be adjustable. If one camera is active the recommended value is 12000000. For a total of four active cameras the recommended value is 8000000. The **Actual** field displays the accepted value of the camera when it is powered On.
6. The **Buffer size (Bytes) Set** field should be set to 1500. The **Actual** field displays the accepted value of the camera when it is powered On.
7. To exit, press **Done**.

Additional System Parameters

Table Bits	0,0	1,0	0,1	1,1
X-Offset	0	0	0	0
Y-Offset	0	0	0	0

Retry Mold Close Counter: 0
 Retry Mold Close Actual: 0

Retry Full Parts Counter: 0
 Retry Full Parts Actual: 0

Retry Downstream Counter: 0
 Retry Downstream Actual: 0

GigE Performance
 Stream (Bytes/s) Set: 8000000
 Actual: 8000000
 Buffer size (Bytes) Set: 1500
 Actual: 1500

Done

Modifying Digital Inputs and Outputs

The Digital I/O Configuration screen lets you modify the I/O for the vision system and molding machine. Once they have been set they are automatically configured properly when the inspection setup for the machine and mold have been loaded.

To check which I/O is assigned, manually perform the function. For example, manually open the mold, and check which indicator at the bottom of the screen is illuminated.

To access this screen, press the **Digital I/O** touchscreen button from the menu selection on the Main window, and then **Digital I/O - IMM**.

Digital Inputs		Digital Outputs	
IMM in Automatic	Digital Input 0	Allow Mold Close	Digital Output 0
IMM Gate Closed	Not Used	Allow Ejector Forward	Digital Output 1
IMM Ejector is Forward	Digital Input 2	Allow Ejector Back	Digital Output 2
IMM Ejector is Back	Digital Input 3	Inspection Failed	Digital Output 7
IMM Mold is Open	Digital Input 1	Mold Close Redundant	Digital Output 4
Cycle Start	Not Used	Skip Eject	Digital Output 5
Table is Locked	Not Used	Allow Table Rotate	Not Used
Position Bit 0	Not Used		
Position Bit 1	Not Used		

Digital I/O (ADR) Active ☒

0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7

Done

Digital Inputs

- **IMM in Automatic:** Used to signal the vision system when the molding machine is operating in Automatic mode.
- **IMM Gate Closed:** Used to signal the vision system when the safety gate on the molding machine is closed.
- **IMM Ejector is Forward/IMM Ejector is Back:** Used to signal the vision system when the ejector is extended and when it is retracted.
- **IMM Mold is Open:** Used to signal the vision system when the mold is open.
- **Cycle Start:** Used to signal the vision system when the **Cycle Start** pushbutton from the molding machine is activated.
- **Table is Locked:** Used to signal the vision system when the rotary table is locked (shot pin extended).
- **Position Bit 0/Position Bit 1:** Used to signal the vision system the positions used on a four-position rotary table.

Digital Outputs

- **Allow Mold Close:** Used to signal the molding machine when mold close is permitted.
- **Allow Ejector Forward/Allow Ejector Back:** Used to signal the molding machine when it is clear to move the ejector forward and back.

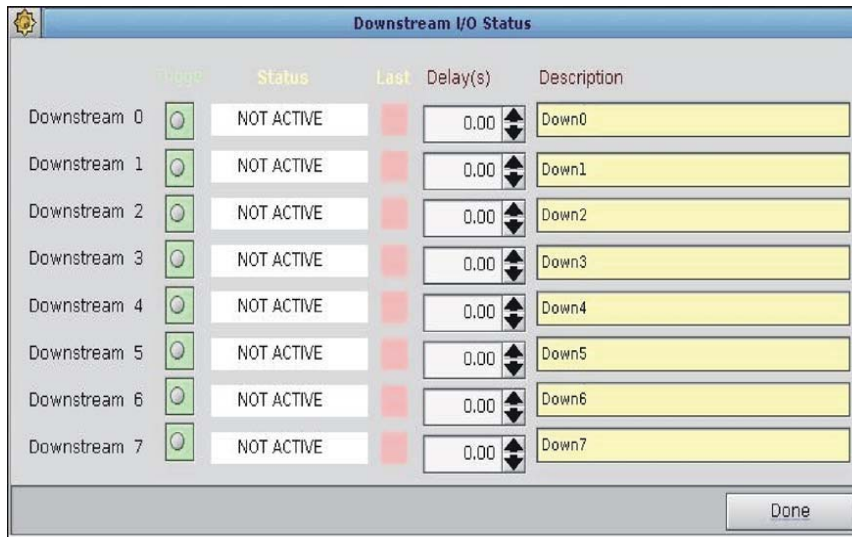
- **Inspection Failed:** Used to signal the audible alarm on the vision system when an inspection fails.
- **Mold Close Redundant:** Used to signal the molding machine when the mold is clear to close.
- **Skip Eject:** Used to signal the molding machine when multiple knockouts can be ignored.
- **Allow Table Rotate:** Used to signal the table when to rotate.
- **Digital I/O (ADR) Active:** When illuminated indicates I/O block communication is active.

Checking Downstream I/O Status

The Downstream I/O Status screen displays the I/O status from the molding machine and robot. When the trigger is active the associated flag on the screen illuminates.

The **Status** column displays the current state of the downstream device. The **Last** column displays the status of the last inspection. An **F** indicates the inspection failed and a **P** indicates the inspection passed. In the **Delay(s)** column you can enter a delay time for each downstream device. You can also use the onscreen keypad to enter a description for each device in the **Description** column.

To access the Downstream I/O Status screen, select **Digital I/O** from the menu selection on the Main window, and then **Digital I/O – Downstream**.



	Trigger	Status	Last	Delay(s)	Description
Downstream 0		NOT ACTIVE	F	0.00	Down0
Downstream 1		NOT ACTIVE	F	0.00	Down1
Downstream 2		NOT ACTIVE	F	0.00	Down2
Downstream 3		NOT ACTIVE	F	0.00	Down3
Downstream 4		NOT ACTIVE	F	0.00	Down4
Downstream 5		NOT ACTIVE	F	0.00	Down5
Downstream 6		NOT ACTIVE	F	0.00	Down6
Downstream 7		NOT ACTIVE	F	0.00	Down7

Done

Modifying Video Signal Settings

The Camera Controls screen allows you to modify video signal settings.

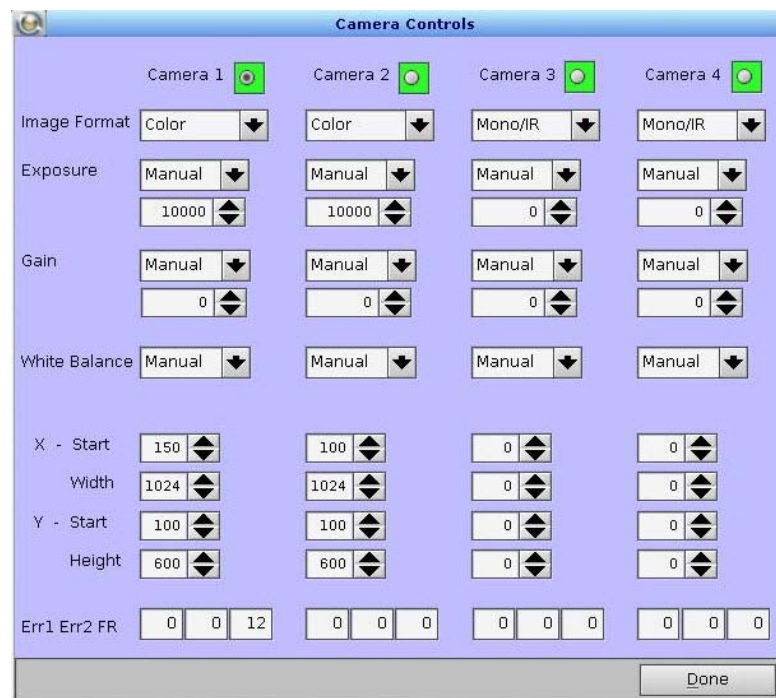
Important!

Video signal settings should only be adjusted if false failures are repeatedly generated.

It is highly recommended to reference images after making any changes to the camera parameters. Inspection integrity must also be checked to make sure that failures are happening as expected. This is done by referencing the image and presenting the failed condition. For example, when completing a mold close check, reference the mold close, and place a part in the cavity you are checking. The window should indicate a failure.

To modify video signal settings:

1. Press **Cameras** from the menu selection on the Main window.
2. From the menu that appears, press **Camera Controls**.
3. Select an **Image Format**.
 - a. **Mono/IR**: Used when the light source is either white or infrared. This format reduces the number of false failures caused by the details of a color inspection.
 - b. **Color**: Used when a color inspection is required either with white or colored lighting.



The screenshot shows the 'Camera Controls' window with settings for four cameras. The settings are as follows:

Setting	Camera 1	Camera 2	Camera 3	Camera 4
Image Format	Color	Color	Mono/IR	Mono/IR
Exposure	Manual 10000	Manual 10000	Manual 0	Manual 0
Gain	Manual 0	Manual 0	Manual 0	Manual 0
White Balance	Manual	Manual	Manual	Manual
X - Start	150	100	0	0
Width	1024	1024	0	0
Y - Start	100	100	0	0
Height	600	600	0	0
Err1 Err2 FR	0 0 12	0 0 0	0 0 0	0 0 0

A 'Done' button is located at the bottom right of the window.

4. If the **Exposure** field is set to **Manual** you must enter an exposure value. For Mono/IR inspection the value ranges from 2000 to 20000. For color inspection, the values range from 20000 to 80000. The

Auto setting is used during setup to obtain the initial image. For normal use, the **Manual** setting should be used.

5. The **Gain** field is typically set to zero when operating in Manual. The camera itself handles most of this parameter.
6. The **White balance** field is used to adjust the process of removing unrealistic color casts, so that objects which appear white are rendered white in the image. Proper camera white balance takes into account the color temperature of a light source. As in, the relative warmth or coolness of white light. This field should only be set to **Auto** if the image appearance is relatively stable. If this is the case, the **Auto** white balance setting may reduce false alarms.
7. Use the up and down arrows beside the **X-Start** field to adjust the starting location of the 1024w pixel, relative to the start of the camera sensor.
8. Use the up and down arrows beside the **X-Width** field to adjust the width of the image. This should be set to 1024.
9. Use the up and down arrows beside the **Y-Start** field to adjust the starting location of the 600h pixel, relative to the start of the camera sensor.
10. Use the up and down arrows beside the **Y-Height** field to adjust the height of the image. This should be set to 600.
11. To exit, press **Done**.

Note: The Err1, Err2, FR fields are used only for troubleshooting purposes.

Checking Status

The IMM-OPTIMA Status screen contains the current status information regarding the vision system and the molding machine. Signals from the molding machine to the vision system, and vice versa are displayed. The flags on the screen illuminate to display the active function. To access this screen press **Status** from the menu selection on the Main window.



Changing Security Level and Password

To access the Security-Passwords screen, press **Security** from the menu selection on the Main window.

To change the security level:

1. The **Current Security Level** field displays the current selected security level. Press the down arrow to change the security level.
2. To gain access, enter the assigned password in the **Level Change Password** field.

To change the password:

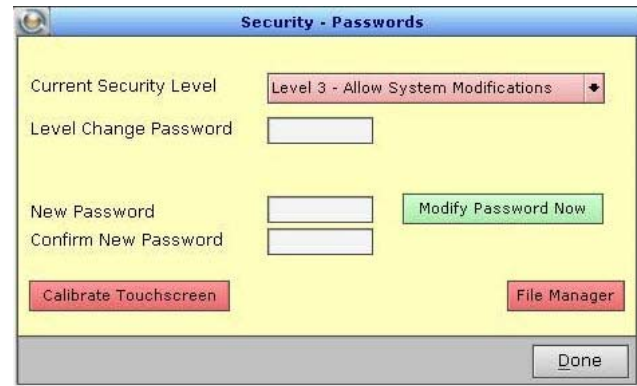
Once you have entered the new password, select **Modify Password Now** to initiate the change.

To calibrate the touchscreen:

Select **Calibrate Touchscreen** to access the calibration window and follow the onscreen prompts.

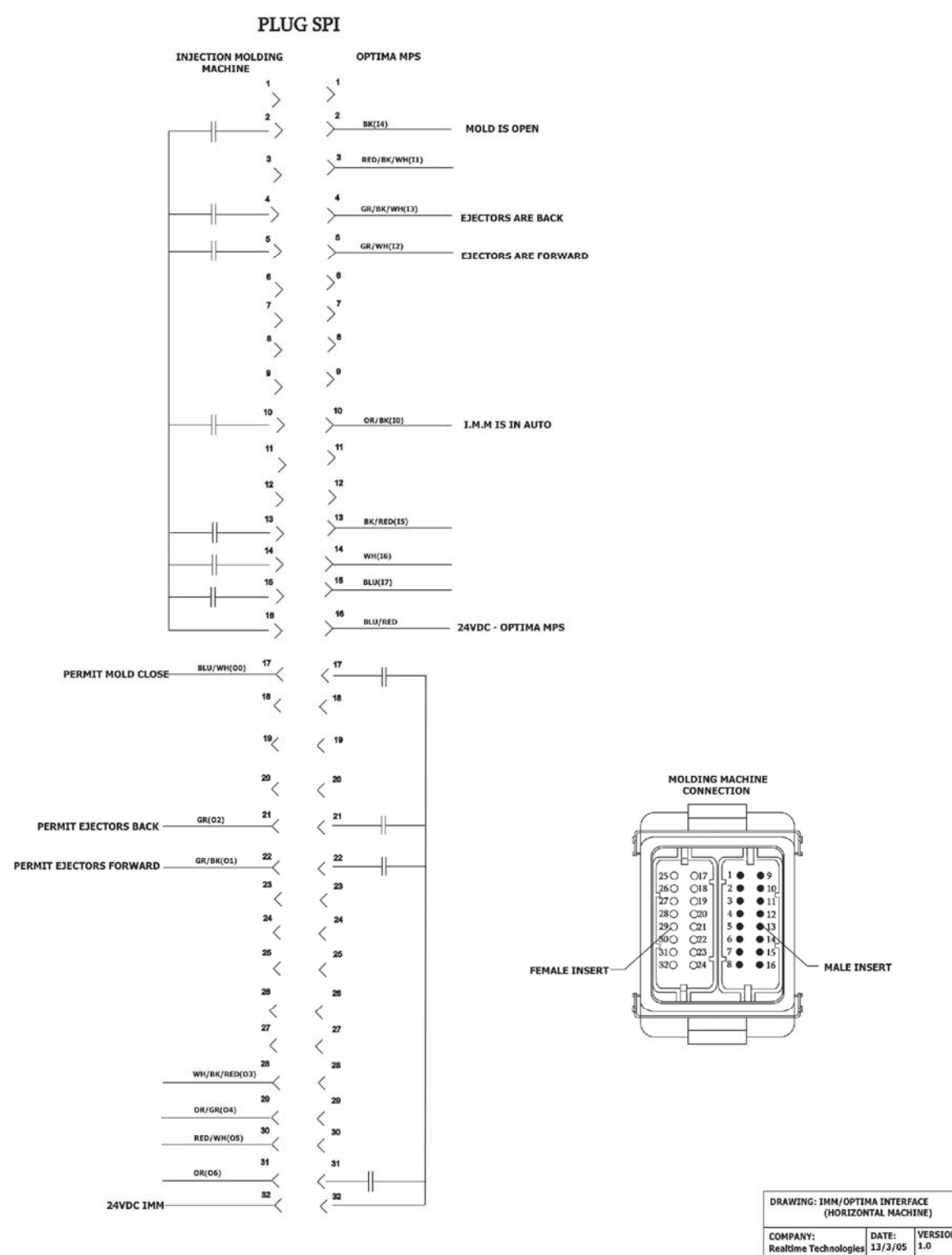
To open the file manager:

Select **File Manager** to access the system file manager.

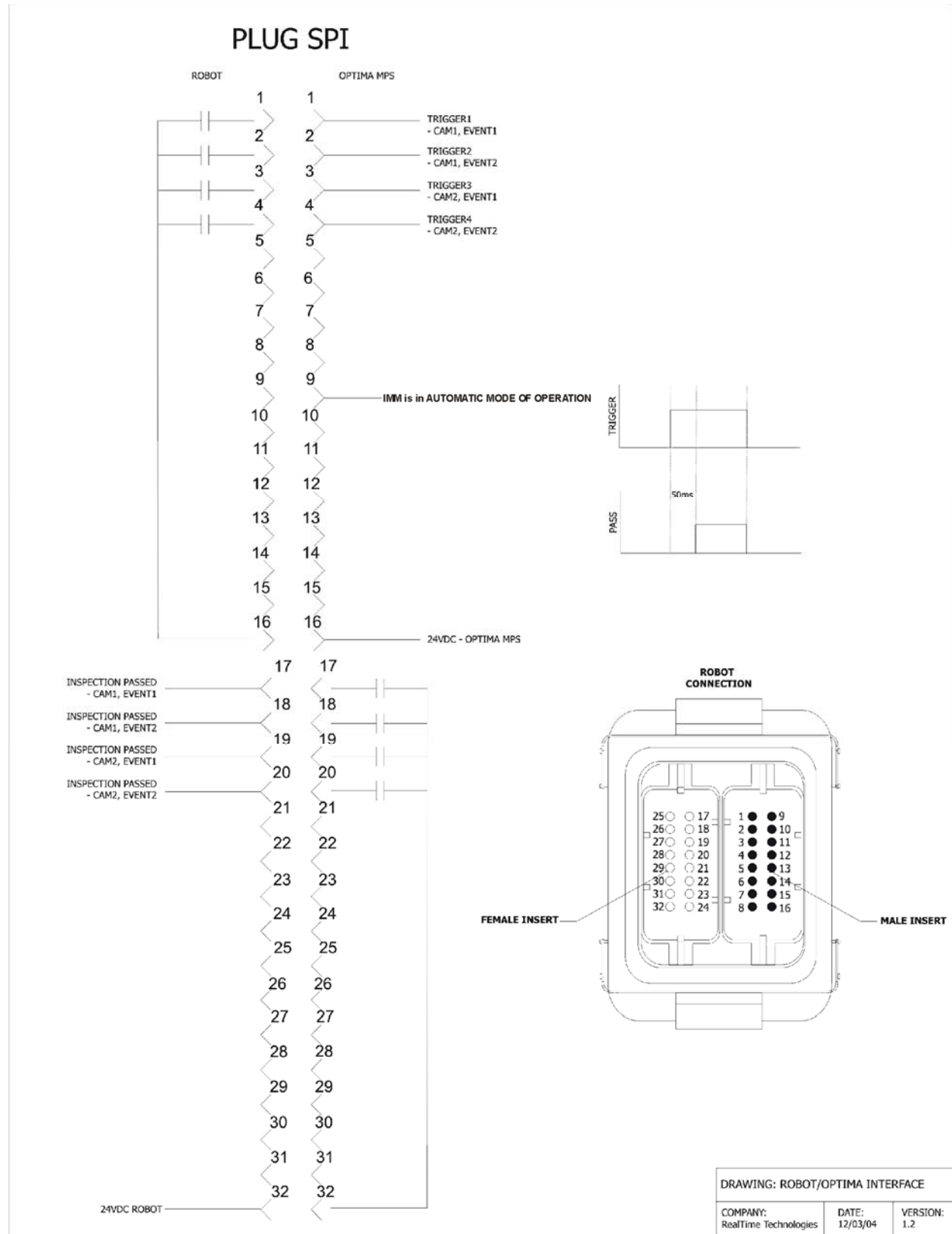


Electrical Drawings/Schematics

IMM/Optima Interface (Horizontal Machine)



Robot/Optima Interface



IMM/Optima Interface (Vertical Machine)

