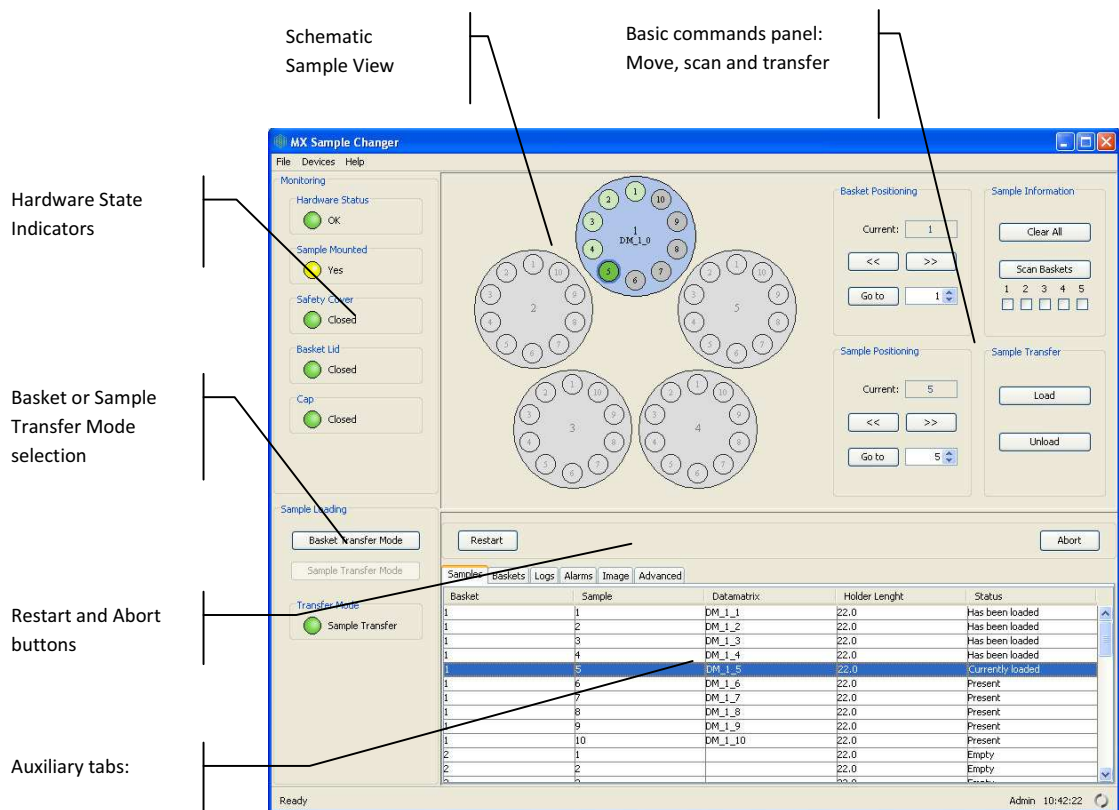




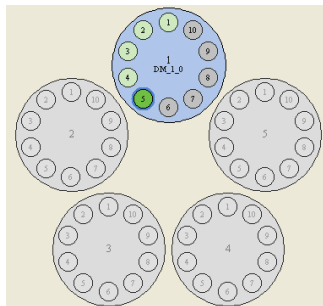
## GUI

The Sample Changer software includes a Graphical User Interface intended for device configuration and calibration, remote support, debugging and stress testing.



## Schematic Sample View

The Schematic Sample View represents the five available basket slots and, for each, the ten sample positions. A color scheme visually indicates the state of each basket sample, translating the information contained in the "Samples" tab. This widget exposes several advanced commands by right clicking the visual objects.



- The basket currently selected is displayed in blue.
- The current sample is indicated with a blue ring around the sample circle.

Sample Color	Meaning
Dark Green	Currently loaded
Light Green	Has been loaded
Dark Gray	Has been detected
Light Gray	Empty or not detected yet

If a basket datamatrix has been read, its value is then printed in the middle of the basket circle. Otherwise only the basket number is displayed.

If a basket datamatrix has been read, its number in the sample circle is displayed black (otherwise it is gray).

The double click of a sample triggers the loading of that sample (with eventual unloading of a previous one) or else the unloading of that sample if it was already loaded. Double-clicking a basket triggers a move to that basket.

Move to Sample Move to Sample Datamatrix
Load Sample from Position Unload Sample To Position
Clear Sample Datamatrix Clear Sample Data
Scan Sample Datamatrix

Right-clicking a sample circle exposes the sample context menu.

It contains commands specific to a sample:

- Move to sample's load position and to datamatrix scanning position.
- Load and unload the sample.
- Clear the sample datamatrix and all sample history.
- Scan sample datamatrix.

Move to Basket Move to Basket Datamatrix
Clear Basket Datamatrix Clear Basket Data
Scan Basket Datamatrix Scan Unread Samples Scan Basket

Right-clicking a basket circle exposes the basket context menu.

It contains commands specific to a basket:

- Move to basket's load position and to its datamatrix position.
- Clear all basket datamatrix information and all basket history.
- Scan the basket datamatrix.
- Scan all basket's samples or scan all unread samples.

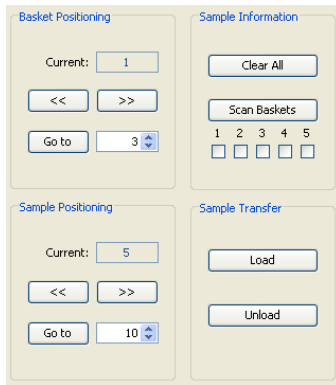
Load Sample from Current Position Unload Sample To Current Position
Clear All Data
Scan Current Basket Scan All Baskets

Right-clicking elsewhere present the general context menu.

It contains the generic commands:

- Load and unload the sample from current position.
- Clear all historic data.
- Scan current basket and scan all baskets.

## Basic Commands Panel



This panel exposes the most usual commands:

- Move to a basket position.
- Move to the next or previous basket position.
- Move to a sample position.
- Move to the next or previous sample position.
- Scan baskets.
- Clear all sample data (datamatrix and load history).
- Load and unload the current sample.

## Hardware State Indication



Shows red if the Pmac device is in error.

Shows yellow if a sample is mounted, green if no sample mounted.

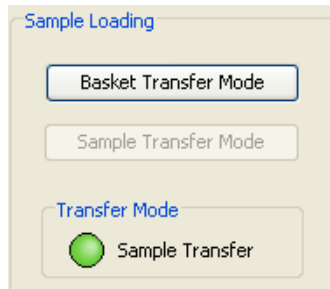
Shows the state of the safety cover (yellow if it is open)

Shows the state of the basket lid (yellow if it is open)

Shows the state of the cap (yellow if it is open)

Commands are denied if the basket lid is open or if the safety cover is open or if the Pmac device is in error state.

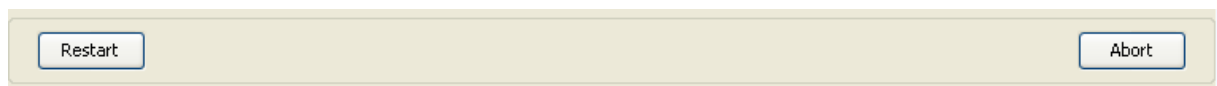
## Transfer Mode Selection



This panel allows switching between Basket Transfer Mode and Sample Transfer Mode.

All commands are denied if the machine is in Basket Transfer Mode. The light indicator will show yellow if it is on Basket Transfer Mode.

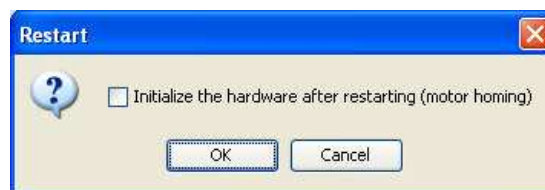
## Restart and Abort Buttons



An ongoing operation can be aborted by clicking the “Abort” button.

The “Restart” button will dispose and re-initialize the control software. This can be done if the application falls to “Error” state, if it becomes blocked by an operation that cannot be aborted, or if there is an unpredicted error.

The confirmation message box below is shown if the “Restart” button is pressed. If the check box is selected, besides the software restart, the Pmac device will be restarted too.



## Auxiliary Tabs

The interface contains a set of auxiliary tabs:

1. "Samples" tab displays the information about the samples:

- Datamatrix.
- Sample Holder Length.
- Status: "Empty", "present", "current loaded" or "has been loaded".

The Datamatrix and "Sample Holder Length" fields can be edited by hand directly on the table by the user.

2. "Baskets" tab displays the information about the baskets:

- Datamatrix.
- Status: "Empty" or "present".
- Scanned flag.

The Datamatrix field can be edited by hand directly on the table by the user.

3. "Logs" tab lists the application logs according to the log level selected in the configuration.

4. "Alarms" tab lists the application alarms. Active alarms are displayed in red. Some alarms may make the application fall to "Alarm" state.

5. "Image" tab shows the camera image and the image processing results (green text overlay) for debugging and testing purposes.

Image commands are available right-clicking the image:

- Zoom-in, zoom-out.
- Rotate/mirror the image.
- Select zoom level.
- Save the image

6. "Advanced" tab

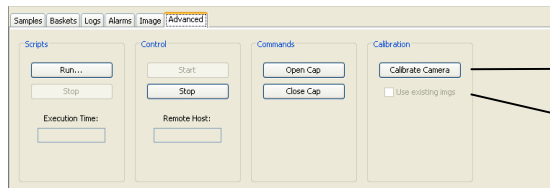
Contains controls to:

- Start/stop scripts (to test the machine).
- Run support tasks (open/close the cap)
- Calibrate the camera (see Camera Calibration).



## Camera Calibration

The camera parameters can be adjusted by a simple wizard. The wizard is started in the “Advanced” tab:

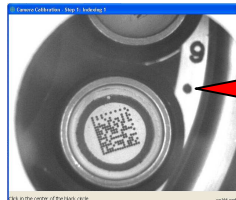


Starts the calibration wizard

If selected, no reference pictures will be taken, but the last ones will be used. If no image has been takes this control is grayed.

### Step 1: Indexing 1

Click in the center of the black circle



### Step 2: Indexing 2

Click in the center of the black circle



### Step 3: Sample Detection

Click in the center of the cap.



### Step 4: Basket Datamatrix

Click in the center of the basket datamatrix.



### Step 5: Basket Detection

Click in the center of the black circle.



After the fifth click the parameters are sent to the camera. In order to abort the operation, close the window before the fifth mouse click.

## Application Menu

### 1. File Menu

File Menu Item	Description
Open Log File...	Opens a daily log file
Open Alarm File...	Opens a daily alarm file
Open Script File...	Opens a script file for editing
Open Image File...	Opens an image file
Save Sample Info As...	Saves all the sample information as an XML file
Load Sample Info From...	Loads sample information from an XML file
Access Level	Enabled if password is configured for administrative tasks, allows changing the user level
User Preferences...	Opens user preferences editor
Software Configuration...	Opens software configuration editor
Exit (Ctrl+Q)	Quits the application

### 2. Devices Menu

Devices Menu Item	Description
Pmac	Opens the Pmac configuration and testing form
Cognex	Opens the Cognex camera configuration and testing form
Terminal	Opens a terminal to send direct commands to the Pmac device