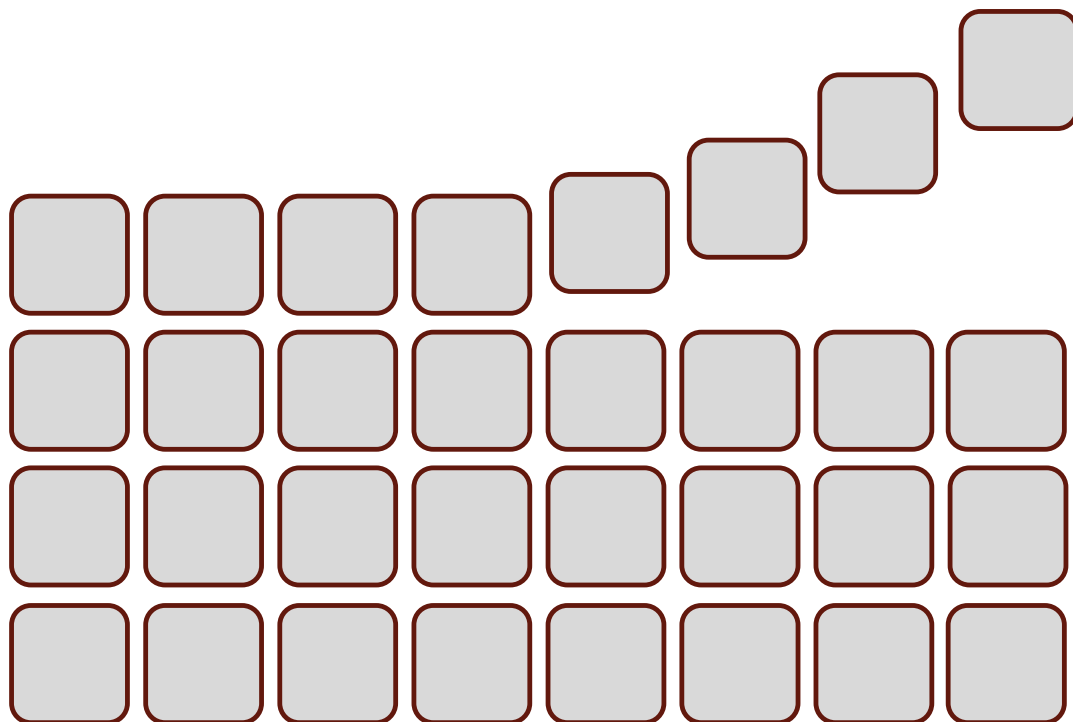


CAM Documentation

MatrixScreener 3 & 4

Frank Sieckmann



18.11.2013

MatrixScreener Docu CAM

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MatrixScreener CAM Documentation

Version

This document

- Version: 4.0.0.14
- Author: Frank Sieckmann
- Status: Y = released
- Last changed: 14.11.2013

This document is valid for the MatrixScreener in Version M3 and M4

- MatrixScreener M4 in LASAF 3.2.0 (release July 2013)
 - Some commands are for the LASAF 3.3.0 (currently not released!)
- MatrixScreener M3 in LASAF 2.7.x (release June 2013)

NOTE

Some of the described CAM commands could be part of the LASAF 3.3.x and will not work for the currently released LASAF 3.2.0. The version LASAF 3.3.0 is currently (18.11.2013) not released!

This document is describing the use of the CAM tester software

- FSLEICAM Tester
 - Version 1.0.1.281
 - Build 02.07.2013

NOTE

- **CAM** is a short name for “**C**omputer **A**ided **M**icroscopy!
- **M4** is a short name for MatrixScreener 4 (version 4)
- **M3** is a short name for MatrixScreener 3 (version 3)
- **HCS-A** = High Content Screening – Automation (= MatrixScreener)

Matrix Screener CAM Documentation

CAM Test Tool; short description CAM syntax; CAM commands

Summary:

To test the CAM commands we have developed a FSLEICAM Test Tool (the client) sending CAM commands to the LASAF (server)) working on Windows! However, all CAM commands can be also controlled using any kind of modern programming language and using all OS platforms.

This report will give you a short description of the currently available CAM commands as well as a short description about the FSLEICAM Test Tool.

Important to know:

CAM Server within the LASAF is listening on port: **8895**

The current version of the FSLEICAM Tester can ordered by mail. Please send this mail to Frank.Sieckmann@leica-microsystems.com

MatrixScreener CAM Documentation

Required LASAF MatrixScreener preparation for CAM

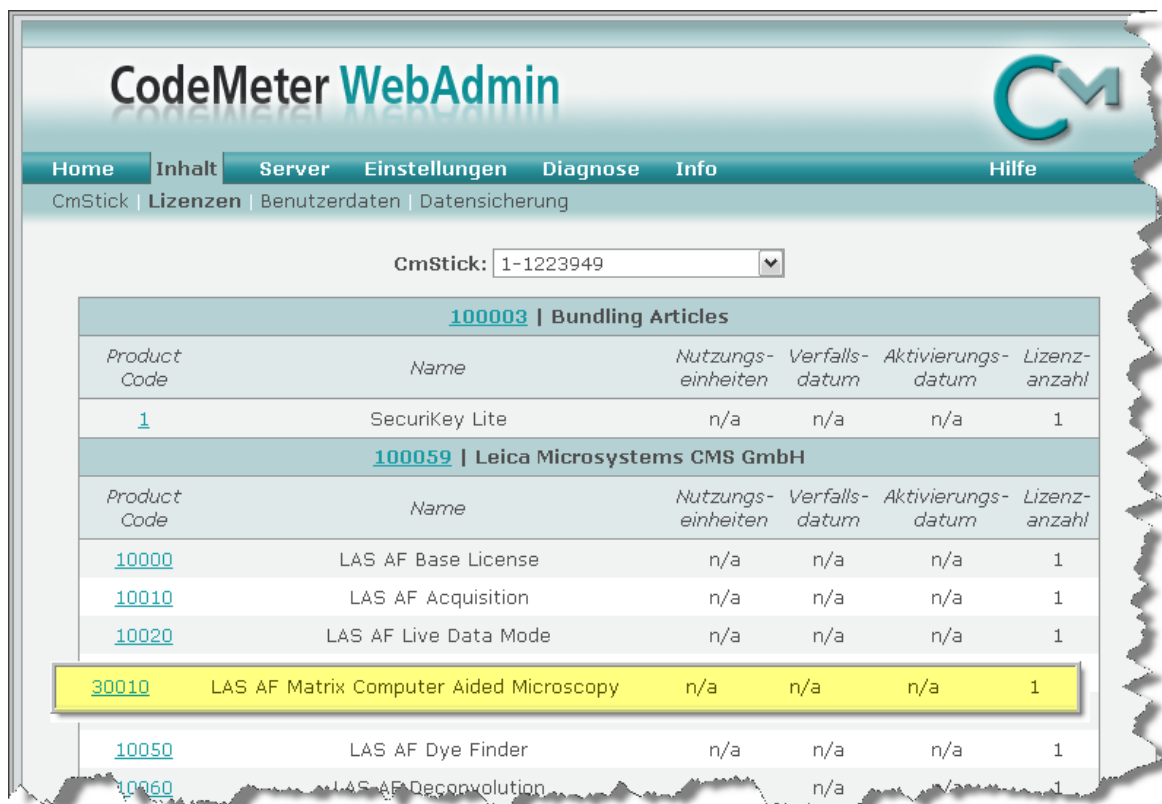
Some steps has to be done to adjust the LASAF / MatrixScreener Version 3 or Version 4 system to enable the CAM control

1. Make sure that you have the required CAM Dongle license
2. Make sure that you have some jobs assigned to the scan fields
3. Make sure that the CAM attribute checkbox enabled
4. Make sure that you export the images to the disk as OME.TIF images
 - *This is required so far you want to analyze the images externally*

Check the CAM Dongle Licence

Start the codemeter webadmin mode.

In case, you are using a **MATRIXSCREENER 3** Version (LASAF 2.x) the license looks like



CodeMeter WebAdmin

Home | Inhalt | **Server** | Einstellungen | Diagnose | Info | Hilfe

CmStick | **Lizenzen** | Benutzerdaten | Datensicherung

CmStick: 1-1223949

Product Code	Name	Nutzungs-einheiten	Verfalls-datum	Aktivierungs-datum	Lizenz-anzahl
100003 Bundling Articles					
1	SecuriKey Lite	n/a	n/a	n/a	1
100059 Leica Microsystems CMS GmbH					
10000	LAS AF Base License	n/a	n/a	n/a	1
10010	LAS AF Acquisition	n/a	n/a	n/a	1
10020	LAS AF Live Data Mode	n/a	n/a	n/a	1
30010	LAS AF Matrix Computer Aided Microscopy	n/a	n/a	n/a	1
10050	LAS AF Dye Finder	n/a	n/a	n/a	1
10060	LAS AF Deconvolution	n/a	n/a	n/a	1

MatrixScreeners CAM Documentation

In case, you are working with a [MATRIXSCREENER 4](#) Version (LASAF 3.x) the licence looks like

CodeMeter WebAdmin						
Home	Inhalt	Server	Einstellungen	Diagnose	Info	Hilfe
CmContainer Lizenzen Benutzerdaten Datensicherung						
CmContainer: 2-2217381						
100003 Bundling Articles						
Product Code	Name	Nutzungs- einheiten	Verfalls- datum	Aktivierungs- datum	Lizenz- anzahl	
1	SecuriKey Lite	n/a	n/a	n/a	1	
101768 Leica Microsystems CMS GmbH						
Product Code	Name	Nutzungs- einheiten	Verfalls- datum	Aktivierungs- datum	Lizenz- anzahl	
10010	LAS AF WPF Acquisition	n/a	n/a	n/a	1	
10010	LAS AF WPF Acquisition	n/a	n/a	n/a	1	
10020	LAS AF WPF Live Data Mode	n/a	n/a	n/a	1	
10031	LAS AF WPF Test3D	n/a	n/a	n/a	1	
30000	LAS AF WPF Single Regular Matrix	n/a	n/a	n/a	1	
30001	LAS AF WPF Multiple Regular Matrices	n/a	n/a	n/a	1	
30002	LAS AF WPF Multiple Regular Matrices Different Positions	n/a	n/a	n/a	1	
30003	LAS AF WPF Multiple Regular Matrices Different Submatrices	n/a	n/a	n/a	1	
30004	LAS AF WPF Matrix with Mark & Find Mode & Random Fields	n/a	n/a	n/a	1	
30005	LAS AF WPF Single Mosaic Fix Size	n/a	n/a	n/a	1	
30006	LAS AF WPF Multiple Mosaics Fix Size	n/a	n/a	n/a	1	
30007	LAS AF WPF Single Selected Mosaic Fix Size	n/a	n/a	n/a	1	
30008	LAS AF WPF Multiple Selected Mosaics Fix Size	n/a	n/a	n/a	1	
30009	LAS AF WPF Multiple Selected Mosaics Flexible Size	n/a	n/a	n/a	1	
30010	LAS AF WPF Matrix Computer Aided Microscopy	n/a	n/a	n/a	1	
30011	LAS AF WPF Matrix Computer Aided	n/a	n/a	n/a		

If the CAM license not available please contact Leica Microsystems to order it! The product code is "30010", the order number is "".

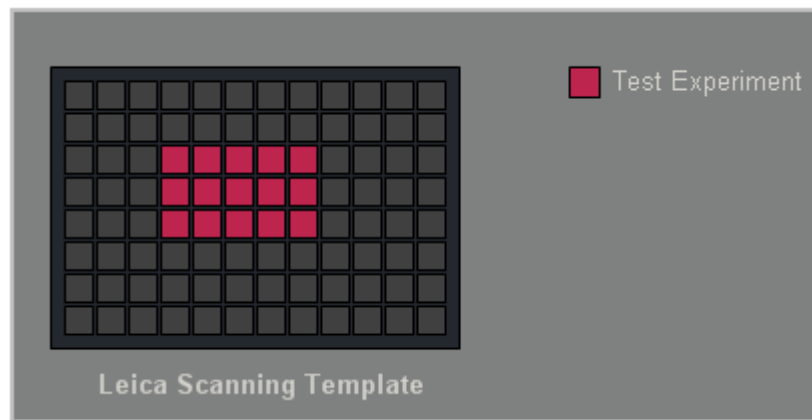
MatrixScreener CAM Documentation

Make sure that you have some jobs assigned to the scan fields

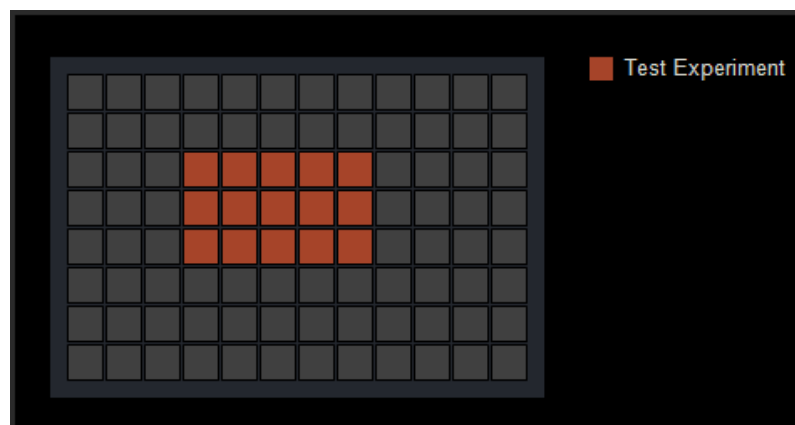
To use the CAM interface, it is required to assign jobs (experiments) to the scan fields.

INFO

A scan field is an X, Y position on the stage. A scan field will be visualized within the MatrixScreener 3 & 4 software as a small, gray square. If a job (experiment) assigned to the scan field the gray square will become a color.



MatrixScreener 3 Version



MatrixScreener 4 Version

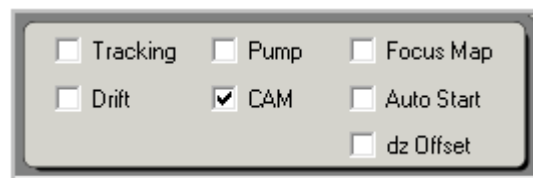
Please assign at least one scan job! Otherwise, CAM commands you have sent will ignored.

INFO

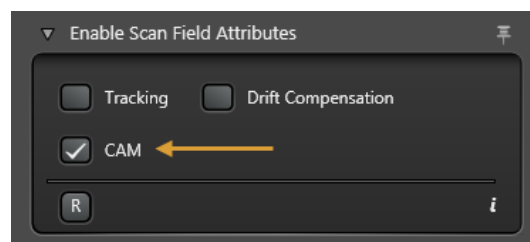
If you have questions about how to assign jobs (experiments) to single scan fields, please see the MatrixScreener help file (in M4, please click onto the character “i” in the right, lower corner of the different MatrixScreener modules!

MatrixScreener CAM Documentation

Make sure that the CAM checkbox is enabled



MatrixScreener 3 Version



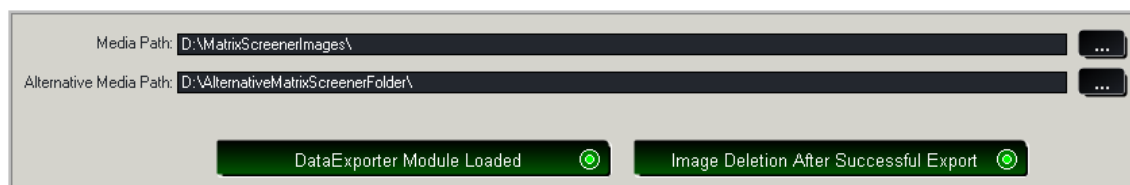
MatrixScreener 4 Version

Please make sure that you have enabled the checkbox to allow CAM! Otherwise, CAM commands you have sent will be ignored.

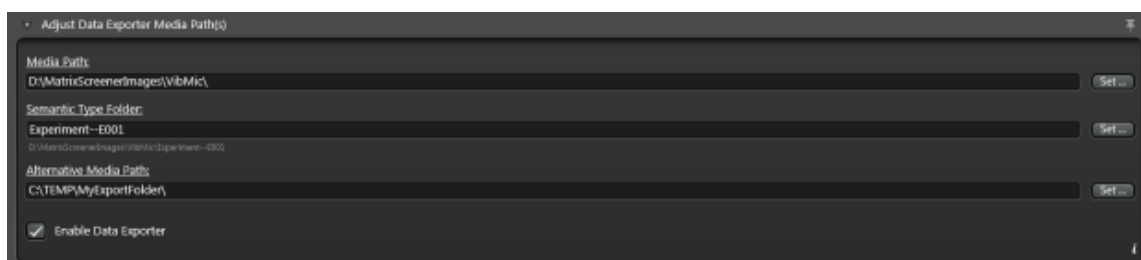
INFO

If you have questions about how to use the attribute CAM, please see the MatrixScreener help file (in M4, please click onto the character “i” in the right, lower corner of the different MatrixScreener modules!)

Make sure that you export the images to the disk



MatrixScreener 3 Version



MatrixScreener 4 Version

MatrixScreener CAM Documentation

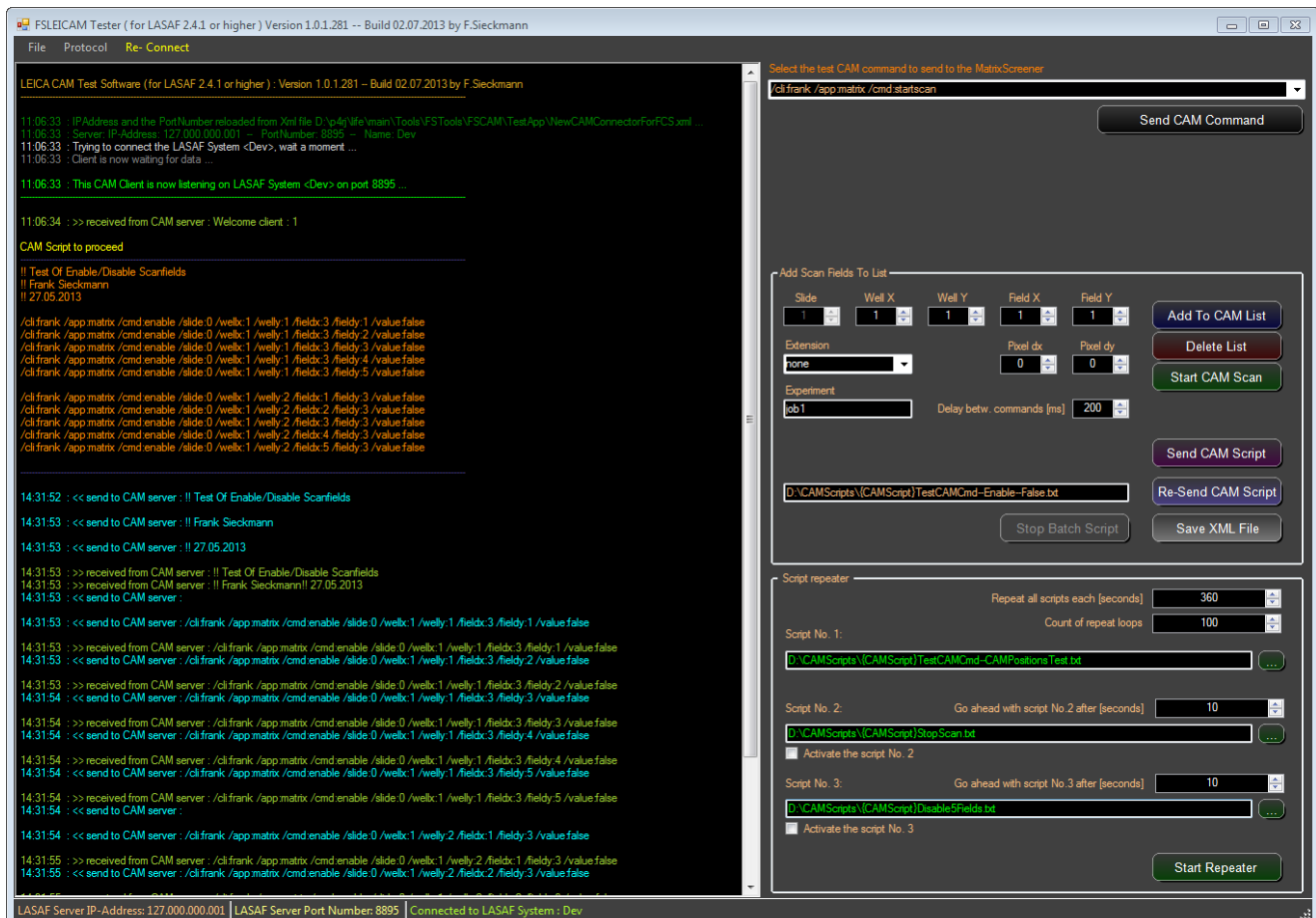
Please make sure that the DataExporter enabled to stream the OME.TIF images to the storage! CAM will run also if you have not enabled the DataExporter, but, if your application requires images for analysis, it is necessary to switch the DataExporter on.

INFO

If you have questions about the data exporter, please see the MatrixScreener help file (in M4, please click onto the character “*i*” in the right, lower corner of the different MatrixScreener modules!

Matrix Screener CAM Documentation

The CAM Test Tool (currently version 1.0.1.281)



CURRENT FEATURES:

- Support different LASAF Server Systems (simply load the connection file)
- Editor for LASAF Server data (Server Name; Server IP; Server Port)
- Editor for Tester Settings (the name of this client)
- All current available CAM commands can be send and verified
- Simple script capability within the test tool (load and proceed simple CAM scripts)
- CAM Monitor (showing the interaction Server <-> Client)
- Re-send CAM scripts
- Repeat CAM scripts a couple of times and using a dedicated time lapse interval
- CAM listener to receive CAM commands

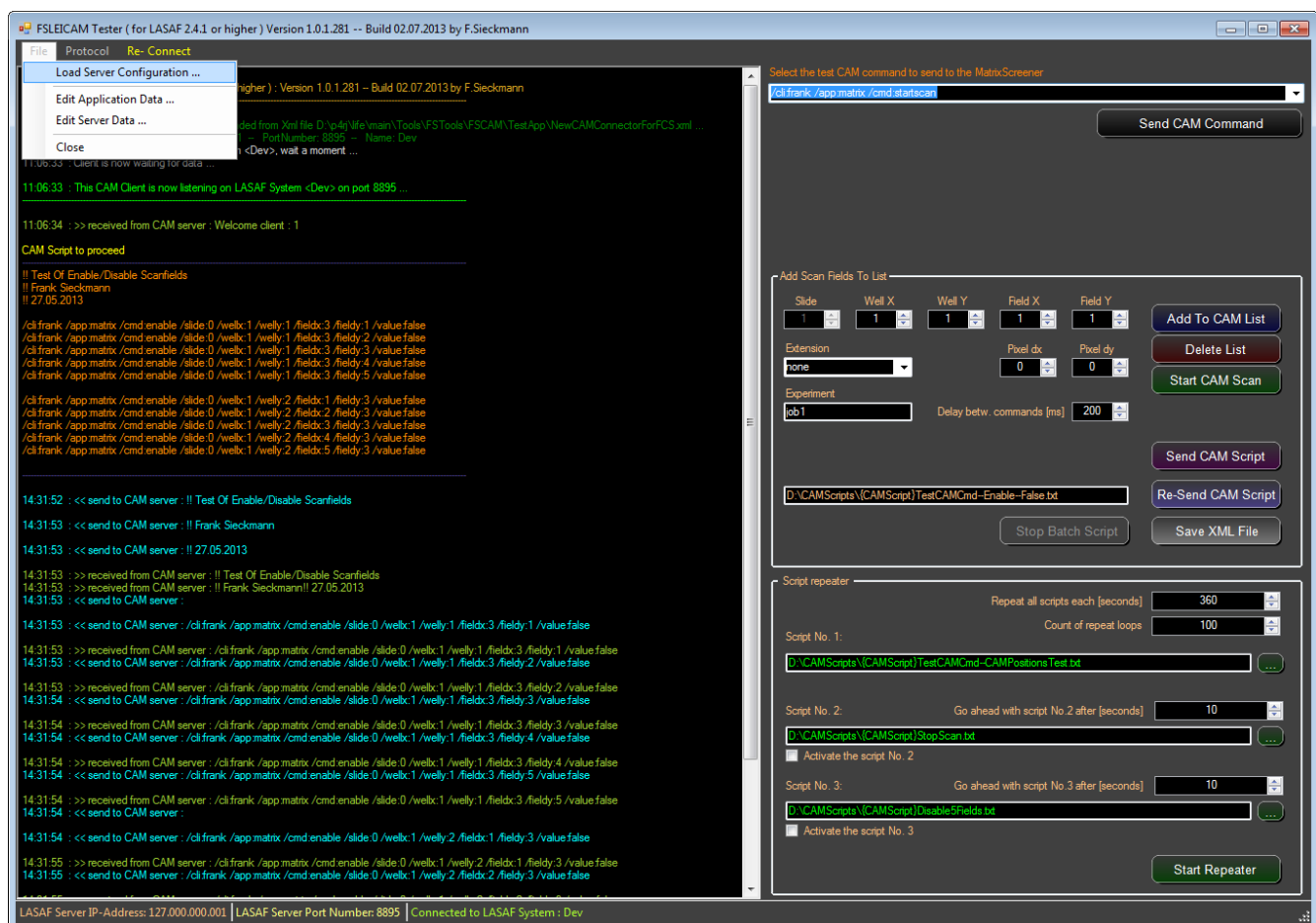
Matrix Screener CAM Documentation

In the bottom line, you will get some important information about the current connected LASAF CAM Server!

LASAF Server IP-Address: 127.0.0.0.001 | LASAF Server Port Number: 8895 | Connected to LASAF System : Frank-Mac

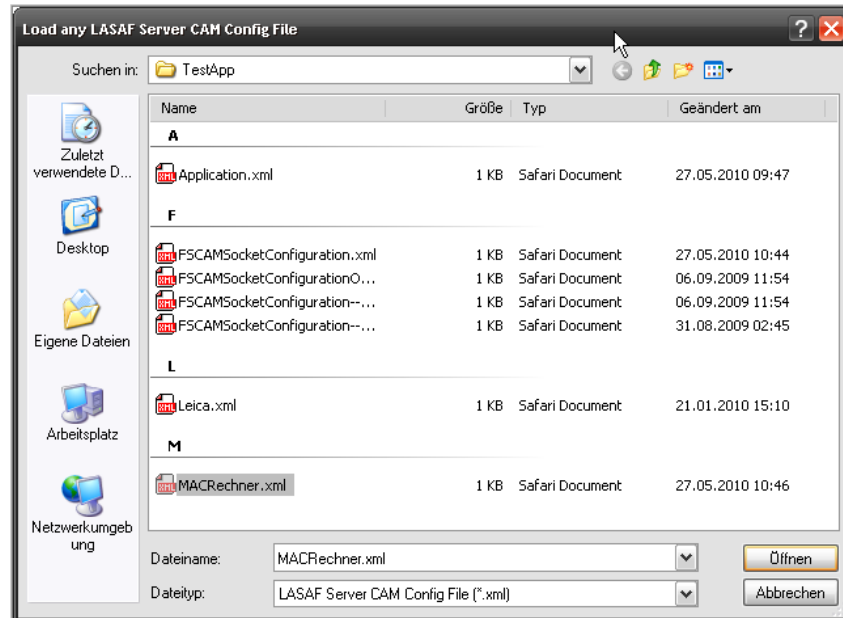
To connect another LASAF system, please load the Socket Configuration file!

The CAM Test Tool – Connect to another LASAF CAM Server

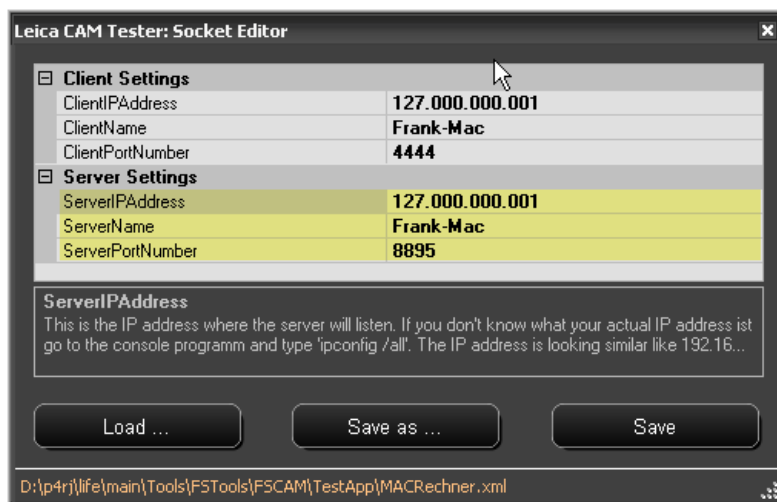


Load an existing Server Configuration File (Menu.Load Server Configuration...):

Matrix Screener CAM Documentation



Assign a new configuration file or to edit an existing, use „**Edit Server Data ...**“



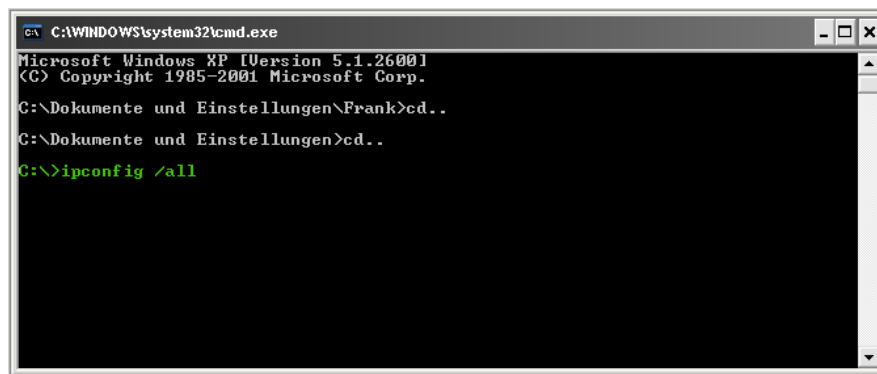
The Client Settings will not work just now! Please adjust the Server Settings. For the LASAF it is currently

- LASAF Server -- CAM port: 8895 (this value is fix)
- LASAF Server -- CAM IP: the IP address the system is running

Matrix Screener CAM Documentation

In the example, the system is using the local host IP address 127.000.000.001! This is the address to use if the CAM test tool will run on the LASAF system itself. In case you like to use the CAM tester within a network, please use the true IP address of the LASAF System.

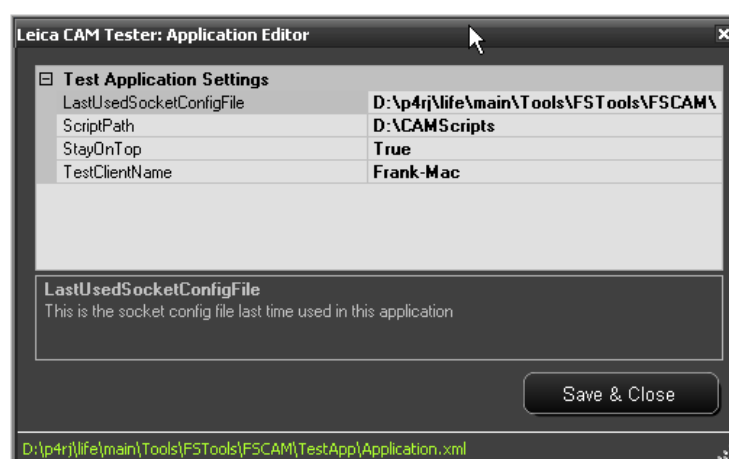
How can I find out the true IP Address of the LASAF system?



Simply call the command console on your LASAF system and type

ipconfig /all

The CAM Test Tool application settings

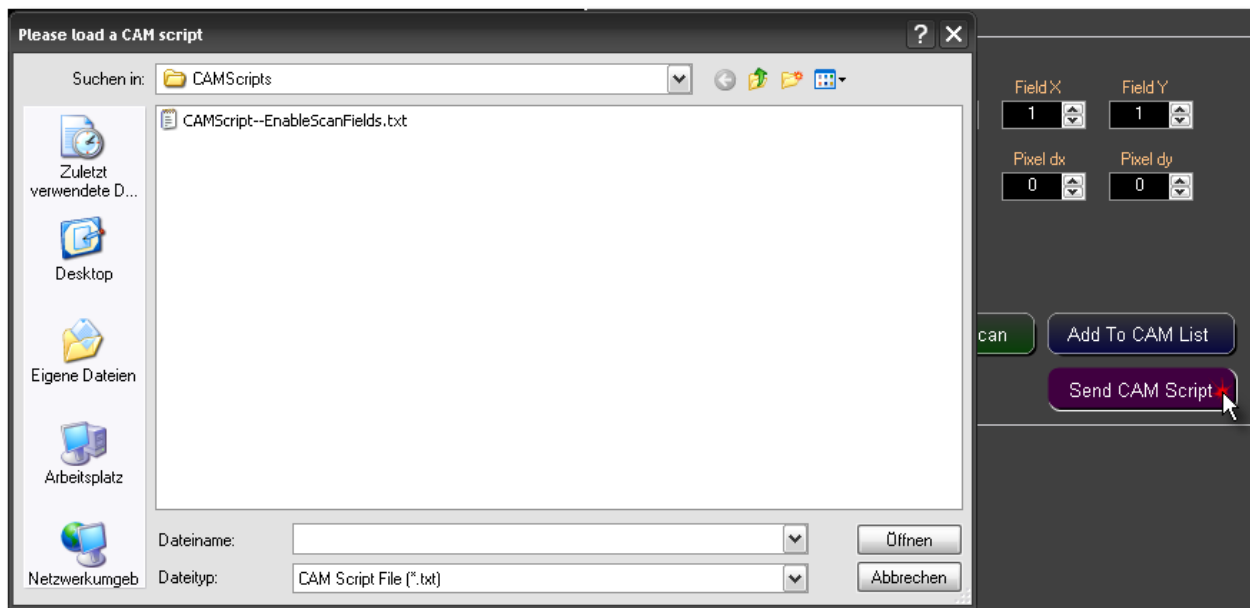


In case multiple clients connected to one LASAF system, it is useful to give every client a name. This name is much easier to decide where a CAM command came from in case of any problem!

Matrix Screener CAM Documentation

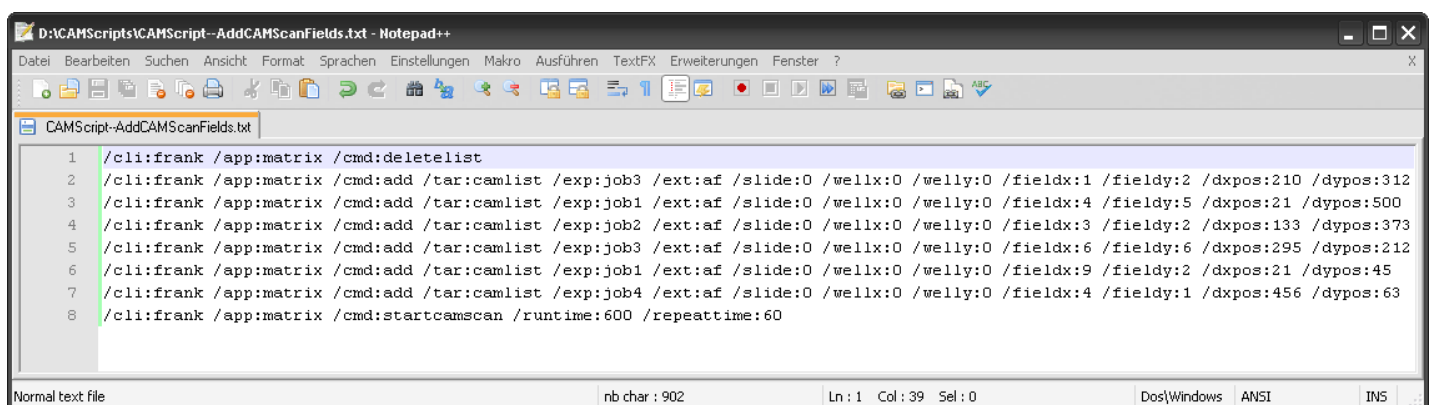
The CAM Test Tool – Scripting

eee



You can design, load and send your own CAM script. A CAM script is a simple list of commands fulfilling the CAM syntax. A CAM script is a simple text file.

Sample: (Add a List of CAM measurement points and start the CAM procedure)



```

1 /cli:frank /app:matrix /cmd:deletelist
2 /cli:frank /app:matrix /cmd:add /tar:camlist /exp:job3 /ext:af /slide:0 /welly:0 /welly:0 /fieldx:1 /fieldy:2 /dxpos:210 /dypos:312
3 /cli:frank /app:matrix /cmd:add /tar:camlist /exp:job1 /ext:af /slide:0 /welly:0 /welly:0 /fieldx:4 /fieldy:5 /dxpos:21 /dypos:500
4 /cli:frank /app:matrix /cmd:add /tar:camlist /exp:job2 /ext:af /slide:0 /welly:0 /welly:0 /fieldx:3 /fieldy:2 /dxpos:133 /dypos:373
5 /cli:frank /app:matrix /cmd:add /tar:camlist /exp:job3 /ext:af /slide:0 /welly:0 /welly:0 /fieldx:6 /fieldy:6 /dxpos:295 /dypos:212
6 /cli:frank /app:matrix /cmd:add /tar:camlist /exp:job1 /ext:af /slide:0 /welly:0 /welly:0 /fieldx:9 /fieldy:2 /dxpos:21 /dypos:45
7 /cli:frank /app:matrix /cmd:add /tar:camlist /exp:job4 /ext:af /slide:0 /welly:0 /welly:0 /fieldx:4 /fieldy:1 /dxpos:456 /dypos:63
8 /cli:frank /app:matrix /cmd:startcamscan /runtime:600 /repeattime:60
  
```

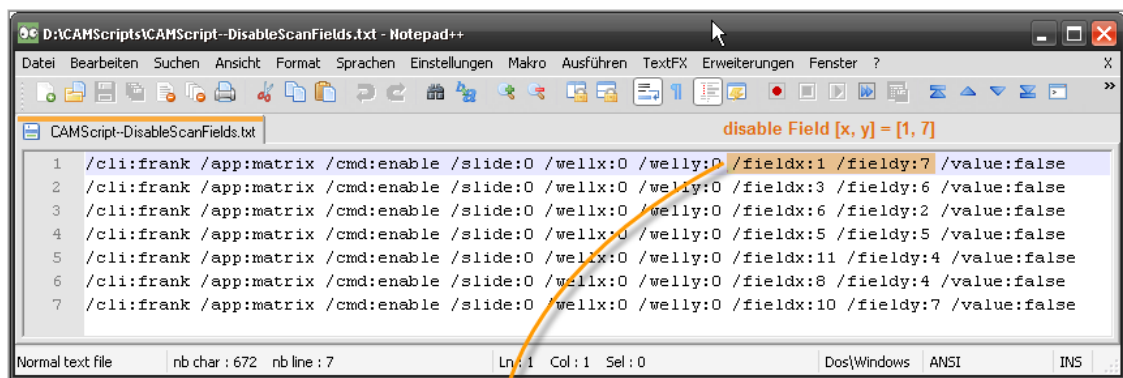
This CAM script will delete the current CAM Scan Field List. Then it will add 6 new CAM scan Fields and will start the CAM scan. The CAM Scan itself has a runtime of 600 seconds and a

MatrixScreener CAM Documentation

repeat time of 60 seconds. After this CAM scan procedure, the MatrixScreener will go ahead with the scanning procedure!

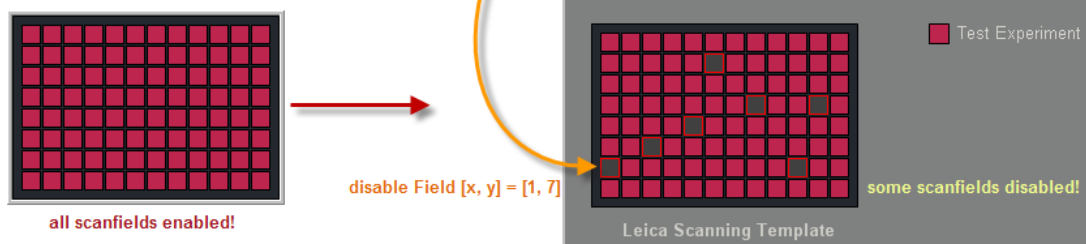
Sample: (Disable some scan fields)

If a scan field is disabled, it will not be used within the scanning process. It is also possible to enable a scan field at runtime. This will allow you to start a scan procedure where some scan fields disabled

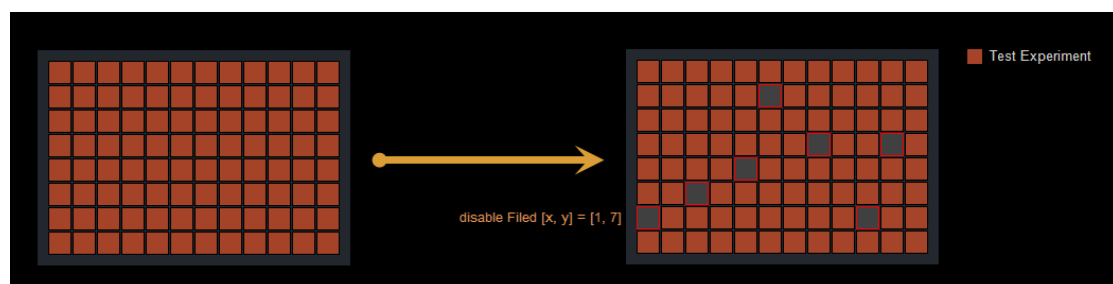


```

1 /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:1 /fieldy:7 /value:false
2 /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:3 /fieldy:6 /value:false
3 /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:6 /fieldy:2 /value:false
4 /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:5 /fieldy:5 /value:false
5 /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:11 /fieldy:4 /value:false
6 /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:8 /fieldy:4 /value:false
7 /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:10 /fieldy:7 /value:false
  
```



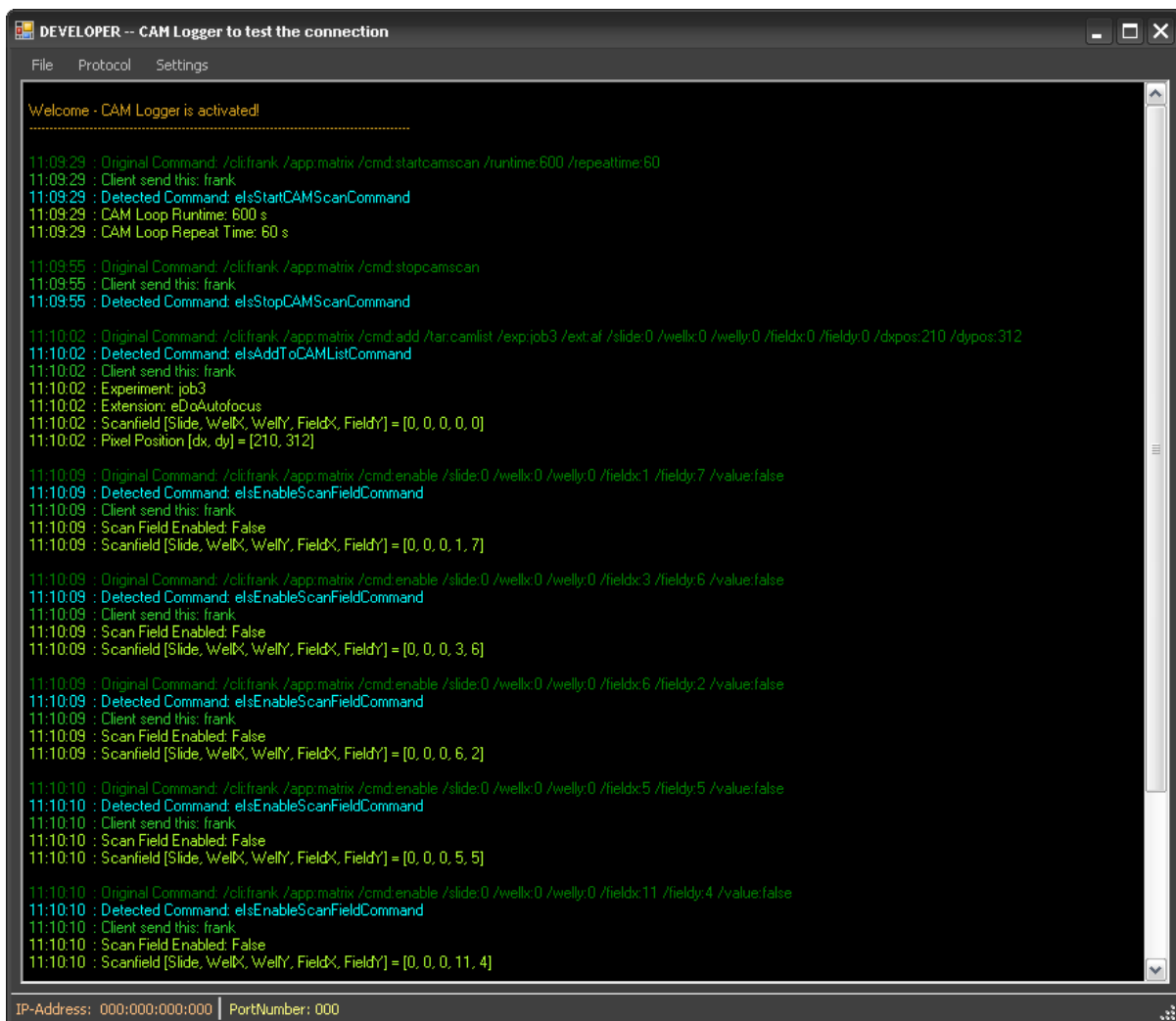
MatrixScreener 3 Version



MatrixScreener 4 Version

MatrixScreener CAM Documentation

The CAM Commands and Test Monitor on the LASAF side



The screenshot shows a window titled "DEVELOPER -- CAM Logger to test the connection". It has a menu bar with "File", "Protocol", and "Settings". The main area displays a log of commands and responses, with timestamps and details for each interaction. The log includes commands like "startcamscan", "stopcamscan", "add /tar:camlist /exp:job3 /ext:af /slide:0 /wellx:0 /welly:0 /fieldx:0 /fieldy:0 /dxpos:210 /dypos:312", and "enable /slide:0 /wellx:0 /welly:0 /fieldx:1 /fieldy:7 /value:false". It also shows detected commands and client responses, such as "Client send this: frank" and "Scan Field Enabled: False". The status bar at the bottom shows "IP-Address: 000:000:000:000 | PortNumber: 000".

```

DEVELOPER -- CAM Logger to test the connection
File Protocol Settings

Welcome - CAM Logger is activated!

11:09:29 : Original Command: /cli:frank /app:matrix /cmd:startcamscan /runtime:600 /repeattime:60
11:09:29 : Client send this: frank
11:09:29 : Detected Command: elsStartCAMScanCommand
11:09:29 : CAM Loop Runtime: 600 s
11:09:29 : CAM Loop Repeat Time: 60 s

11:09:55 : Original Command: /cli:frank /app:matrix /cmd:stopcamscan
11:09:55 : Client send this: frank
11:09:55 : Detected Command: elsStopCAMScanCommand

11:10:02 : Original Command: /cli:frank /app:matrix /cmd:add /tar:camlist /exp:job3 /ext:af /slide:0 /wellx:0 /welly:0 /fieldx:0 /fieldy:0 /dxpos:210 /dypos:312
11:10:02 : Detected Command: elsAddToCAMListCommand
11:10:02 : Client send this: frank
11:10:02 : Experiment: job3
11:10:02 : Extension: eDoAutoFocus
11:10:02 : Scanfield [Slide, WellX, WellY, FieldX, FieldY] = [0, 0, 0, 0, 0]
11:10:02 : Pixel Position [dx, dy] = [210, 312]

11:10:09 : Original Command: /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:1 /fieldy:7 /value:false
11:10:09 : Detected Command: elsEnableScanFieldCommand
11:10:09 : Client send this: frank
11:10:09 : Scan Field Enabled: False
11:10:09 : Scanfield [Slide, WellX, WellY, FieldX, FieldY] = [0, 0, 0, 1, 7]

11:10:09 : Original Command: /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:3 /fieldy:6 /value:false
11:10:09 : Detected Command: elsEnableScanFieldCommand
11:10:09 : Client send this: frank
11:10:09 : Scan Field Enabled: False
11:10:09 : Scanfield [Slide, WellX, WellY, FieldX, FieldY] = [0, 0, 0, 3, 6]

11:10:09 : Original Command: /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:6 /fieldy:2 /value:false
11:10:09 : Detected Command: elsEnableScanFieldCommand
11:10:09 : Client send this: frank
11:10:09 : Scan Field Enabled: False
11:10:09 : Scanfield [Slide, WellX, WellY, FieldX, FieldY] = [0, 0, 0, 6, 2]

11:10:10 : Original Command: /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:5 /fieldy:5 /value:false
11:10:10 : Detected Command: elsEnableScanFieldCommand
11:10:10 : Client send this: frank
11:10:10 : Scan Field Enabled: False
11:10:10 : Scanfield [Slide, WellX, WellY, FieldX, FieldY] = [0, 0, 0, 5, 5]

11:10:10 : Original Command: /cli:frank /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:11 /fieldy:4 /value:false
11:10:10 : Detected Command: elsEnableScanFieldCommand
11:10:10 : Client send this: frank
11:10:10 : Scan Field Enabled: False
11:10:10 : Scanfield [Slide, WellX, WellY, FieldX, FieldY] = [0, 0, 0, 11, 4]

IP-Address: 000:000:000:000 | PortNumber: 000
  
```

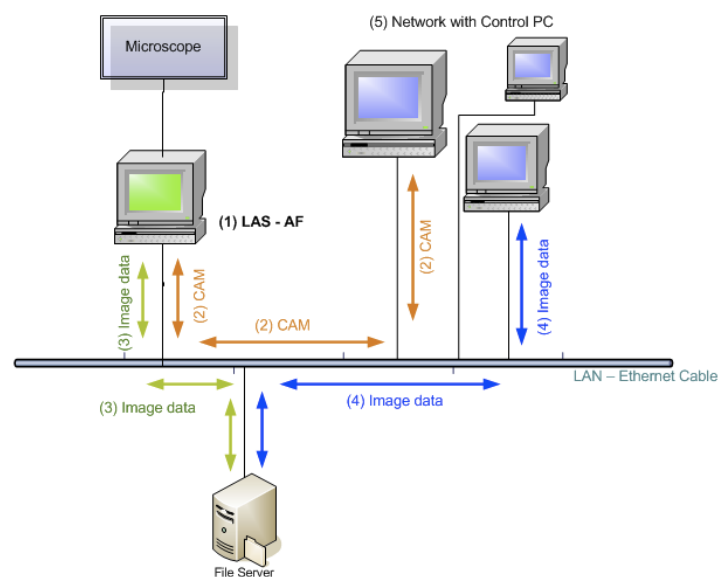
Within the LASAF, we have developed a CAM monitor as well. This monitor will show accepted CAM commands only. If there is any syntax errors within the CAM command sent it will be ignored and not proceed. This is to protect the LASAF against wrong or not allowed commands possibly harmful for the LASAF. To see this window press **CTRL & P** within the MatrixScreener App...

If the CAM command is accepted, you will see a detailed response within the LASAF CAM Monitor. This response will inform you about the type of CAM command received as well as the parameter detected (if any). The „Client sends this“ information will show you the name of the client who seny this CAM command.

MatrixScreener CAM Documentation

The CAM Command Syntax

BASICS:



The syntax of the command line language is very simple and easy to understand. One command block contains an identifier, a command, a separator and a parameter.

Principal command block structure:

/Command:Parameter

/	= Identifier
Command	= the command we have to send or will receive to do any action
:	= Separator to separate the command from the Parameter
Parameter	= the parameter will contain any value needed

Both, Command and Parameter are strings. It depends from the command itself whether the parameter will be to interpret as a string, an integer etc.. Some of the commands are able to control the application; other will used to inform the clients about the status of the application only.

Sometimes you can send a list of commands (depending of the command), separated by a space

SAMPLE: **/Command1:Parameter1 /Command2:Parameter2 /Command3:Parameter3....**

MatrixScreener CAM Documentation

M3 & M4 CAM Commands

REMARK:

- **M4** is a short name for MatrixScreener 4 (version 4)
- **M3** is a short name for MatrixScreener 3 (version 3)

Some of the CAM commands are available only in the M4! In the description of each individual CAM commands there is a note informing you for which MatrixScreener version this CAM command is available.

REMARK:

If you use your own software language to control the system using CAM, please make sure that there is a small delay in between the single CAM commands, let's say 50ms.

- CAM command 1
- Delay(50ms)
- CAM command 2
- Delay(50ms)
- CAM command 3
- Delay(50ms)
- ...

MatrixScreener CAM Documentation

Basic CAM Commands (Start, Stop, ...)

Start Scan

Command to send **/cli:test /app:matrix /cmd:startscan**

Token Description: /cli = Client (the name of the client who sent this command)
 /app: = Application (the target application for this command)
 /cmd: = the command to proceed

Available For: M3, M4

CAM Command Description:

Will start the scan procedure of the MatrixScreener. This requires a complete defined experiment as well as assigned jobs to the scan fields.

Stop Scan

Command to send **/cli:test /app:matrix /cmd:stopscan**

Token Description: /cli = Client (the name of the client who sent this command)
 /app: = Application (the target application for this command)
 /cmd: = the command to proceed

Available For: M3, M4

CAM Command Description:

Will stop the current running MatrixScreener scan procedure.

MatrixScreener CAM Documentation

Pause Scan

Command to send `/cli:test /app:matrix /cmd:pausescan`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed

Available For: M3, M4

CAM Command Description:

Will switch the MatrixScreener scan into the Pause modus. The current scan procedure will hold until the next pausescan command will send.

Autofocus Scan

Command to send `/cli:test /app:matrix /cmd:autofocusscan`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed

Available For: M3, M4

CAM Command Description:

Will start the autofocus scan procedure of the MatrixScreener. In case the scan procedure is currently running this CAM command will ignored.

Matrix Screener CAM Documentation

Add / Edit new Position (DeleteList, StartCamScan, ...)

Delete the CAM position List

Command to send `/cli:test /app:matrix /cmd:deletelist`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed

Available For: M3, M4

CAM Command Description:

Will delete the list with CAM scanfield objects added before

Start CAM scan

Command to send

`/cli:test /app:matrix /cmd:startcamscan /runtime:600 /repeattime:60`

`/cli:test /app:matrix /cmd:startcamscan /runtime:60 /repeattime:10 /afinterval:2 /trackinterval:1 /pumpinterval:1 /afj:cam1autofocus /afr:30.2 /afs:20`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed
- `/runtime:` = In seconds. The runtime of the CAM loop
- `/repeattime:` = In seconds. The time this scan shall repeat
- `/afinterval:` = autofocus interval
- `/trackinterval:` = the tracking interval
- `/pumpinterval:` = the pump interval
- `/afj:` = auto focus job (the name) to use for CAM
- `/afs:` = count of slices to use for the auto focus job afj
- `/afr:` = scan range to use for the auto focus job afj [µm]

Available For: M3, M4

MatrixScreener CAM Documentation

CAM Command Description:

Will start the CAM loop (level 1 or Level 2, depending of the current scan status). If the MatrixScreener is currently in the standard scan mode this command will switch to CAM level 1. If the MatrixScreener is currently in CAM Level 1 this command will switch to CAM Level 2!

The runtime is the time this CAM procedure should run (in seconds) until the system will return in the scan level above! If the CAM level is Level 1 the system will return to the standard MatrixScreener modus. The repeat time is the time (also in seconds) the CAM Job List should be repeated. The quotient of runtime / repeattime is the count of loops this CAM command will proceed!

You can use a dedicated auto focus job (afj) for the CAM level 1 or CAM level 2 procedure. This auto focus job has to be defined separately. This will allow to use a dedicated auto focus for the CAM scan. If you not define the auto focus job name, no auto focus will be used.

The interval settings (for the autofocus, tracking or pump attribute) will have an effect onto the CAM scan jobs only. If you don't define these values within your CAM command, the default value will automatically be set to 1.

Add (a x, y position to the CAM list)

Command to send **`/cli:test /app:matrix /cmd:add /tar:camlist /exp:job3 /ext:af /slide:0 /wellx:0 /welly:0 /fieldx:0 /fieldy:0 /dxpos:210 /dypos:312`**

Token Description:	<code>/cli</code> = Client (the name of the client send this command)
	<code>/app:</code> = Application (the target application for this command)
	<code>/cmd:</code> = the command to proceed
	<code>/tar:</code> = the target of the command (here the cam list)
	<code>/exp:</code> = The experiment to change (here Job1)
	<code>/ext</code> = an extension for the different modes (see below)
	<code>/slide</code> = The slide number
	<code>/wellx</code> = The well position in x direction
	<code>/welly</code> = The well position in y direction
	<code>/fieldx</code> = The field position in x direction
	<code>/fieldy</code> = The field position in y direction
	<code>/dxpos</code> = Pixel(!); relative to image middle point. Rare Event
	<code>/dypos</code> = Pixel(!); relative to image middle point. Rare Event

MatrixScreener CAM Documentation

Available For: M3, M4

CAM Command Description:

This is the co-ordinate of a rare event as detected using external clients, for example an image analysis client. As soon as the „add“ command is received these co-ordinates, they will be added to a special CAM list of scan fields. As soon the „startcamscan“ command is received, this CAM list of scan fields will download and be translated by the MatrixScreener into the CAM procedure. The co-ordinates [dxpos, dypos] are pixel co-ordinates and are relative to the middle point of the image where the rare event detected.

Possible Extensions: **/ext:af** etc. ...

- | | |
|---------------------------|--|
| 1. Extension = none | = No additional property set to this scan field |
| 2. Extension = af | = The autofocus (drift comp.) flag is true |
| 3. Extension = pump | = The pump flag is true |
| 4. Extension = track | = The tracking flag is true |
| 5. Extension = atrack | = The autofocus and(!) tracking flag is true |
| 6. Extension = pumpaf | = The pump and(!) autofocus flag is true |
| 7. Extension = pumpatrack | = The pump, autofocus and(!) tracking flag is true |
-

Stop CAM Scan

Command to send **/cli:test /app:matrix /cmd:stopcamscan**

Token Description:

/cli	= Client (the name of the client who sent this command)
/app:	= Application (the target application for this command)
/cmd:	= the command to proceed

Available For: M3, M4

CAM Command Description:

This will stop the current CAM loop and the MatrixScreener will return to the next upper Level. If the Current CAM Level = 1 the stop command will switch the system to the normal MatrixScreener scan mode. If the current CAM Level = 2 the stop command will switch the system to CAM Level 1.

MatrixScreener CAM Documentation

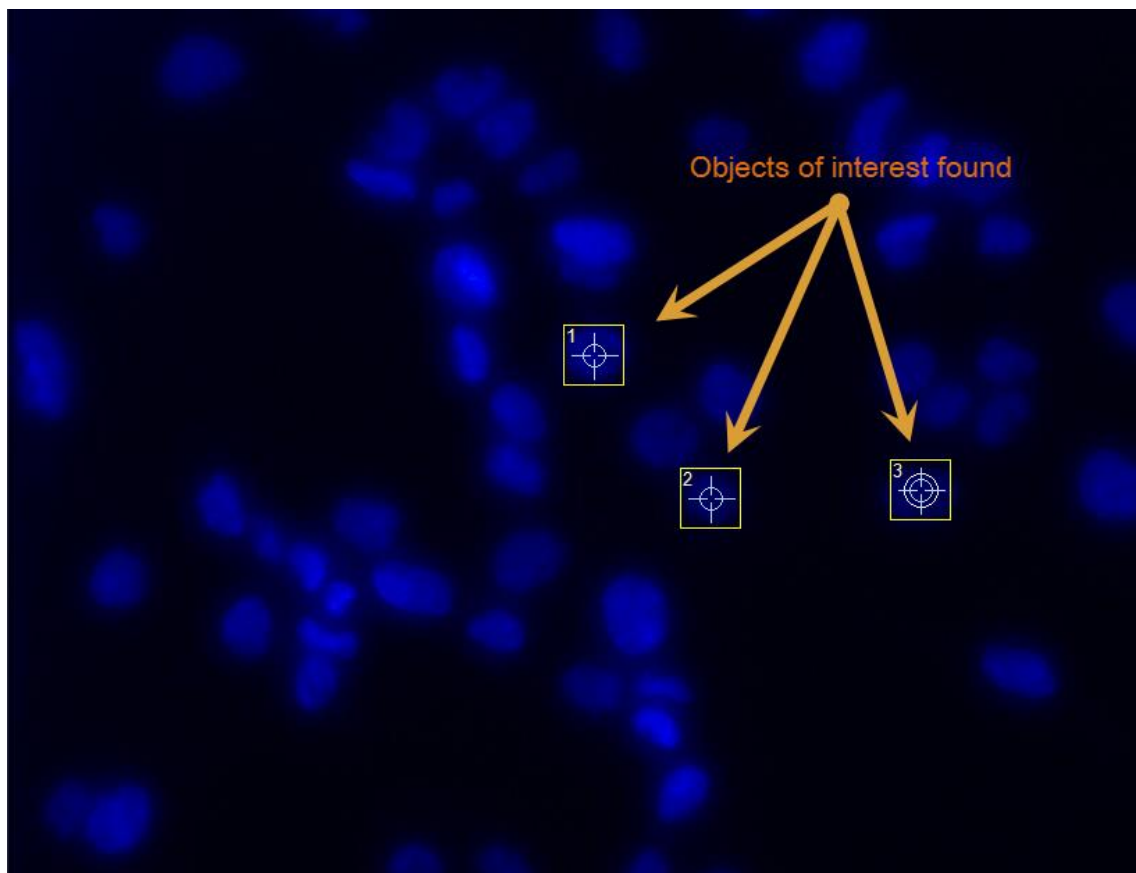
Sample Code

Often called “intelligent microscopy” the “*startcamscan*” function will allow you to change the experiment flow in runtime. You can move to a different x, y, z position and you can start a complete new experiment using totally different settings.

This allows the system to acquire different types of cells or cell behavior in runtime by using individual experimental setups.

It requires an external image analysis to detect the position and type of special cell or the cell behavior. Then use CAM to send this position to the MatrixScreener software inclusive of the type of experiment you like to use for this position.

If you have different types of cell behavior (e.g. anaphase, pro-metaphase etc.) you can assign for each of this cell type behaviors a dedicated experiment setup.



MatrixScreener CAM Documentation

```

** This CAM command will delete the current existing click positions within the camlist of the MatrixScreener **
/cli:default client /app:matrix /cmd:deletelist

** This CAM command(s) will add all(!) click positions selected in all(!) images analyzed to the camlist of the MatrixScreener **
** REMARK: The spelling of the CAM job name must(!) be written correctly! Nevertheless, the CAM Job Name is not case sensitiv, in CAM commands it is always in lower cases!

** Selected click positions for image < image-L0000-S00-U00-V00-J10-E00-O00-X00-Y00-T0000-Z00-C00.jpg > **
/cli:default client /app:matrix /cmd:add /tar:camlist /exp:CAM /ext:none /slide:0 /wellX:0 /wellY:0 /fieldX:0 /fieldY:0 /dxpos:-275 /dypos:-271
/cli:default client /app:matrix /cmd:add /tar:camlist /exp:CAM /ext:none /slide:0 /wellX:0 /wellY:0 /fieldX:0 /fieldY:0 /dxpos:-191 /dypos:-168
/cli:default client /app:matrix /cmd:add /tar:camlist /exp:CAM /ext:none /slide:0 /wellX:0 /wellY:0 /fieldX:0 /fieldY:0 /dxpos:-40 /dypos:-174

** Selected click positions for image < OverLay16.png > **

** Selected click positions for image < Color.png > **

** This CAM command will start the CAM scan procedure **
** In case the interval settings for af, track and pump are 1 this command parameters will not appear (default values are already 1 !) **
** In case the AF CAM Job is not defined (string is empty) the AF command parameters will not appear! **
** In case the AF scan range is < 0.0 µm the AF command parameters will not appear! **
** In case the AF slice count is < 1 the AF command parameters will not appear! **
/cli:default client /app:matrix /cmd:startcamscan /runtime:60 /repeattime:10

```

Created CAM script

This CAM command will delete the current existing click positions within the camlist of the MatrixScreener **

```
/cli:default client /app:matrix /cmd:deletelist
```

Selected 3 positions for image < image-L0000-S00-U00-V00-J10-E00-O00-X00-Y00-T0000-Z00-C00.jpg >

```
/cli:default client /app:matrix /cmd:add /tar:camlist /exp:CAM /ext:none /slide:0 /wellX:0 /wellY:0
/fieldX:0 /fieldY:0 /dxpos:-275 /dypos:-271
```

```
/cli:default client /app:matrix /cmd:add /tar:camlist /exp:CAM /ext:none /slide:0 /wellX:0 /wellY:0
/fieldX:0 /fieldY:0 /dxpos:-191 /dypos:-168
```

```
/cli:default client /app:matrix /cmd:add /tar:camlist /exp:CAM /ext:none /slide:0 /wellX:0 /wellY:0
/fieldX:0 /fieldY:0 /dxpos:-40 /dypos:-174
```

This CAM command will start the CAM scan procedure

```
/cli:default client /app:matrix /cmd:startcamscan /runtime:60 /repeattime:10
```

=====

Matrix Screener CAM Documentation

Water Dispenser

Pump water

Command to send

/ cli: test /app:matrix /cmd:pump /time:1000 /wait:1000

Token Description:

/cli = Client (the name of the client who sent this command)
/app: = Application (the target application for this command)
/cmd: = the command to proceed
/time: = In milliseconds. The time of water flow
/wait: = In milliseconds. The time to wait until to go ahead

Available For:

M3, M4

CAM Command Description:

This command will activate the water refilling system for the adjusted time of milliseconds. After the pump phase the system will wait the adjusted time of milliseconds until it will go ahead with the normal scan procedure.

Matrix Screener CAM Documentation

Adjustment

Adjust the Pinhole

Command to send `/cli:test /app:matrix /cmd:adjust /tar:pinhole /exp:job1 /value:5`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed
- `/tar:` = the target of the command (here Pinhole)
- `/exp:` = The experiment to change (here Job1)
- `/value` = The new value of the target (Pinhole = 5 (Airy Units))

Available For: M3, M4

CAM Command Description:

This command will change the pinhole diameter of the selected scan job

Adjust the PMT - Gain

Command to send `/cli:test /app:matrix /cmd:adjust /tar:pmt /num:1 /exp:job1`
`/prop:gain /value:500,4`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed
- `/tar:` = the target of the command (here photomultiplier)
- `/num:` = The number of the PMT (here 1: PMT1)
- `/exp:` = The experiment to change (here Job1)
- `/prop` = The property to change (here gain)
- `/value` = the new voltage value for the Gain (here 500,4 V)

Available For: M3, M4

CAM Command Description:

This command will change the photomultiplier gain settings of a dedicated photomultiplier of the selected scan job

MatrixScreener CAM Documentation

Adjust the PMT - Offset

Command to send
/prop:offset /value:4.3

/cli:test /app:matrix /cmd:adjust /tar:pmt /num:1 /exp:job1

Token Description:

/cli = Client (the name of the client who sent this command)
/app: = Application (the target application for this command)
/cmd: = the command to proceed
/tar: = the target of the command (here photomultiplier)
/num: = The number of the PMT (here 1: PMT1)
/exp: = The experiment to change (here Job1)
/prop = The property to change (here offset)
/value = the new voltage value for the Offset (here 4.3)

Available For:

M3, M4

CAM Command Description:

This command will change the photomultiplier offset settings of a dedicated photomultiplier of the selected scan job

MatrixScreener CAM Documentation

Adjust the Laser Intensity

Command to send

/cli:test /app:matrix /cmd:adjustls /exp:job1 /seq:1 /lsq:vis /lid:488 /tar:laser /value:50.7

Token Description:	/cli	= Client (the name of the client who sent this command)
	/app:	= Application (the target application for this command)
	/cmd:	= the command to proceed
	/exp:	= The experiment to change (here Job1)
	/seq:	= the sequence within this job (1 .. 16)
	/lsq:	= the light source qualifier (vis, uv, mp)
	/lid	= the line index (wavelength) to change (e.g. 488)
	/tar:	= the target of the command (here Laser)
	/value	= The new laser intensity (e.g. 50.7)

Available For: M3, M4

CAM Command Description:

This command will change the laser intensity settings of the selected scan job (given by the command **/exp:**).

In case that your job is using multiple laser wavelengths the command **/lid:** will specify the laser wavelength. If you like to change the laser wavelength of the 488nm laser, please use **/lid:488** to specify this laser.

In case that the specified job is a sequential job, you can also specify the sequence number (1 ... 16) within this job where you like to change the laser intensity. The command is **/seq:**.

SAMPLE:

Let's assume, you have defined a sequential job with 3 sequential steps. The name of this job is "sequential_job_3". The second sequential step is using 3 different laser wavelength's.

Now, the laser intensity of the second laser wavelength (this should be 488nm) of the second sequential step should be changed to 88.0 %.

/cli:test /app:matrix /cmd:adjustls /exp: sequential_job_3 /seq:2 /lsq:vis /lid:488 /tar:laser /value:88.0

MatrixScreener CAM Documentation

Adjust the Count Of Loops (M3)

Command to send **/cli:test /app:matrix /cmd:loop /runh:0 /runm:6 /runs:0 /reph:0 /repm:1 /reps:0**

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = adjust the experiment loop count
- /runh: = hours of total run time
- /runm: = seconds of total run time
- /runs: = seconds of total run time
- /reph: = hours when to repeat the next measurement loop
- /repm: = seconds when to repeat the next measurement loop
- /reps: = seconds when to repeat the next measurement loop

Available For: **M3 only** and only for the Single Matrix Application Module!

CAM Command Description:

This command will allow to readjust the count of loops as well as the run time and the repeat time of the experiment. This command will have an effect to the MatrixScreener Module “Single Regular Matrix” only. The command is available for the LASAF 2.7.1 only!

SAMPLE:

Let’s assume that you like to make a nonlinear time-lapse experiment, characterized in that the experiment in the first 10 hours will repeated each 30 minutes. Then within the next 5 hours, the experiment should repeated each 10 minutes.

1. Define a standard experiment using the following loop settings
 - a. Runtime = 10h; Repeat Time = 30m
2. Start the experiment
3. If this first experiment finished, send the CAM commands
 - a. **/cli:test /app:matrix /cmd:loop /runh:5 /runm:0 /runs:0 /reph:0 /repm:10 /reps:0**
 - b. **/cli:test /app:matrix /cmd:startscan**

MatrixScreener CAM Documentation

Adjust the Count Of Loops (M4)

Command to send `/cli:test /app:matrix /cmd:loop /rund:0 /runh:0 /runm:0 /runs:0 /repd:0 /reph:0 /repm:0 /reps:0 /loops:2 /dorun:0 /dorep:0 /doloop:0`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = adjust the experiment loop count
- `/rund:` = days of total run time
- `/runh:` = hours of total run time
- `/runm:` = minutes of total run time
- `/runs:` = seconds of total run time
- `/repd:` = days when to repeat the next measurement loop
- `/reph:` = hours when to repeat the next measurement loop
- `/repm:` = minutes when to repeat the next measurement loop
- `/reps:` = seconds when to repeat the next measurement loop
- `/loops:` = the count of loops to set
- `/dorun:` = 1: will set the run time values; 0: will not set it
- `/dorep:` = 1: will set the repeat time values; 0: will not set it
- `/doloop:` = 1: will set the loop count values; 0: will not set it

Available For: **M4 only** and all MatrixScreener application modules

CAM Command Description:

This command will allow to readjust the count of loops as well as the run time and the repeat time of the experiment. The command is available for the LASAF 3.2.0 or higher.

It is not necessary to use the complete CAM command string to define the loop settings. The command tokens will keep the current time settings if the “do” flag wasn’t set to be 1. Therefore it is also allowed to send command structures like

`/cli:test /app:matrix /cmd:loop /rund:2 /runh:1 /runm:12 /runs:0 /dorun:1`

`/cli: test /app:matrix /cmd:loop /loops:11 /doloop:1`

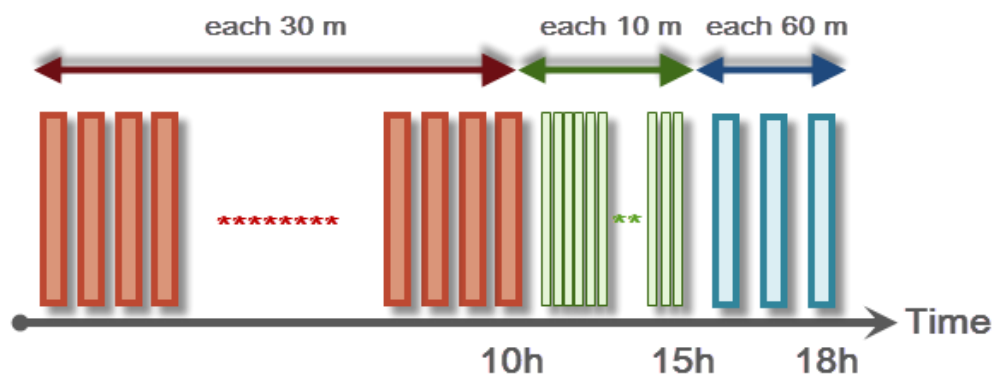
Please do not send this command at runtime of the MatrixScreener! If the system is currently screening the sample, the CAM command will ignored.

MatrixScreener CAM Documentation

SAMPLE:

Let's assume you have to design a nonlinear time-lapse experiment, characterized in that the experiment in the first 10 hours will repeated each 30 minutes, then within the next 5 hours, the experiment should repeated each 10 minutes, finally, after this experiment, a third experiment will run for 3 hours and a repeat time of 60 minutes

1. Define a standard experiment using the following loop settings
 - a. Runtime = 10h; Repeat Time = 30m
2. Start the experiment
3. If this first experiment finished, send the CAM commands
 - a. `/cli:test /app:matrix /cmd:loop /rund:0 /runh:5 /runm:0 /runs:0 /reph:0 /repm:10 /reps:0 /loops:30 /dorun:1 /dorep:1 /dolooop:0`
 - b. `/cli:test /app:matrix /cmd:startscan`
4. If this second experiment finished, send the CAM commands
 - a. `/cli:test /app:matrix /cmd:loop /rund:0 /runh:3 /runm:0 /runs:0 /reph:0 /repm: 0 /reps:0 /loops:3 /dorun:1 /dorep:1 /dolooop:0`
 - b. `/cli:test /app:matrix /cmd:startscan`



MatrixScreener CAM Documentation

Adjust the Barcode (or the user folder name)

Command to send

```
/cli:test /app:matrix /cmd:barcode /value:12345677 /ext:useforfoldername  
/cli: test /app:matrix /cmd:barcode /value:12345677 /ext:none
```

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = the command to proceed
- /ext: = if “useforfoldername” a subfolder will generated
- /value = e.g. the bar code or any name

Available For: M4

CAM Command Description:

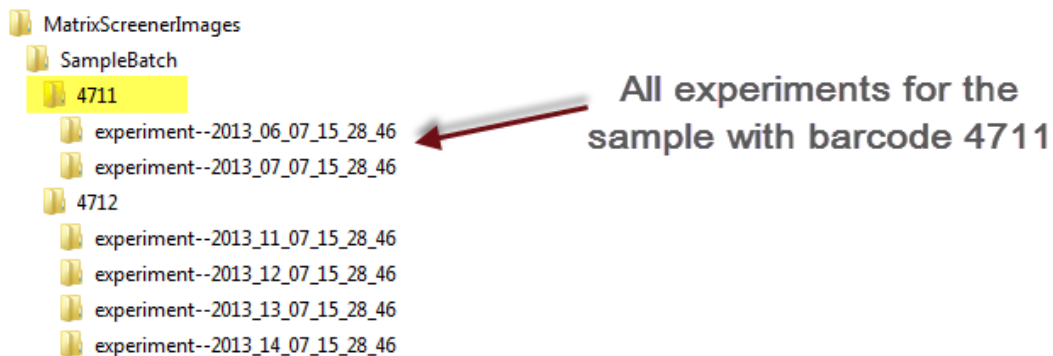
This command will change the barcode string using CAM. This will allow external devices to read a barcode and send this barcode string using this CAM command. In case the extension flag “/ext:useforfoldername” is set, the MatrixScreener will create a subfolder with the same name as the barcode string within the media path.

SAMPLE:

An external system (e.g. a robot) is using a barcode reader. So far this external system is able to establish the CAM communication it can send this bar code to the MatrixScreener. Let’s say the barcode name is 4711, then the system has to send

```
/cli:test /app:matrix /cmd:barcode /value:4711 /ext:useforfoldername
```

The MatrixScreener will create a sub folder with name “**4711**”



MatrixScreener CAM Documentation

Adjust Mosaic

Command to send

```
/cli:test /app:matrix /cmd:adjustmosaic /exp:job3 /width:1000 /height:1300 /startx:49740.7 /starty:46116.8 /startz:23.8 /affieldx:2 /affieldy:3 /af:true
```

Token Description:	/cli = Client (the name of the client who sent this command)
	/app: = Application (the target application for this command)
	/cmd: = the command to proceed
	/exp: = the job to use for the mosaic scan
	/width = the width of the mosaic section [Unit = μm]
	/height = the height of the mosaic section [Unit = μm]
	/startx = the X-start position of the mosaic [Unit = μm]
	/starty = the Y-start position of the mosaic [Unit = μm]
	/startz = the Z-start position of the mosaic [Unit = μm]
	/affieldx= the X scan field where to run the autofocus
	/affieldy= the Y scan field where to run the autofocus
	/af = if true, the auto focus will run before the mosaic scan

Available For: M3 “Single Mosaic” only; M4 “Single Mosaic” & “Individual Adjustable Mosaic”

CAM Command Description:

This command will change the mosaic application settings remotely. It is possible to use a subset of the complete CAM string.

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmosaic /exp:job 2
```

Will keep all settings of the current mosaic adjustment, however, it will change the job currently assigned. In case the image size of the new job is different the mosaic will readjust itself automatically.

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmosaic /width:1000 /height:1300
```

Will keep all settings of the current mosaic adjustment except the width and height of the mosaic. The count of tiles will automatically readjusted.

MatrixScreener CAM Documentation

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmosaic /startx:49740.7 /starty:46116.8
```

Will keep all settings of the current mosaic adjustment except the start co-ordinates of the current mosaic.

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmosaic /startz:23.8
```

Will keep all settings of the current mosaic adjustment except the z-position of the mosaic. This value will be adjusted.

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmosaic /exp:job 3 /startx:49740.7 /starty:46116.8 /startz:23.8
```

Will keep all settings of the current mosaic adjustment except the x, y z-position of the mosaic and it will also change the job currently assigned.

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmosaic /af:true
```

Will keep all settings of the current mosaic adjustment, however, it will activate the middle scan field position of the mosaic as focus field and will create the autofocus just before the main mosaic scan starts,

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmosaic /affieldx:2 /affieldy:3 /af:true
```

Will keep all settings of the current mosaic adjustment, but it will set one(!) dedicated scan field position to be an autofocus scan field. This scan field is given by the tokens /affieldx and /affieldy.

MatrixScreener CAM Documentation

Adjust Matrix

Command to send

```
/cli:test /app:matrix /app:matrix /cmd:adjustmatrix /exp:job90 /startx:130.2 /starty:400.2  
/startz:73.8 /swdx:1000.3 /swdy:1200.3 /sfdx:200.0 /sfdy:203.0
```

Token Description:	/cli	= Client (the name of the client who sent this command)
	/app:	= Application (the target application for this command)
	/cmd:	= the command to proceed
	/exp:	= the job to use for the matrix scan
	/sfdx	= scan field distance in X [Unit = μm]
	/sfdy	= scan field distance in Y [Unit = μm]
	/swdx	= scan well distance in X [Unit = μm]
	/swdy	= scan well distance in Y [Unit = μm]
	/startx	= the X-start position of the matrix [Unit = μm]
	/starty	= the Y-start position of the matrix [Unit = μm]
	/startz	= the Z-start position of the matrix [Unit = μm]

Available For: M4

CAM Command Description:

This command will change the matrix application settings remotely. It is possible to use a subset of the complete CAM string.

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmatrix /sfdx:200.0 /sfdy:200.0
```

Will keep all settings of the current matrix adjustment, however, it will change the current scan field distances in X- and Y direction.

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmatrix /swdx:1000.3 /swdy:1000.3
```

Will keep all settings of the current matrix adjustment, however, it will change the current scan well distances in X- and Y direction.

MatrixScreener CAM Documentation

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmatrix /startx:1000.2 /starty:2000.2 /startz:23.8
```

Will keep all settings of the current matrix adjustment, but it will change the current start co-ordinates of the matrix. Furthermore it will set a new z-position for all scan fields within all scan wells.

SAMPLE:

```
/cli:test /app:matrix /cmd:adjustmatrix /exp:job1
```

Will keep all settings of the current matrix adjustment, but it will change the current assigned job. In this case it will set the job1 to all scan fields.

Matrix Screener CAM Documentation

Enable / Disable

Enable or disable scan fields

Command to send

`/cli:test /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:3 /fieldy:4 /value:false`

Token Description:	<code>/cli</code> = Client (the name of the client who sent this command)
	<code>/app:</code> = Application (the target application for this command)
	<code>/cmd:</code> = the command to proceed
	<code>/slide</code> = The slide number
	<code>/wellx</code> = The well position in x direction
	<code>/welly</code> = The well position in y direction
	<code>/fieldx</code> = The field position in x direction
	<code>/fieldy</code> = The field position in y direction
	<code>/value</code> = the scan field status (false = scan field disabled)

Available For: M3, M4

CAM Command Description:

This command will enable or disable the scan fields

SAMPLE:

`/cli:test /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:3 /fieldy:4 /value:true`

Will enable this scan field.

SAMPLE:

`/cli:test /app:matrix /cmd:enable /slide:0 /wellx:0 /welly:0 /fieldx:3 /fieldy:4 /value:false`

Will disable this scan field (the scan field will get a red frame).

Matrix Screener CAM Documentation

Enable or disable scan wells

Command to send

`/cli:test /app:matrix /cmd:enableall /slide:0 /wellx:1 /welly:1 /value:true`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed
- `/slide` = The slide number
- `/wellx` = The well position in x direction
- `/welly` = The well position in y direction
- `/value` = the scan field status (false = scan field disabled)

Available For: M3, M4

CAM Command Description:

This command will enable or disable all scan fields within the specified scan well.

SAMPLE:

`/cli:test /app:matrix /cmd:enableall /slide:0 /wellx:1 /welly:1 /value:true`

Will enable all scan fields in scan well [1, 1]

SAMPLE:

`/cli:test /app:matrix /cmd:enableall /slide:0 /wellx:1 /welly:1 /value:false`

Will disable all scan fields in scan well [1, 1] (the scan field will get a red frame).

Matrix Screener CAM Documentation

Enable or disable all scan fields

Command to send

`/cli:test /app:matrix /cmd:enableall /value:false`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed
- `/value` = the scan field status (false = scan field disabled)

Available For: M3, M4

CAM Command Description:

This command will enable or disable all scan ..

SAMPLE:

`/cli:test /app:matrix /cmd:enableall /value:false`

Will enable all scan fields

SAMPLE:

`/cli:test /app:matrix /cmd:enableall /value:false`

Will disable all scan fields (the scan field will get a red frame).

MatrixScreener CAM Documentation

Load / Save

Load an existing scanning template

Command to send

/cli:test /app:matrix /sys:1 /cmd:load /fil:{ScanningTemplate}MatrixApp0.xml

Token Description:	/cli	= Client (the name of the client who sent this command)
	/app:	= Application (the target application for this command)
	/sys:	= the LASAF system number of this command
	/cmd:	= the command to proceed
	/fil	= the file to load (here MatrixApp0.xml)

Available For: M3, M4

CAM Command Description:

This command will load this scanning template if this scanning template exists. The path the CAM command is searching the file is the pre-defined scanning template folder adjusted within the MatrixScreener application!

REMARK:

Don't forget the tag {ScanningTemplate} in front of the file name!

SAMPLE:

/cli:test /app:matrix /sys:1 /cmd:load /fil:{ScanningTemplate}M4Experiment.xml

Will load this template!

REMARK:

- M3: If the file is not available the system will catch the error. It will send a CAM information back to the client software
- M4: The template files are connected with the customer database. If the file is available but the entry of this file within the database doesn't exist the file will not load. If the data base entry exists, the file will load and the data base pointer will be correctly adjusted.

MatrixScreener CAM Documentation

Save the current scanning template

Command to send

/cli:test /app:matrix /sys:1 /cmd:save /fil:{ScanningTemplate}MatrixApp0.xml

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /sys: = the LASAF system number of this command
- /cmd: = the command to proceed
- /fil = the file to load (here MatrixApp0.xml)

Available For: M3, M4

CAM Command Description:

This command will save the current scanning template. The path the CAM command will save the file is the pre-defined scanning template folder adjusted within the MatrixScreener application!

Matrix Screener CAM Documentation

Get Information's

Get information's about the stage position

Command to send

/cli:test /app:matrix /cmd:getinfo /dev:stage

Token Description:

/cli	= Client (the name of the client who sent this command)
/app:	= Application (the target application for this command)
/cmd:	= the command to proceed (getinfo)
/dev	= the device where we like to get the info (here stage)

Available For: M3, M4

CAM Command Description:

This commands call information's about the current stage position. The values will returned as a string. Typically the units of the return value will be [meter].

Returned string (example):

/app:matrix /sys:1 /dev:stage /info_for:test /unit:meter /xpos:0,063 /ypos:0,04118 /zpos:-0,0000000204

/unit	= the unit of the returned values
/xpos	= the current x position of the stage
/ypos	= the current y position of the stage
/zpos	= the current z position of the z-drive

Matrix Screener CAM Documentation

Get information's about the z-device position

Command to send

/cli:test /app:matrix /cmd:getinfo /dev:zdrive

Token Description:

/cli	= Client (the name of the client who sent this command)
/app:	= Application (the target application for this command)
/cmd:	= the command to proceed (getinfo)
/dev	= the device where we like to get the info (here zdrive)

Available For: M3, M4

CAM Command Description:

This commands calls for information about the current zdrive position. The values will returned as a string. Typically the units of the returned value will be [meter].

Returned string (example):

/app:matrix /sys:1 /dev:zdrive /info_for:test /unit:meter /zpos:-0,0000000204

/unit	= the unit of the returned values
/zpos	= the current z position of the z-drive

MatrixScreener CAM Documentation

Get information's about the corr-ring position

Command to send

/cli:test /app:matrix /cmd:getinfo /dev:corring

Token Description:

/cli	= Client (the name of the client who sent this command)
/app:	= Application (the target application for this command)
/cmd:	= the command to proceed (getinfo)
/dev	= the device where we like to get the info (here corring)

Available For: M3, M4

CAM Command Description:

This commands call information's about the current corring position. The values will returned as a string.

Returned string (example):

/app:matrix /sys:1 /dev:corring /info_for:test /angle:0 /angleMin:0 /angleMax:180

/angle	= the current angle position of the corr-ring
/angleMin	= the minimal possible angle of the corr-ring
/angleMax	= the maximal possible angle of the corr-ring

MatrixScreener CAM Documentation

Get information's about the current available job's

Command to send

/cli:test /app:matrix /cmd:getinfo /dev:joblist

Token Description:

/cli	= Client (the name of the client who sent this command)
/app:	= Application (the target application for this command)
/cmd:	= the command to proceed (getinfo)
/dev	= the device where we like to get the info (here job list)

Available For: M3, M4

CAM Command Description:

This command calls information's about the current available jobs. These jobs are all jobs (incl. AF jobs) except for patterns! The job list will filled and is available as soon the MatrixScreener has been started.

Returned string (example):

/app:matrix /sys:1 /dev:joblist /info_for:test /jobname1:AF Job /jobid1:61 /jobname2:Job 2 /jobid2:62 /jobname3:Pause 6 /jobid3:63 /jobname4:DriftAF /jobid4:70 /count:4

/jobname1	= AF Job
/jobid1	= 61
/jobname2	= Job 2
/jobid2	= 62
/jobname3	= Pause 6
/jobid3	= 63
/jobname4	= DriftAF
/jobid4	= 70
/count	= 4

REMARKS:

The internal structure of the returned string is always

/"jobname" + number

Frank Sieckmann—18.11.2013

Matrix Screener CAM Documentation

(e.g. jobname = "Job" + number = 2 >>> /jobname2)

If you parse the returned string, it is a good practice to read the available count of jobs first. In the sample above the count of available jobs is = 4. As soon you know the count of entries, it is very easy to read all job names, simply by increasing a number variable step by step until the maximal count of jobs. In the sample it will generate

Count = 4

Number 1: >> /jobname1
Number 2: >> /jobname2
Number 3: >> /jobname3
Number 4: >> /jobname4

The jobid = Job ID token is a unique number used internally. Each job has its own, individual and unique ID.

REMARK

The Job ID will generated by the LASAF system. Whenever you reload the job file (LRP – file; a file with the extension *.lrp is the "live data mode" file type) a new list of Job ID's will generated! Therefore, the concrete value of the Job ID numbers will change whenever you reload the live data mode file. The numbers itself will remain always unique, but it will never the same.

MatrixScreener CAM Documentation

Get information's about the current available pattern's

Command to send

/cli:test /app:matrix /cmd:getinfo /dev:patternlist

Token Description:

/cli	= Client (the name of the client who sent this command)
/app:	= Application (the target application for this command)
/cmd:	= the command to proceed (getinfo)
/dev	= the device where we like to get the info (here pattern's)

Available For: M3, M4

CAM Command Description:

This command calls for information about the current available patterns. This list contains no job's!
The list of patterns will be filled and is available as soon the MatrixScreener has been started.

Returned string (example):

/app:matrix /sys:1 /dev:patternlist /info_for:test /patternname1:collecting pattern /patternid1:60 /patternname2:Pattern 3 /patternid2:64 /count:2

/patternname1	= collecting pattern
/patternid1	= 60
/patternname2	= Pattern 3
/patternid2	= 64
/count	= 2

REMARKS:

The internal structure of the returned string is always

/"patternname" + number
(e.g. patternname = "pattern" + number = 1 >>> /patternname1)

If you parse the returned string, it is a good practice to read the available count of patterns first.
In the sample above the count of available patterns is = 2. As soon as you know the count of

Matrix Screener CAM Documentation

entries, it is very easy to read all pattern names, simply by increasing a number variable step by step until the maximal count of patterns. In the sample it will generate

Count = 2

Number 1: >> /patternname1

Number 2: >> /patternname2

The patternid = Pattern ID token is a unique number used internally. Each pattern has its own, individual and unique ID.

REMARK

The Pattern ID will generated by the LASAF system. Whenever you reload the job file (LRP – file) a new list of Pattern ID's will generated! Therefore, the concrete value of the Pattern ID numbers will change whenever you reload the live data mode file. The numbers itself will remain always unique, but it will never the same!

Matrix Screener CAM Documentation

Get information's about the current scan status

Command to send

/cli:test /app:matrix /cmd:getinfo /dev:scanstatus

Token Description:

/cli	= Client (the name of the client who sent this command)
/app:	= Application (the target application for this command)
/cmd:	= the command to proceed (getinfo)
/dev	= the device where we like to get the info (scan status)

Available For: M3, M4

CAM Command Description:

This commands calls for information about the current status of the scanner and the current CAM level the system is running.

Returned string (example):

/app:matrix /sys:1 /dev:scanstatus /info_for:test /val:eScanIdle /camlevel:0

/val	= eScanIdle
/camlevel	= 0

Possible return values:

/val	= [eScanIdle, eScanContinuous, eScanSingle, eScanSeries, eScanBusy]
/camlevel	= [0, 1, 2]

MatrixScreener CAM Documentation

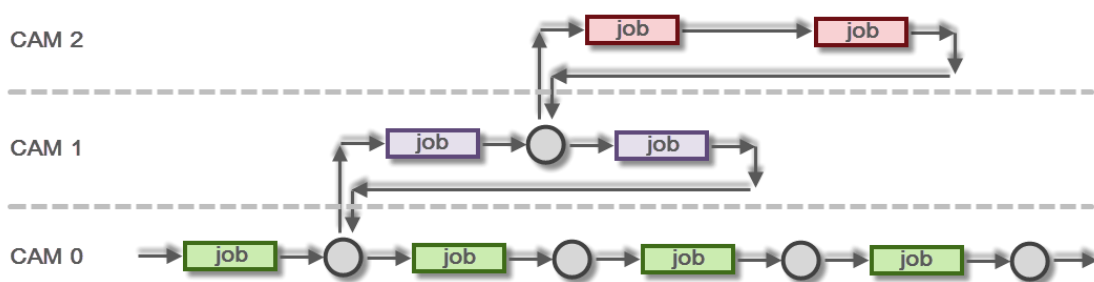
Description of the values:

eScanIdle	Currently, there is no MatrixScreener scan nor a live image scan active
eScanContinuous	If you enable the “Live” button, this scan status will return
eScanSingle	If you start a single scan, this scan status will return
eScanSeries	If you start a MatrixScreener experiment, this scan status will return
eScanBusy	In case the MatrixScreener is running, but currently the system is not doing anything (e.g. the system has stopped temporarily and is now waiting for an external CAM command)

Description of the CAM level:

0	This CAM level is the normal scan level (no CAM scan was started!)
1	This CAM level will take as soon a CAM scan command was sent
2	These CAM level requires CAM level 1. The CAM level 2 can be taken as soon a CAM scan command was sent and(!) if the system is currently running on CAM level 1.

What are different CAM level?



In total there are three different CAM level. The level = 0 is the standard mode. This mode is running whenever you start a scan, even if no CAM license available.

If a “startcamscan” command was received, the system will move to the next level. Now it will work using all jobs which has been defined for CAM 1. From CAM level 1, the system can fall back into CAM 0 or it can move to CAM 2. It will move to CAM 2 if a second “startcamscan” command has been received.

MatrixScreener CAM Documentation

Get information's about the current experiment

Command to send

/cli:test /app:matrix /cmd:getinfo /dev:experiment

Token Description:

/cli	= Client (the name of the client who sent this command)
/app:	= Application (the target application for this command)
/cmd:	= the command to proceed (getinfo)
/dev	= the device where we like to get the info (experiment)

Available For: M3, M4

CAM Command Description:

This command calls for information about the current experiment setup. This is useful to adjust external controller automatically, e.g. to adjust the count of used wells or fields. The scan field matrices of each well must have the same rang (count of scan fields in x, y direction)

Returned string (example):

/app:matrix /sys:1 /dev:experiment /info_for:test /name:{ScanningTemplate}Test01082013.xml /slides:0
/wellsx:1 /wellsy:1 /fieldsx:5 /fieldsy:5 /loops:1 /reptime:15 /fielddx:10 /fielddy:10 /welldx:0 /welldy:0

/name	= the file name of the current loaded scanning template
/slides	= the count of slides used (currently always 0!)
/wellsx	= the count of wells used in x direction
/wellsy	= the count of wells used in y direction
/fieldsx	= the count of fields used in x direction
/fieldsy	= the count of fields used in y direction
/loops	= the count of loops was adjusted for this experiment
/reptime	= the repeat time [in seconds] of each loop
/fielddx	= the distance of the scan fields in x direction [unit = μm]
/fielddy	= the distance of the scan fields in y direction [unit = μm]
/welldx	= the distance of the wells in x direction [unit = μm]
/welldy	= the distance of the wells in y direction [unit = μm]

Matrix Screener CAM Documentation

Get information's about the current x, y, z, position

Command to send

/cli:test /app:matrix /cmd:getinfo /scmd:position

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = the command to proceed (getinfo)
- /scmd = second command (here : position)

Available For: M4

CAM Command Description:

With M4 we have introduced a second command (/scmd:) token to become more flexible. If the second command is "*position*" the system will return the current stage position as well as the z-position. The z-position is the position of the z-drive of the selected autofocus job!

Returned string (example):

/app:matrix /sys:1 /cmd:get /scmd:position /xpos:0,0013 /ypos:0,00144 /zpos:0,0000000002 /zdrive:eU-seGalvo /units:meter

- /xpos = the current X position of the stage [unit = meter]
- /ypos = the current y position of the stage [unit = meter]
- /zpos = the current z position of the AF z-drive [unit = meter]
- /zdrive = the current used auto focus z-drive
- /units = the units of the values returned

Matrix Screener CAM Documentation

Get information's about the current load position

Command to send

/cli:test /app:matrix /cmd:getinfo /scmd:loadposition

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = the command to proceed (getinfo)
- /scmd = second command (here : loadposition)

Available For: M4

CAM Command Description:

With M4 we have introduced a second command (/scmd:) token to be more flexible. If the second command is "*loadposition*" the system will move back to the load position. The load position is a special x, y, z position the system. The system will move to this co-ordinates if the scan procedure was finished. in.

Returned string (example):

/app:matrix /sys:1 /cmd:get /scmd:loadposition /xpos:0,0013 /ypos:0,00144 /zpos:0 /zusemode:z-Wide
/units:meter

- /xpos = the load X position of the stage [unit = meter]
- /ypos = the load y position of the stage [unit = meter]
- /zpos = the load z position of the AF z-drive [unit = meter]
- /zdrive = the current used z-drive for the load position
- /units = the units of the values returned

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Get information's about the current used auto focus zdrive

Command to send

/cli:test /app:matrix /cmd:get /scmd:afzusemode

Token Description:

/cli	= Client (the name of the client who sent this command)
/app:	= Application (the target application for this command)
/cmd:	= the command to proceed (get)
/scmd	= second command (here : afzusemode)

Available For: M4

CAM Command Description:

If the second command (/scmd:) is "afzusemode" the system will return the name of the z-drive currently used for the focus drive.

Returned string (example):

/app:matrix /sys:1 /cmd:get /scmd:afzusemode /afzusemode:eUseGalvo

/afzusemode = the current used z-drive for the auto focus job

REMARK:

- It is possible, that the z-drive as used for the auto focus is different in respect to the z-drive which will be used for the experiment job. The z-drive which we use for the auto focus is always the "master"! This means that all experiment z-positions we have defined are taking as reference the current autofocus z-position.

Matrix Screener CAM Documentation

Get information's about the current z-position of the auto focus z-drive

Command to send

/cli:test /app:matrix /cmd:get /scmd:afzposition

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = the command to proceed (get)
- /scmd = second command (here : afzposition)

Available For: M4

CAM Command Description:

If the second command (/scmd:) is "*afzposition*" the system will return the current z-position of the auto focus drive (this is the z-drive used for the selected autofocus job!)

Returned string (example):

/app:matrix /sys:0 /cmd:get /scmd:afzposition /afzpos:0,0000549734 /afzusemode:eUseGalvo /afunit:meter

- /afzpos* = the current z-position of the auto focus job
- /afzusemode* = the current used z-drive for the auto focus job
- /afunit* = the unit used for the afzpos value (meter)

This means that the autofocus job is currently using the z-Drive = z-Galvo and the current z-position of the autofocus job is

$$z(\text{af}) = 0,0000549734 \text{ m}$$

$$z(\text{af}) = (0,0000549734 * 1000000) \mu\text{m} = 54,9734 \mu\text{m}$$

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Set Stage Position

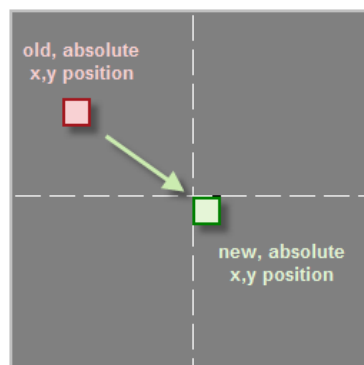
REMARK:

This stage commands will have no(!) effect to the x, y, z positions which has been defined within the scanning template! It will not override the template defined x, y, z positions, neither offline nor at runtime!

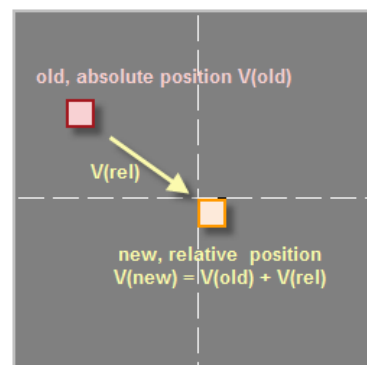
The set stage position commands will move the stage to the wanted position only.

This CAM command is useful to move the stage to a dedicated x, y or z position, maybe to a position to replace the sample more easy or to a position of an injection unit.

It is possible to set the new co-ordinates in absolute or in relative values.



New absolute x,y position



New relative x,y position

MatrixScreener CAM Documentation

Move to a stage position (type: absolute or relative position; unit = meter or microns)

Command to send

```
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:absolute /dev:stage /unit:meter /xpos:0.00012 /ypos:0.0034  
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:absolute /dev:stage /unit:microns /xpos:120.0 /ypos:220.0
```

Token Description:	/cli	= Client (the name of the client who sent this command)
	/app:	= Application (the target application for this command)
	/sys:	= the LASAF system number of this command
	/cmd:	= the command to proceed (set position)
	/typ	= possible values are absolute or relative
	/dev	= device; possible values are stage or zdrive
	/unit	= possible values are meter or microns
	/xpos	= the x position of the stage
	/ypos	= the y position of the stage

Available For: M3, M4

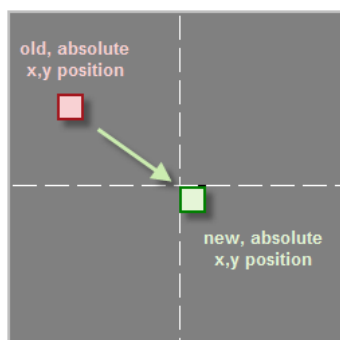
CAM Command Description:

This command allows to move the stage to a new x, y position! The unit can be meter or microns. It is possible to move the stage to a relative or absolute x, y position.

Case 1: Move the stage to an absolute position:

Command:

```
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:absolute /dev:stage /unit:meter /xpos:0.00012 /ypos:0.0034  
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:absolute /dev:stage /unit:microns /xpos:120.0 /ypos:220.0
```



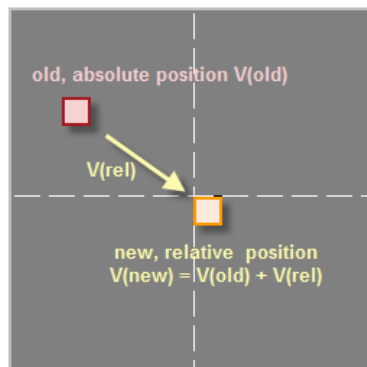
The stage will move directly to the given position. In case the given co-ordinates are outside the allowed scan range of the stage your CAM command will ignored and you will get a feedback string continuing some information's about this exception.

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Case 2: Move the stage to an relative position:

Command:

```
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:relative /dev:stage /unit:meter /xpos:0.0000012 /ypos:0.000034  
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:relative /dev:stage /unit:microns /xpos:100.0 /ypos:100.0
```



The algorithm will measure the current stage position and will add your relative co-ordinates for x and y.

Returned string:

If everything is successful you will get the command sent as a return value

```
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:relative /dev:stage /unit:microns /xpos:100.0 /ypos:100.0
```

EXCEPTION :

In case of any exception your command will be ignored and you will get as feedback a short description about the problem e.g.

/exception: Please check the parameter of the <xpos> token! Value out of range! Your x position value is 0,0120000000 m. The allowed range is [xMin, xMax] = [-0,0060000000, 0,0060000000] m

MatrixScreener CAM Documentation

Move the stage to a specified well position

Command to send

`/cli:test /app:matrix /sys:1 /cmd:movetowell /upos:0 /vpos:0`

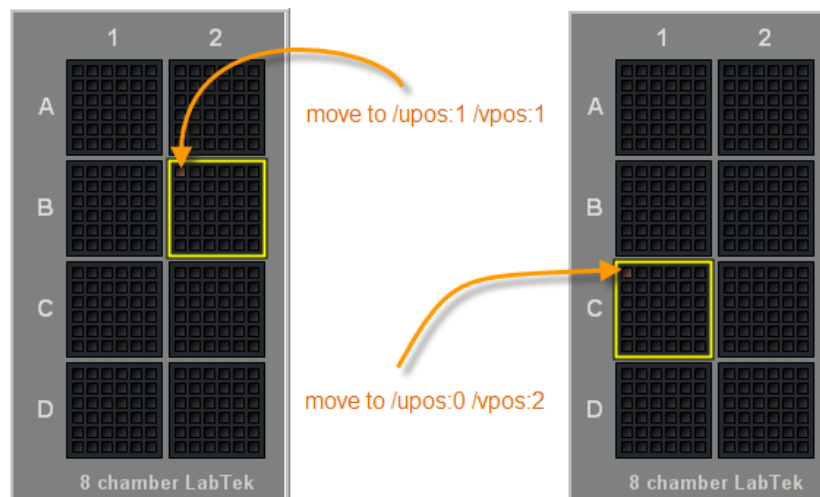
Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed (movetowell)
- `/upos` = the “x” value; defining the well or chamber number
- `/vpos` = the “y” value; defining the well or chamber number

Available For: M3, M4

CAM Command Description:

This command will move the stage to the x, y position as specified within the scanning template. The x, y position to move to is the co-ordinate of the first, upper left scanfield within the specified well (or chamber).



Returned string:

If everything is successful you will get the command sent as a return value incl. the current x,y position of the selected well or chamber

`/app:matrix /sys:1 /cmd:movetowell /info_for:frank /upos:0 /vpos:0 /xpos:0,063 /ypos:0,04118`

Matrix Screener CAM Documentation

Save the current position (device = stage)

Command to send

`/cli:test /app:matrix /sys:1 /cmd:savecurrentposition /dev:stage`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/sys:` = the LASAF system number of this command
- `/cmd:` = the command to proceed (savecurrentposition)
- `/dev` = device; possible values are **stage**

Available For: M3, M4

See also:

`/cli:test /app:matrix /sys:1 /cmd:returntosavedposition /dev:zdevice`

CAM Command Description:

If you send the command “**Save Current Position**” the LASAF will save the current position of the selected device. The command “**Return To Saved Position**” (see below) will let the device move back to the saved position.

Returned string:

If everything is successful you will get the command sent as a return value incl. the current position of the selected device

`/app:matrix /sys:1 /cmd:savecurrentposition /dev:stage /info_for:frank /unit:meter /xpos:0,0002
/ypos:0,00028`

`/xpos:` the current measured (and now saved) x position
`/ypos:` the current measured (and now saved) y position

MatrixScreener CAM Documentation

Return to the saved position (device = stage)

Command to send

`/cli:test /app:matrix /sys:1 /cmd:returntosavedposition /dev:stage`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/sys:` = the LASAF system number of this command
- `/cmd:` = the command to proceed (getinfo)
- `/dev` = device; possible values are **stage**

Available For: M3, M4

See also:

`/cli:test /app:matrix /sys:1 /cmd:savcurrentposition /dev:zdevice`

CAM Command Description:

If you send the command **“Return To Saved Position”** the LASAF will return to the position of the selected device we have saved before using the command **“Save Current Position”** (see below).

Returned string:

If everything is successful you will get the command sent as a return value incl. the current position of the selected device

`/app:matrix /sys:1 /cmd:returntosavedposition /dev:stage /info_for:frank /unit:meter /xpos:0,0002 /ypos:0,00028 /zpos:0,00026`

- `/xpos:` the current measured (return) x position of the stage
- `/ypos:` the current measured (return) y position of the stage
- `/zpos:` the current measured (return) z position of the stage

MatrixScreener CAM Documentation

Set z-Drive Position

Move to a z position (type: absolute or relative position; unit = meter or microns)

Command to send

```
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:absolute /dev:zdrive /unit:meter /zpos:0.000032  
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:absolute /dev:zdrive /unit:microns /zpos:55.4
```

Token Description:	/cli	= Client (the name of the client who sent this command)
	/app:	= Application (the target application for this command)
	/sys:	= the LASAF system number of this command
	/cmd:	= the command to proceed (set position)
	/typ	= possible values are absolute or relative
	/dev	= device; possible values are stage or zdrive
	/unit	= possible values are meter or microns
	/zpos	= the z position of the current z-device

Available For: M3, M4

CAM Command Description:

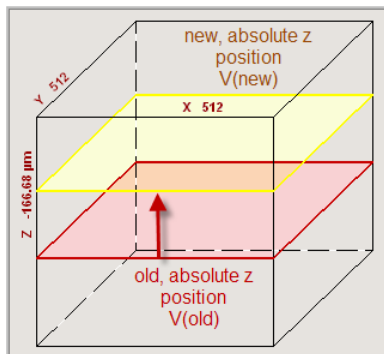
This command allows the currently selected z-device to move to a new z position! The unit can be meter or microns. It is possible to move the z-device to a relative or absolute z position.

Case 1: Move the z-device to an absolute position:

Command:

```
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:absolute /dev:zdrive /unit:meter /zpos:0.000032  
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:absolute /dev:zdrive /unit:microns /zpos:55.4
```

MatrixScreener CAM Documentation

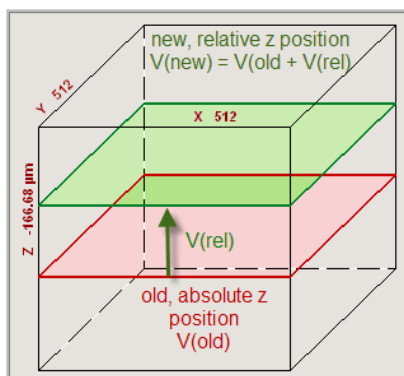


The z-device will move to the new z position in absolute co-ordinates.

Case 2: Move the z-device to an relative position:

Command:

```
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:relative /dev:zdrive /unit:meter /zpos:0.00000032/  
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:relative /dev:zdrive /unit:microns /zpos:-10.0
```



The algorithm will measure the current z position of the z-device and will add your relative co-ordinate z to this value.

Returned string:

If everything is successful you will get the command sent as a return value

```
/cli:test /app:matrix /sys:1 /cmd:setposition /typ:relative /dev:zdrive /unit:microns /zpos:-10.0
```

Matrix Screener CAM Documentation

Save the current position (device = z-device)

Command to send

`/cli:test /app:matrix /sys:1 /cmd:savecurrentposition /dev:zdevice`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/sys:` = the LASAF system number of this command
- `/cmd:` = the command to proceed (savecurrentposition)
- `/dev` = device; possible values are **zdrive**

Available For: M3, M4

See also:

`/cli:test /app:matrix /sys:1 /cmd:returntosavedposition /dev:stage`

CAM Command Description:

If you send the command “**Save Current Position**” the LASAF will save the current position of the selected device. The command “**Return To Saved Position**” (see below) will let the device move back to the saved position.

Returned string:

If everything is successful you will get the command sent as a return value incl. the current position of the selected device

`/app:matrix /sys:1 /cmd:savecurrentposition /dev:zdrive /info_for:frank /unit:meter /zpos:0,00000116`

`/zpos:` the current measured (and now saved) z position

MatrixScreener CAM Documentation

Return to the saved position (device = z-device)

Command to send

`/cli:test /app:matrix /sys:1 /cmd:returertosavedposition /dev:zdevice`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/sys:` = the LASAF system number of this command
- `/cmd:` = the command to proceed (getinfo)
- `/dev` = device; possible values are **zdrive**

Available For: M3, M4

See also:

`/cli:test /app:matrix /sys:1 /cmd:savecurrentposition /dev:stage`

CAM Command Description:

If you send the command **“Return To Saved Position”** the LASAF will return to the position of the selected device we have saved before using the command **“Save Current Position”** (see below).

Returned string:

If everything is successful you will get the command sent as a return value incl. the current position of the selected device

`/app:matrix /sys:1 /cmd:returertosavedposition /dev:zdrive /info_for:frank /unit:meter /xpos:0,0002 /ypos:0,00022 /zpos:0,00028`

- `/xpos:` the current measured (return) x position of the stage
- `/ypos:` the current measured (return) y position of the stage
- `/zpos:` the current measured (return) z position of the stage

MatrixScreener CAM Documentation

Move to start- or load position

Move the stage to the load position

Command to send

`/cli:test /app:matrix /sys:1 /cmd:loadposition`

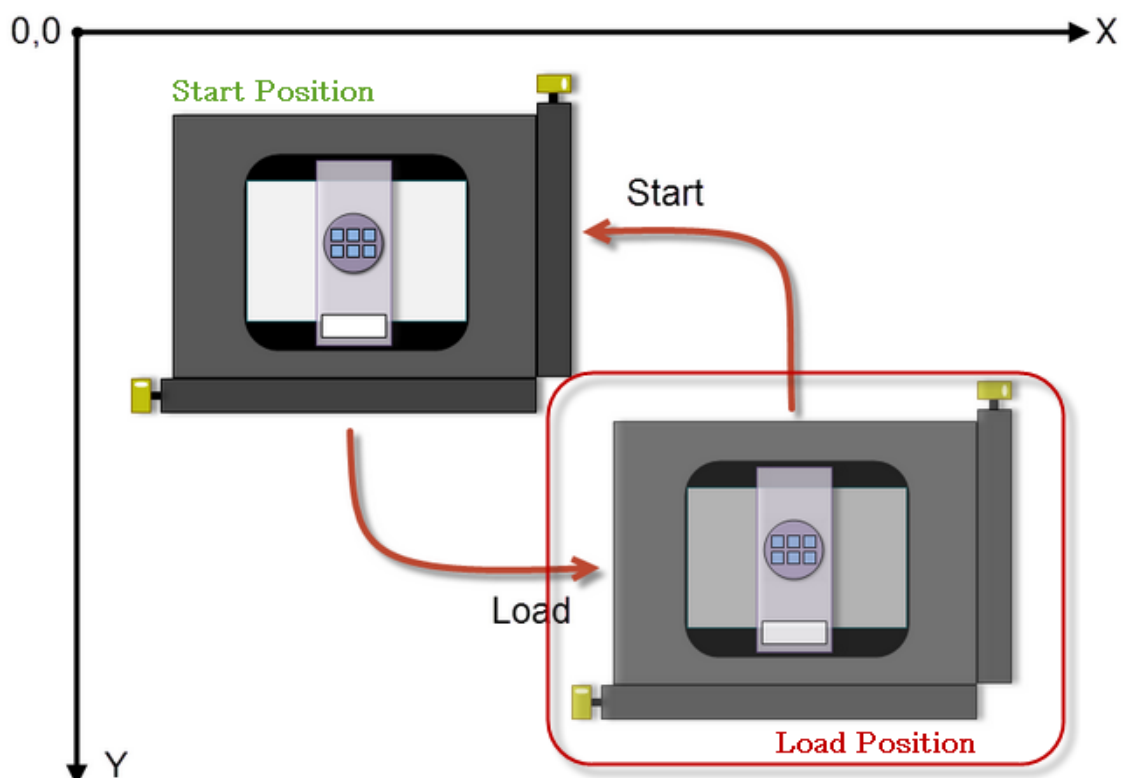
Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = the command to proceed (loadposition)

Available For: M4

CAM Command Description:

This command will move the stage to the x, y, z position as defined as load position.



Returned string:

It will return the command string which have been sent.

MatrixScreener CAM Documentation

Move the stage to the start position

Command to send

/cli:test /app:matrix /sys:1 /cmd:startposition

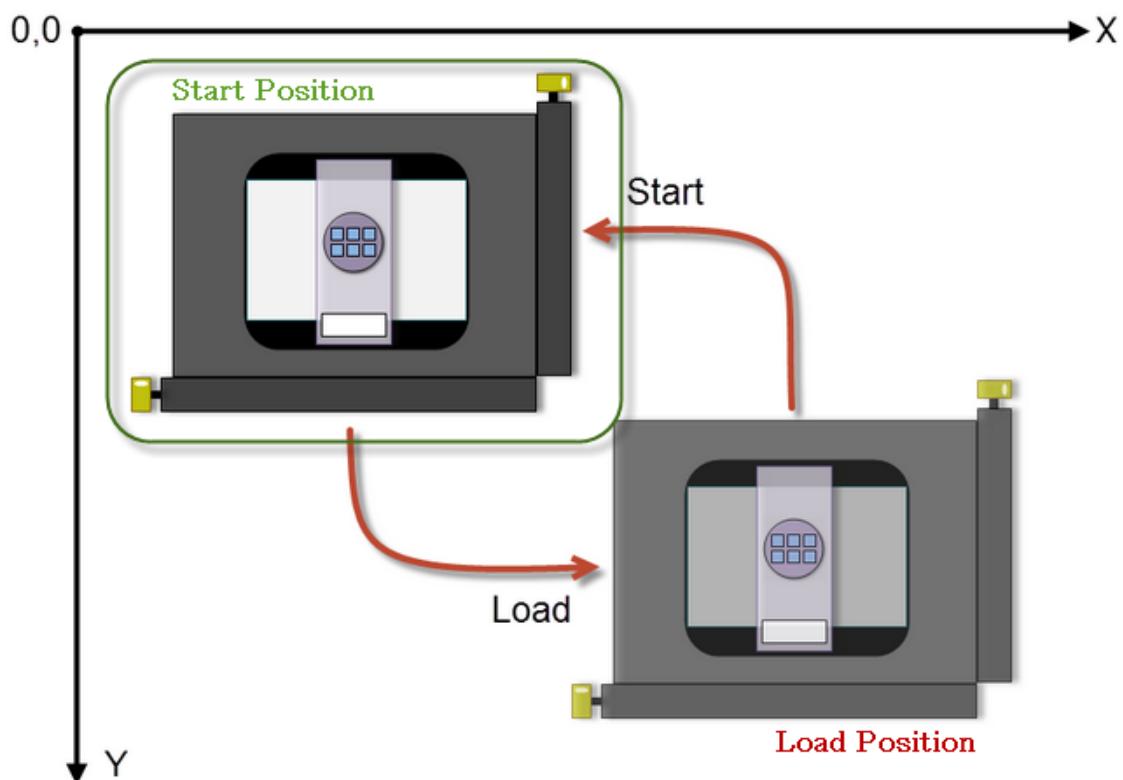
Token Description:

- /cli = Client (the name of the client send this command)
- /app: = Application (the target application for this command)
- /cmd: = the command to proceed (startposition)

Available For: M4

CAM Command Description:

This command will move the stage to the x, y, z position to the start position.



Returned string:

It will return the command string which have been sent.

MatrixScreener CAM Documentation

Bypass commands

External Bypass Commands

Command to send

`/cli:test /app:external /name:appname /cmd:whatever /par1:1 /par2:22 /par3:test /par4:1.234 /par5:true`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/name` = the name of the external application
- `/cmd:` = your choice
- `/par1:` = parameter 1 = your choice (any value)
- `/par2:` = parameter 2 = your choice (any value)
- `/par3:` = parameter 3 = your choice (any value)
- `/par4:` = parameter 4 = your choice (any value)
- `/par5:` = parameter 5 = your choice (any value)

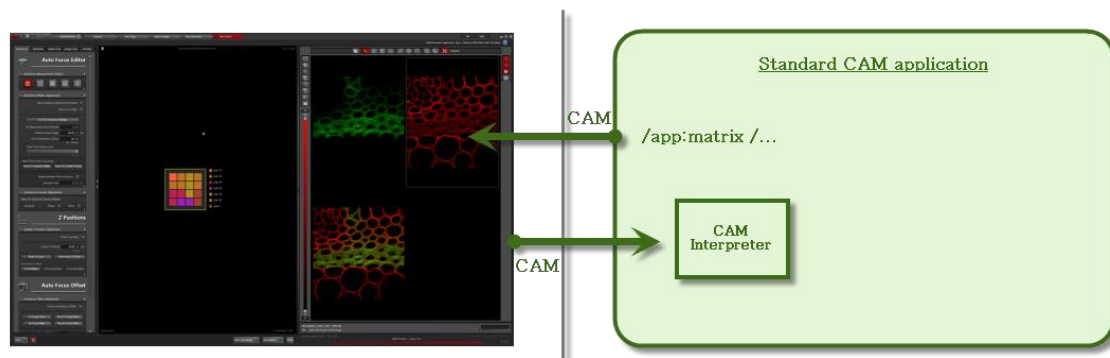
Available For: M3, M4

CAM Command Description:

This command is very powerful. It let you define your own CAM commands for any external device. An external device is any non MatrixScreener application you like to integrate into the CAM communication process.

Sample:

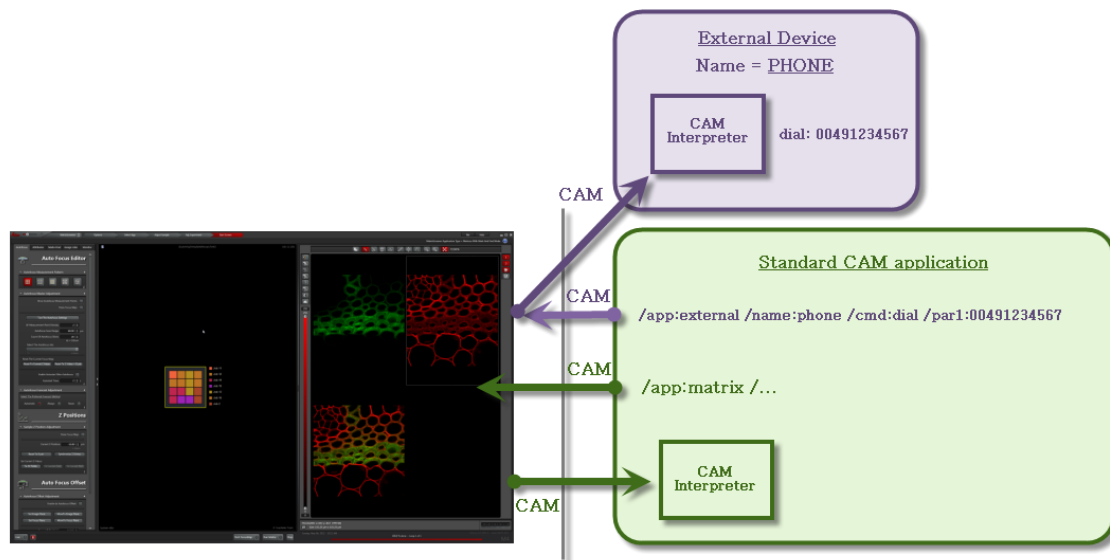
To see the benefit using this command let us make a simple sample. Let's say you are using any external software to communicate with the MatrixScreener application. In principal, this type of communication workflow looks like



MatrixScreener CAM Documentation

The `/app:external` command will allow to bypass a CAM command to any external application able to read and send CAM commands.

Now, the connection schema looks now like



In the sample we have a CAM command for an external device, let say it is a phone. Assuming that the phone has an integrated CAM interpreter (a piece of software to allow it to receive and send CAM commands), this new CAM command will allow you to send a command to the phone! The CAM server of the MatrixScreener will reflect the command to the phone.

The command to define could be

```
/cli:test /app:external /name:phone /cmd:dial /par1:00491234567
```

```
/name = phone >> the external device this CAM command is for is the phone
/cmd:  = dial  >> the command is dial ... so the phone should dial a number
/par1: = 00491234567 ... this is the phone number to dial
```

The external components can be very diverse, however, each of the external devices need to have a CAM interface to be able to connect the CAM network. As soon this requirement is valid, you can define your own CAM commands as you need to have it!

Matrix Screener CAM Documentation

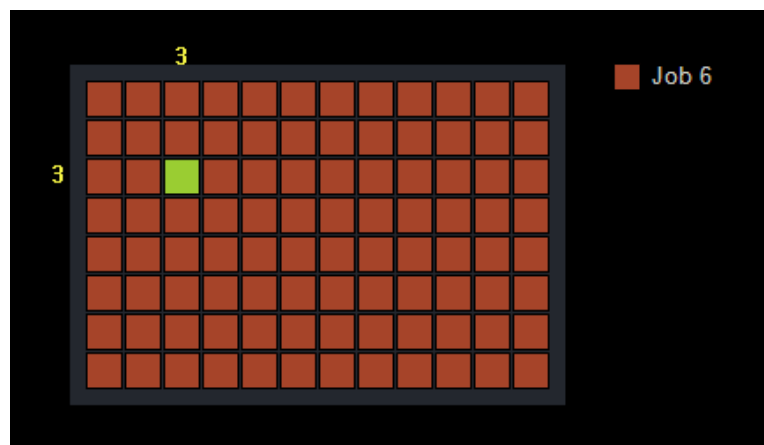
Assign jobs

To assign a job to a scan field, the scan field has to be selected first. Therefore, the job assign process need to have 2 steps

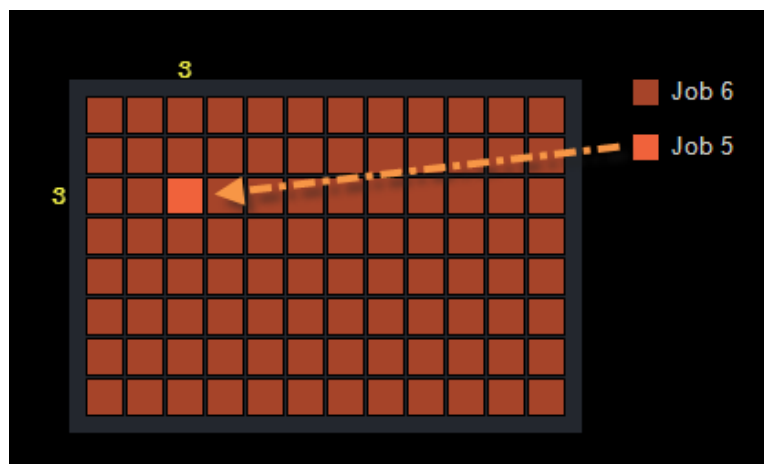
1. Select the scan field(s)
2. Assign the job

SAMPLE:

Let's assume the scan field on position X = 3, Y = 3 should get a new job. First, select this scan field



Then assign the Job you like to use at this stage position



Matrix Screener CAM Documentation

Select a single scan field

Command to send

`/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:3 /fieldy:3`

Token Description:

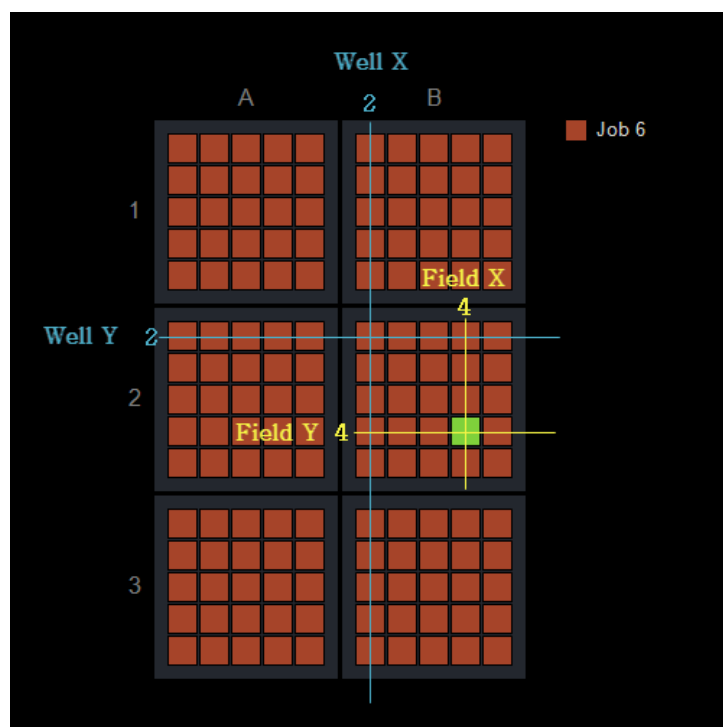
- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = selectfield (a scan field should be selected)
- `/wellx:` = the X position of the well
- `/welly:` = the Y position of the well
- `/fieldx:` = the X position of the scan field
- `/fieldy:` = the Y position of the well

Available For: M3, M4

CAM Command Description:

This command will select a dedicated scan field. This selection is required before a new job should be assigned!

Information:



MatrixScreener CAM Documentation

The first scan field in X and Y have always the co-ordinate value 1. The first well in X and Y have also always the value 1! The origin for both, scan fields as well as scan wells is always the top, left corner (within the image above this is the well "A1").

To select the scan field on position X = 4, Y = 4 of scan well on position Y = 2, Y = 2 the following CAM command should do the job

```
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:2 /welly:2 /fieldx:4 /fieldy:4
```

REMARKS:

1. If you send "*selectfield*" a CAM command this scan field will not be highlighted within the MatrixScreener user interface. The selection is silent and there will no bright green scan field indicate that this scan field was selected!
2. It is also possible to select multiple scan fields by using the "*selectfield*" CAM command multiple times

SAMPLE:

If you like to select three scan fields, simply send 3 CAM commands, one command for each scan field

```
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:2 /welly:2 /fieldx:4 /fieldy:4  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:2 /fieldx:2 /fieldy:3  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:2 /welly:3 /fieldx:1 /fieldy:5
```

MatrixScreener CAM Documentation

Select all scan fields

Command to send

`/cli:test /app:matrix /sys:0 /cmd:selectallfields`

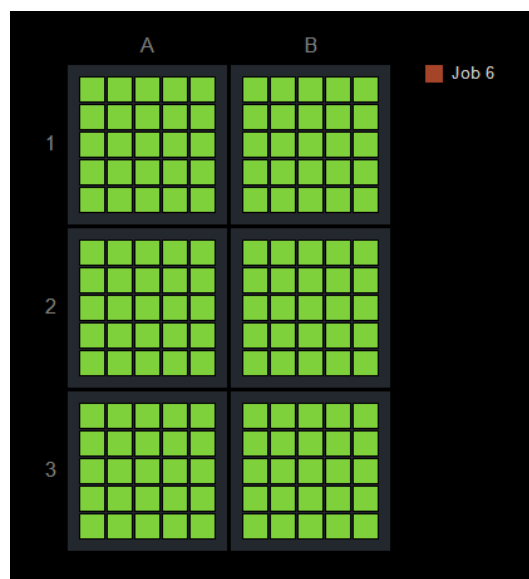
Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = *selectallfields* (all scan fields will selected)

Available For: M3, M4

CAM Command Description:

This command will select all available scan fields. This makes it easy to replace the experiment job assigned.



REMARK:

If you send "*selectallfields*" a CAM command the scan fields will not be highlighted within the MatrixScreener user interface. The selection is silent and there will no bright green scan fields indicating that this scan field was selected!

MatrixScreener CAM Documentation

Assign a job to selected scan fields

Command to send

`/cli:test /app:matrix /sys:0 /cmd:assignjob /job:job 5`

Token Description:

<code>/cli</code>	= Client (the name of the client who sent this command)
<code>/app:</code>	= Application (the target application for this command)
<code>/cmd:</code>	= <i>assignjob</i> (will assign a new job to selected scan fields)
<code>/job:</code>	= the name of the job you like to assign

Available For: M3, M4

CAM Command Description:

This command will assign the job to the selected scan fields.

REMARKS:

- Please assure that the job name is exactly written as the job name defined within the live data mode (incl. blanks). However, it doesn't matter if you use capital or small letter
- Please do not try to assign a new job name at run time (if the system is running in CAM level 0,1 or 2). The scan process should be idle if you try to assign new jobs

SAMPLE:



Matrix Screener CAM Documentation

How to select the scan fields using CAM to get a smiley?

Sample Script:

Eyes:

```
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:5 /fieldy:2  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:6 /fieldy:2  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:13 /fieldy:2  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:14 /fieldy:2  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:5 /fieldy:3  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:6 /fieldy:3  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:13 /fieldy:3  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:14 /fieldy:3
```

Nose:

```
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:9 /fieldy:6  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:10 /fieldy:6
```

Mouth:

```
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:4 /fieldy:8  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:5 /fieldy:9  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:6 /fieldy:10  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:7 /fieldy:11  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:8 /fieldy:11  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:9 /fieldy:11  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:10 /fieldy:11  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:11 /fieldy:11  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:12 /fieldy:11  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:13 /fieldy:10  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:14 /fieldy:9  
/cli:test /app:matrix /sys:0 /cmd:selectfield /wellx:1 /welly:1 /fieldx:15 /fieldy:8
```

Assign Job = Job 5:

```
/cli:test /app:matrix /sys:0 /cmd:assignjob /job:job 5
```

REMARK:

If you send a series of CAM commands, please insert a small time delay in between each CAM command, e.g. 50 ms should be enough.

Matrix Screener CAM Documentation

Assign Attributes

Enable Attributes for single scan fields

Command to send

`/cli:test /app:matrix /sys:0 /cmd:enableattribute /slide:0 /wellx:1 /welly:1 /fieldx:3 /fieldy:4 /drift:true /track:true /pump:true`

Token Description:	<code>/cli</code> = Client (the name of the client who sent this command)
	<code>/app:</code> = Application (the target application for this command)
	<code>/cmd:</code> = <i>enableattribute</i> (enable or disable attributes) fields)
	<code>/slide</code> = The slide number
	<code>/wellx</code> = The well position in x direction
	<code>/welly</code> = The well position in y direction
	<code>/fieldx</code> = The field position in x direction
	<code>/fieldy</code> = The field position in y direction
	<code>/drift</code> = true / false = enable / disable drift compensation
	<code>/track</code> = true / false = enable / disable tracking
	<code>/pump</code> = true / false = enable / disable the pump feature

Available For: M3, M4

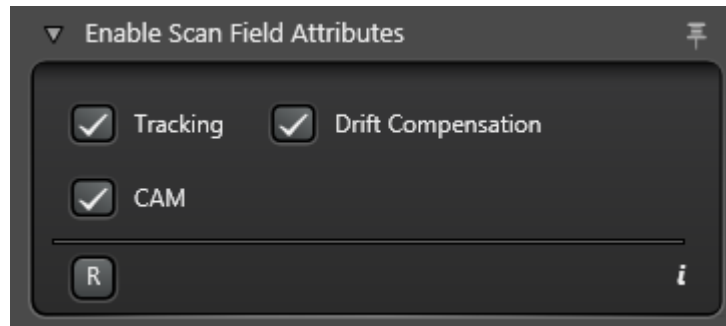
CAM Command Description:

This command will enable or disable the attributes for the specified scan fields.

REMARK:

To use this feature, please make sure that you have selected the checkbox to enable the attribute(s) you like to set with a CAM command!

Matrix Screener CAM Documentation



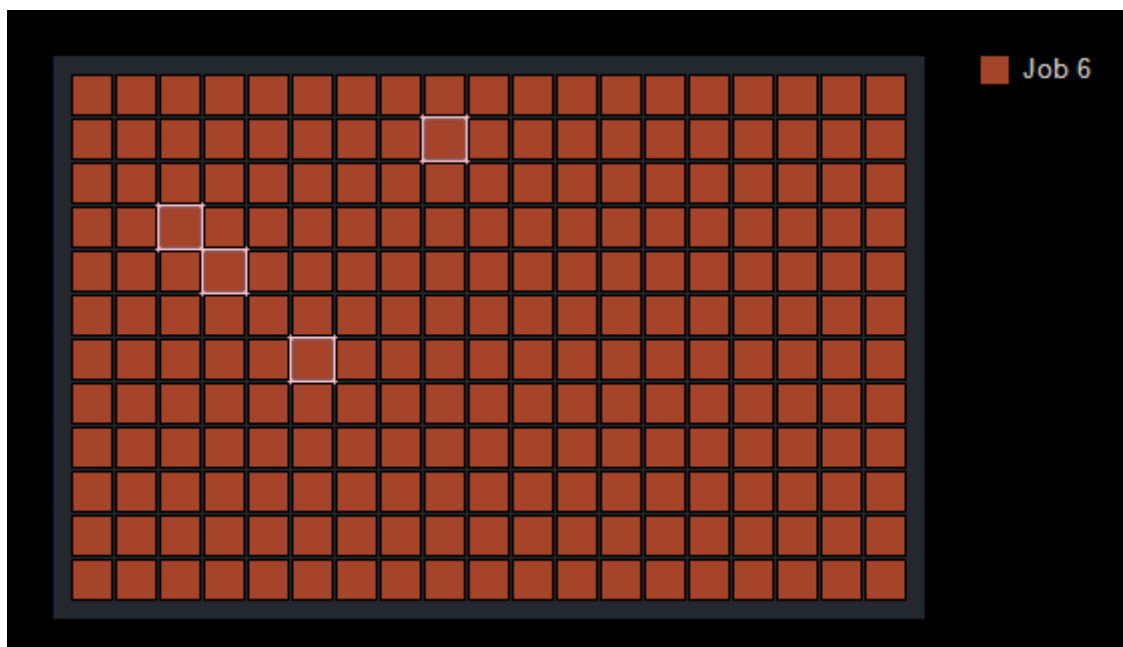
SAMPLE:

```
/cli:test /app:matrix /sys:0 /cmd:enableattribute /slide:0 /wellx:1 /welly:1 /fieldx:3 /fieldy:4  
/drift:true /track:false /pump:false
```

```
/cli:test /app:matrix /sys:0 /cmd:enableattribute /slide:0 /wellx:1 /welly:1 /fieldx:4 /fieldy:5  
/drift:true /track:false /pump:false
```

```
/cli:test /app:matrix /sys:0 /cmd:enableattribute /slide:0 /wellx:1 /welly:1 /fieldx:6 /fieldy:7  
/drift:true /track:false /pump:false
```

```
/cli:test /app:matrix /sys:0 /cmd:enableattribute /slide:0 /wellx:1 /welly:1 /fieldx:9 /fieldy:2  
/drift:true /track:false /pump:false
```



REMARK:

If you send a series of CAM commands, please insert a small time delay in between each CAM command, e.g. 50 ms should be enough.

MatrixScreener CAM Documentation

Enable Attributes for all scan fields

Command to send

/app:matrix /cmd:enableattribute /drift:true /track:false /pump:false

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = **enableattribute** (enable or disable attributes) fields
- /drift = true / false = enable / disable drift compensation
- /track = true / false = enable / disable tracking
- /pump = true / false = enable / disable the pump feature

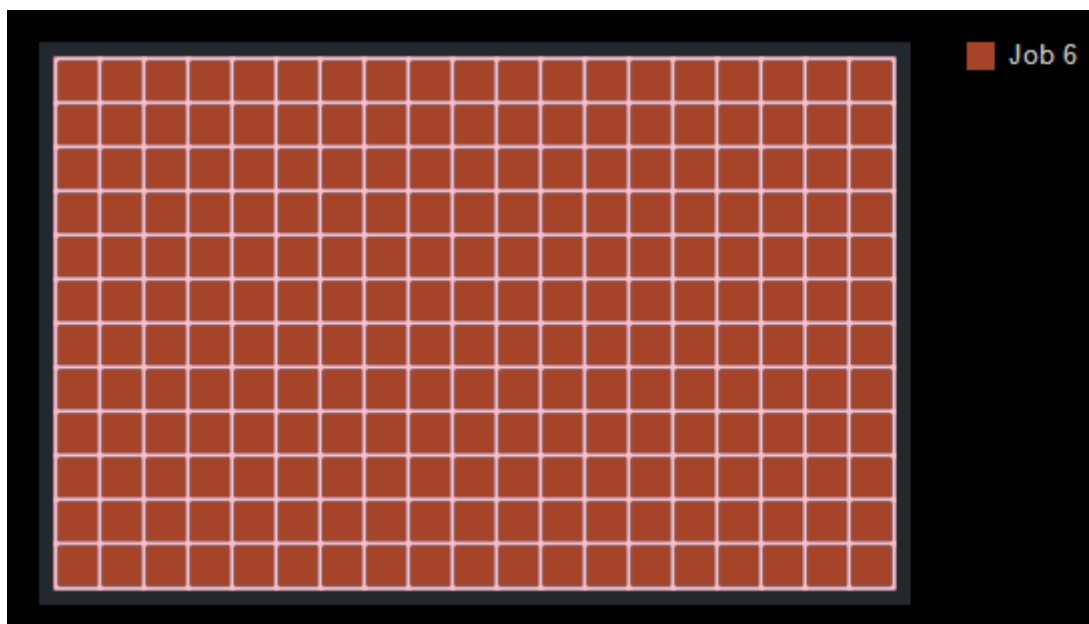
Available For: M3, M4

CAM Command Description:

This command will enable or disable the attributes for all(!) scan fields.

REMARK:

To use this feature, please make sure that you have selected the checkbox to enable the attribute(s) you like to set with a CAM command!



MatrixScreener CAM Documentation

Conditional CAM commands

Skip the waiting message box

Command to send

`/cli:test /app:matrix /sys:1 /cmd:stopwaitingforcam`

Token Description:

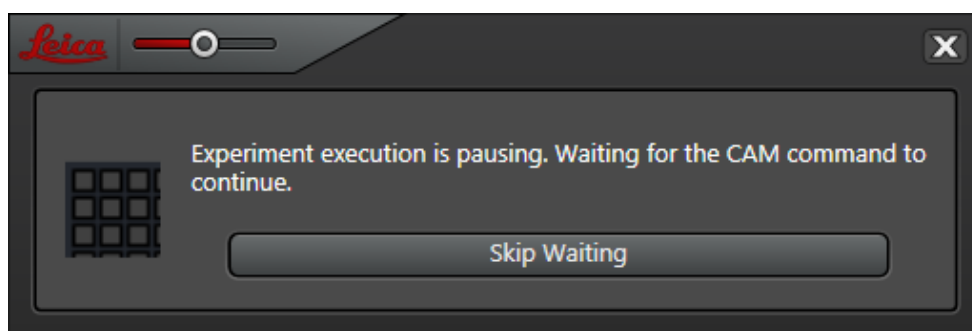
- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = *stopwaitingforcam*

Available For: M3, M4

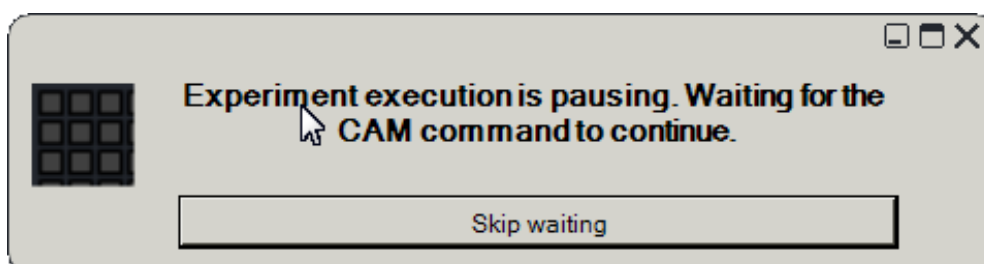
CAM Command Description:

This command will close the “*Skip Waiting*” message box. It will allow you to stop the current running procedure and to wait until any external condition was fulfilled. Then the scanning procedure will go ahead.

SP8:



SP5:

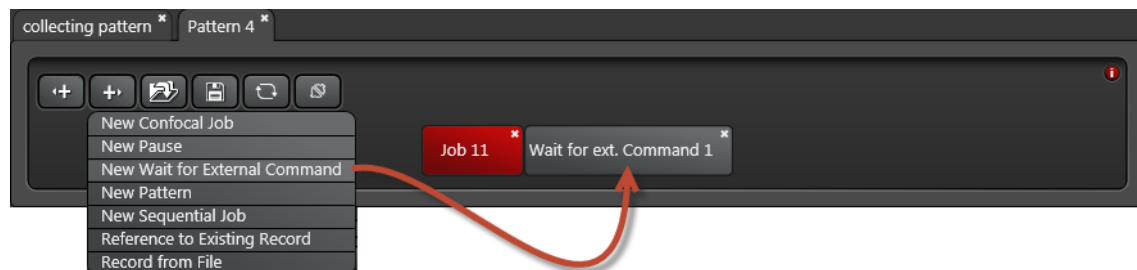


MatrixScreener CAM Documentation

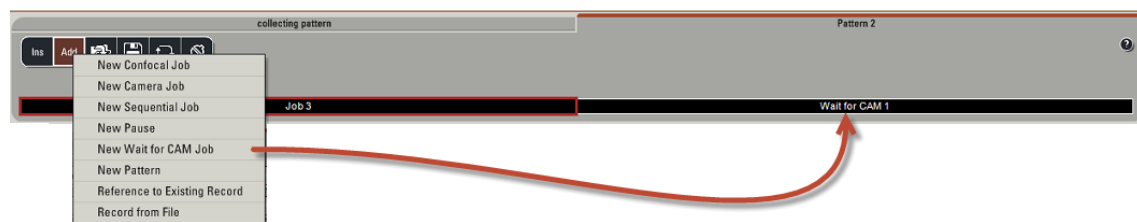
REMARK:

This experiment adjustment requires a special pattern looking like

SP8:

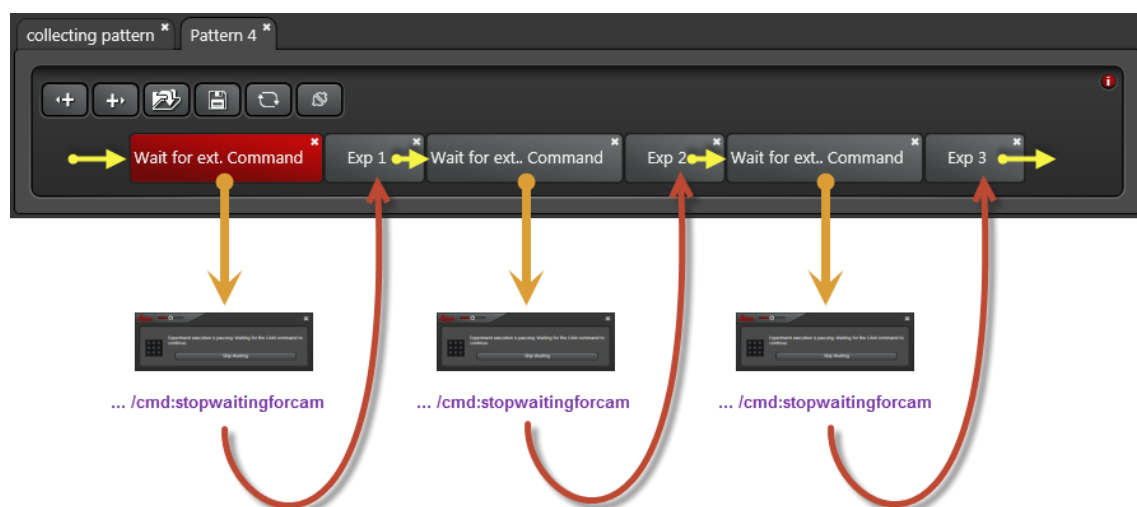


SP5:



SAMPLE:

Let us assume that we have a pattern with 3 jobs, and before we start one of this three jobs, the system has to wait until an external condition was fulfilled. The experiment setup would be now



MatrixScreener CAM Documentation

Skip waiting extended

Command to send

```
/cli:test /app:matrix /sys:1 /cmd:skip /slide:0 /wellx:1 /welly:1 /fieldx:3 /fieldy:4 /mode:9  
/cli: test /app:matrix /sys:1 /cmd:skip /mode:0  
/cli: test /app:matrix /sys:1 /cmd:skip /mode:1  
/cli: test /app:matrix /sys:1 /cmd:skip /mode:2  
/cli: test /app:matrix /sys:1 /cmd:skip /mode:3  
/cli: test /app:matrix /sys:1 /cmd:skip /mode:4  
/cli: test /app:matrix /sys:1 /cmd:skip /mode:5  
/cli: test /app:matrix /sys:1 /cmd:skip /mode:6  
/cli: test /app:matrix /sys:1 /cmd:skip /mode:7  
/cli: test /app:matrix /sys:1 /cmd:skip /mode:8
```

Token Description:

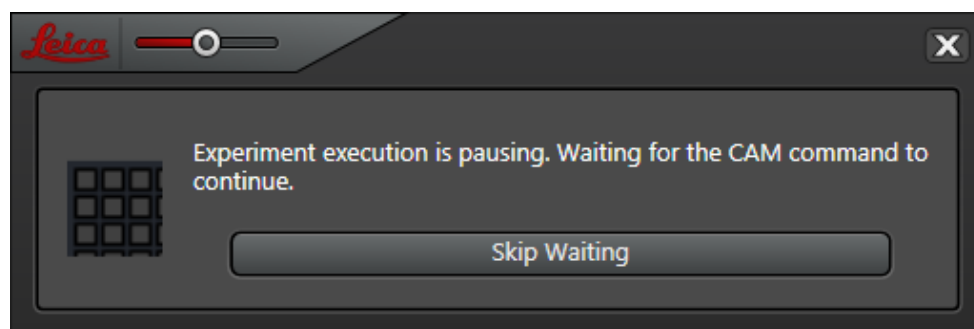
- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = *skip*
- /mode: = different modes are available (see below)

Available For: M4

CAM Command Description:

This command will also close the “Skip Waiting” message box. However, after the message box has been closed, the additional parameter “*mode*” allows fine adjustment of the behavior as to how the experiment will go ahead as soon the (“Skip Waiting”) message box was closed.

SP8:



MatrixScreener CAM Documentation

Mode 0

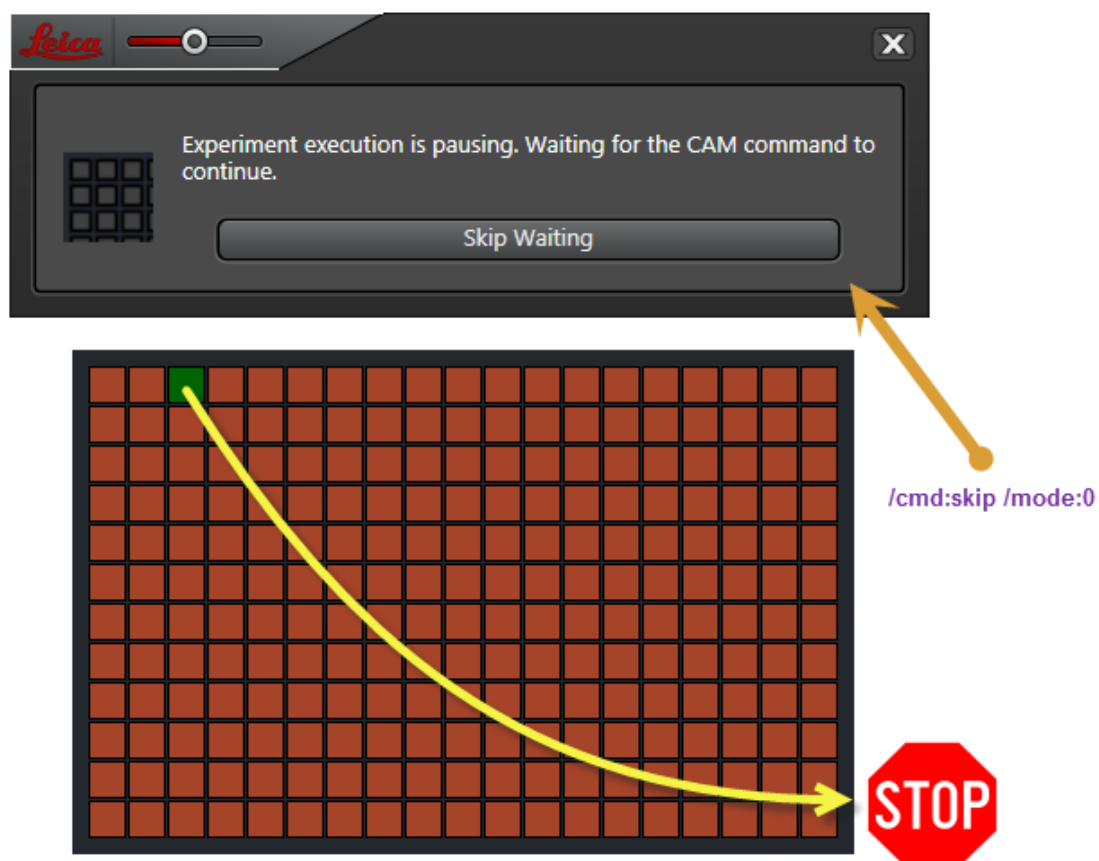
`/cli: test /app:matrix /sys:1 /cmd:skip /mode:0`

Available For: M4

CAM Command Description:

The Mode = 0 will close the "Skip Waiting" message box and will stop the currently running experiment! This skip modus can be useful if anything is going wrong with the experiment and if it should be stopped. Because this skip mode is under external control, external image analysis can be designed to become able to make an "experiment stop" decision.

SAMPLE:



REMARK:

This mode will immediately stop the experiment, doesn't matter how many additional wait jobs has been defined within the current pattern!

MatrixScreener CAM Documentation

Mode 1

/cli: test /app:matrix /sys:1 /cmd:skip /mode:1

Available For: M4

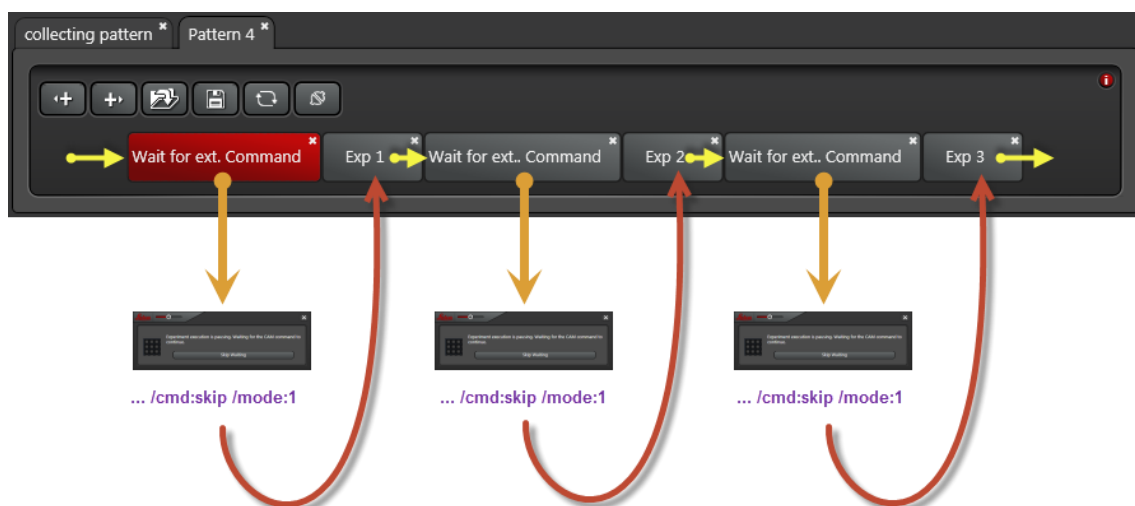
CAM Command Description:

The Mode = 1 will close the “Skip Waiting” message box and will proceed the next job. This behavior of this mode is similar to

/cli:test /app:matrix /sys:1 /cmd:stopwaitingforcam

SAMPLE:

Let us assume that we have a pattern with 3 jobs, and before we start one of this three jobs, the system has to wait until an external condition was fulfilled. The experiment setup would now be



TIP:

If you use the “Wait For External Command” as a regular job, you can also let the experiment wait on any position within the MatrixScreener experiment. Simply assign this “Wait For External Command” as a standard job to the scan field!

MatrixScreener CAM Documentation

Mode 2

/cli: test /app:matrix /sys:1 /cmd:skip /mode:2

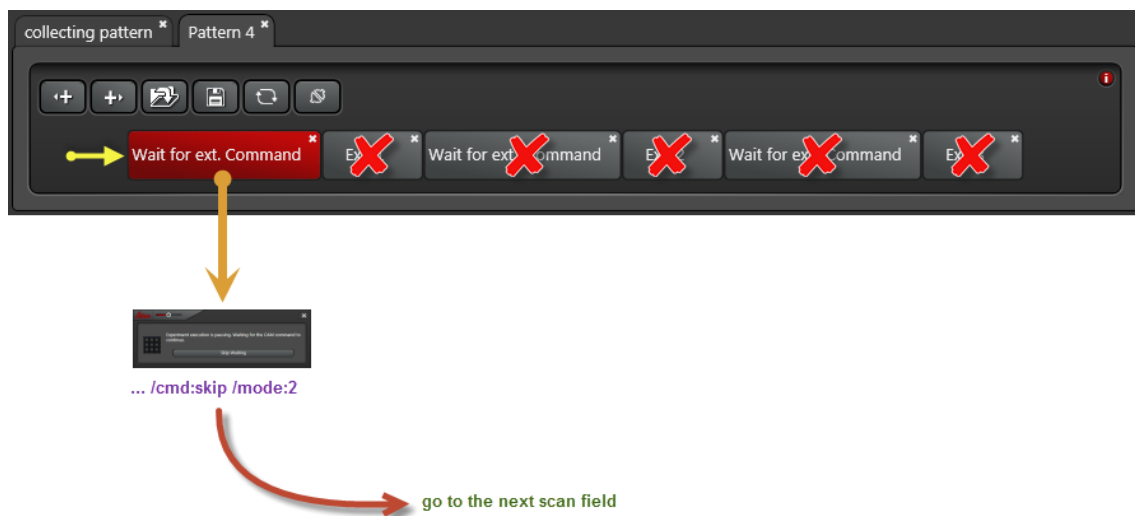
Available For: M4

CAM Command Description:

The Mode = 2 will close the “Skip Waiting” message box and will leave the current pattern, doesn't matter how many additional “Wait For External Command” jobs has been defined within this pattern. The MatrixScreener will leave the current pattern and will run the job of the next scan field.

SAMPLE:

Let us assume that we have a pattern with 3 jobs. If we send the skip command with mode = 2, the rest of the whole pattern will ignored. The system will move directly to the next scan field!



ATTENTION:

If you use the “Wait For External Command” as a regular job for a single scan field the skip command with mode = 2 will directly stop the experiment! The behavior is similar as the mode = 0.

Matrix Screener CAM Documentation

Mode 3

/cli: test /app:matrix /sys:1 /cmd:skip /mode:3

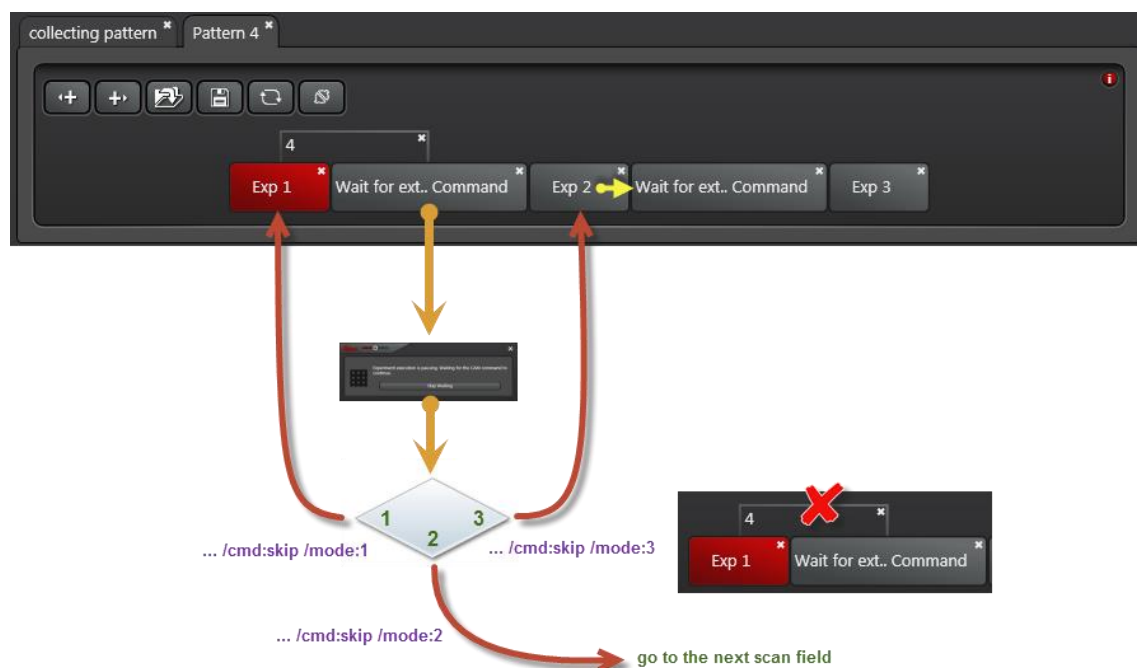
Available For: M4

CAM Command Description:

The Mode = 3 will close the “Skip Waiting” message box and will leave the current loop that was defined within the current pattern and will go ahead with the next job within the current pattern outside the loop! This requires not the “Skip Waiting” message box!

SAMPLE:

Within the sample we use 3 different skip modes. This will allow to define a much more complex condition to influence the current experiment workflow if a special external condition was detected.



- Leave the current loop and go ahead with the next job outside the loop
`/cmd:skip /mode:3`
- Go ahead with the next job within the current loop
`/cmd:skip /mode:1`
- Leave the current loop and(!) the current pattern and go ahead with the next scan field
`/cmd:skip /mode:2`

Matrix Screener CAM Documentation

Mode 4

`/cli: test /app:matrix /sys:1 /cmd:skip /mode:4`

Available For: M4

CAM Command Description:

The Mode = 4 will interrupt the current pattern and will go to the next scanfield. This requires not the “Skip Waiting” message box! This does not require the “Skip Waiting” message box.

SAMPLE:

Within the sample we use jobs only. Let us assume that the current job running is the job with experiment = “Exp 2”.

As soon the CAM command

`/cmd:skip /mode:4`

was detected, the rest of the experiment within the pattern (*Exp 3, Exp 4, Exp 5, Exp 6*) will ignored and the system will leave this pattern and will go to the next scan field.



REMARK:

The current running experiment within the pattern (in our sample it is “Exp 2”) is not interrupted! The process of this pattern will run until the “Exp 2” is ready before it is going to the next scan field.

MatrixScreener CAM Documentation

Mode 5

`/cli: test /app:matrix /sys:1 /cmd:skip /mode:5`

Available For: M4

CAM Command Description:

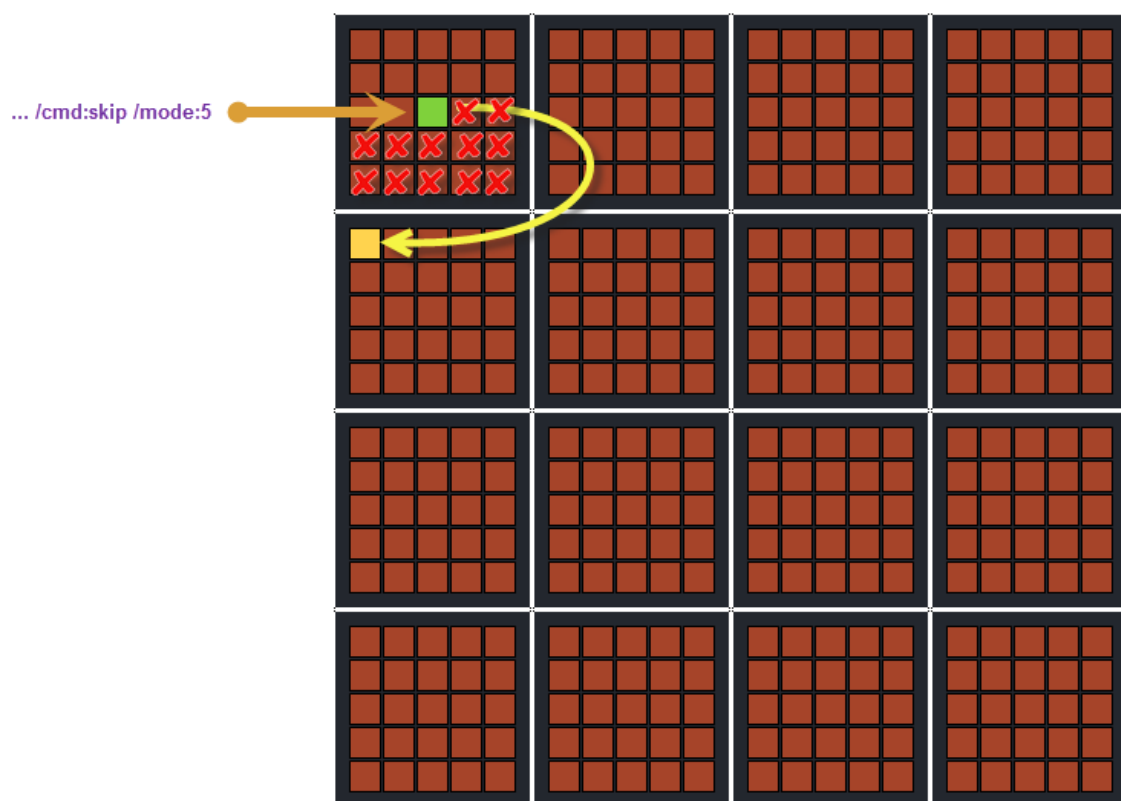
The Mode = 5 will interrupt the current scan of the scan field and will ignore all remaining scan fields of the current well. Instead, the system moves to the first field of the next scan Well!

This does not require the "Skip Waiting" message box.

SAMPLE:

Within the sample we use jobs only. Let us assume that the current experiment is running on scan field X = 3, Y = 3 within the first well. Some scan fields remaining to scan.

Now, the skip command with mode = 5 will ignore all the remaining scan fields of well 1 and will jump directly to the first scan field of the next scan well!



MatrixScreener CAM Documentation

Mode 6

`/cli: test /app:matrix /sys:1 /cmd:skip /mode:6`

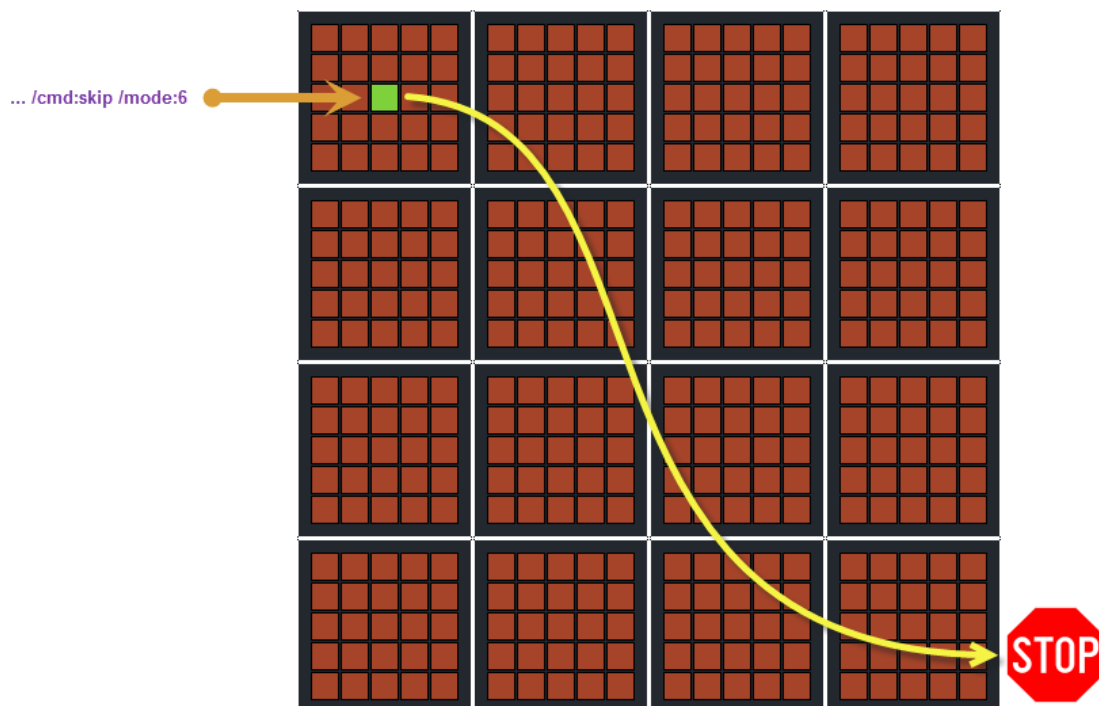
Available For: M4

CAM Command Description:

The Mode = 6 will interrupt the current and will stop it. This does not require the “Skip Waiting” message box.

SAMPLE 1:

Here we do not need a skip waiting message box.



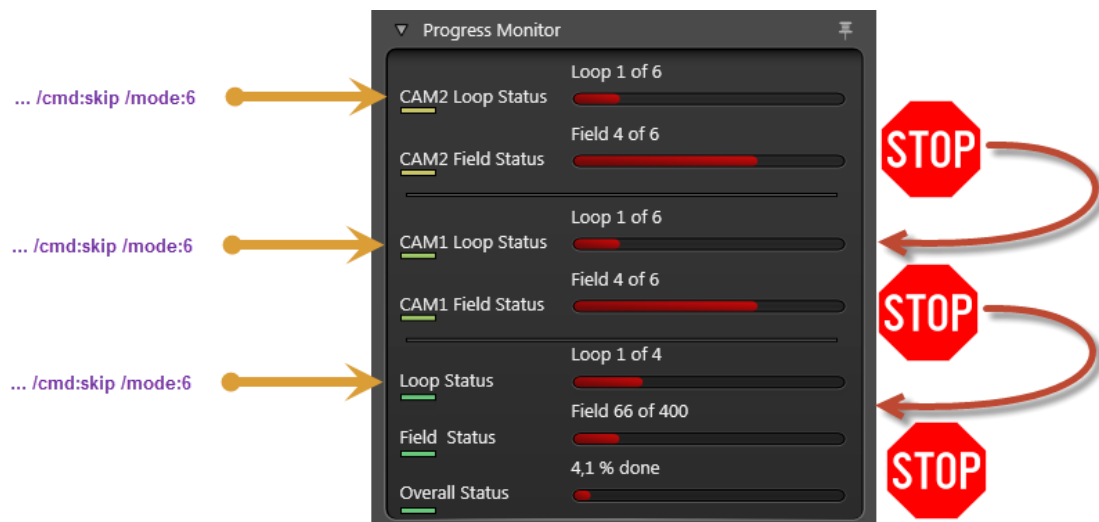
MatrixScreener CAM Documentation

SAMPLE 2:

In case your experiment is running on CAM level 1 or CAM level 2, the skip command

`/cmd:skip /mode:6`

Will interrupt the current CAM level experiment and will return to the next, lower CAM level!



The behavior is:

If CAM Level 2 is active

➔ Stop CAM level 2 and return to CAM level 1

If CAM Level 1 is active

➔ Stop CAM level 1 and return to CAM level 0

If CAM Level 0 is active

➔ Stop the experiment

Matrix Screener CAM Documentation

Mode 7

/cli: test /app:matrix /sys:1 /cmd:skip /mode:7

Available For: M4

CAM Command Description:

... currently not implemented ...

Mode 8

/cli: test /app:matrix /sys:1 /cmd:skip /mode:8

Available For: M4

CAM Command Description:

... currently not implemented ...

MatrixScreener CAM Documentation

Mode 9

```
/cli:test /app:matrix /sys:1 /cmd:skip /slide:0 /wellx:2 /welly:3 /fieldx:3 /fieldy:4 /mode:9
```

Available For: M4

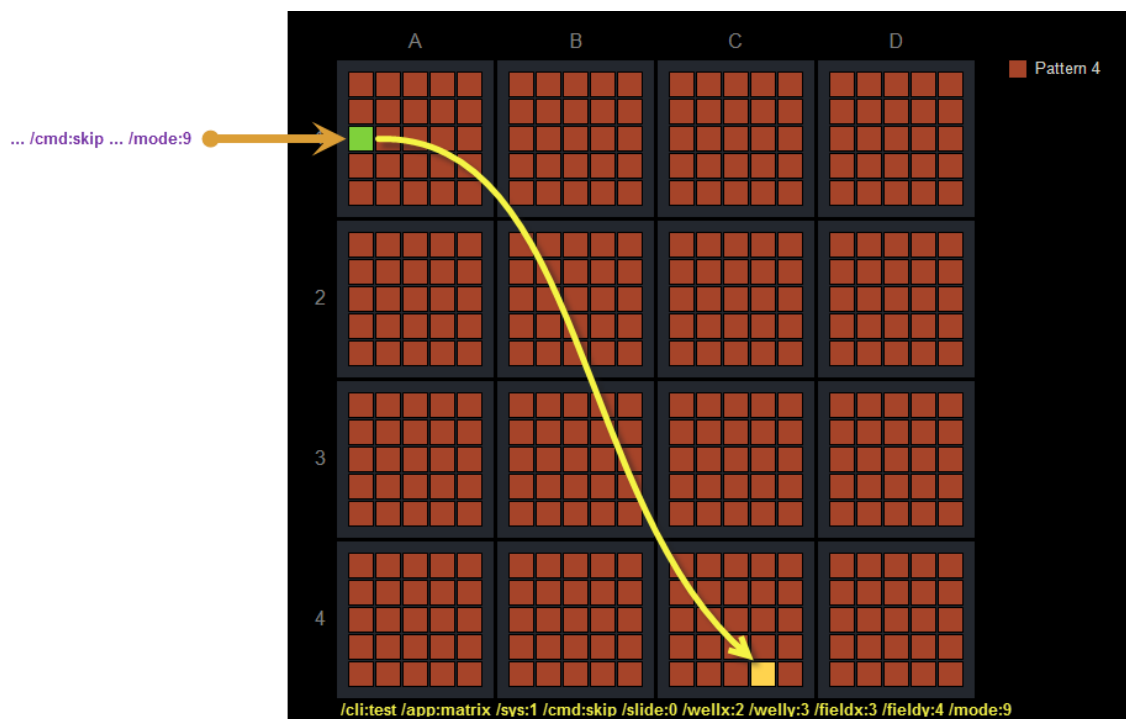
CAM Command Description:

The Mode = 9 will interrupt the current scan of the scan field and will go to the specified scan field. It will ignore all scan fields in between. This does not require the “Skip Waiting” message box.

SAMPLE:

Let us assume we are in well A1 and currently the system is scanning the [fieldX, fieldY] = [1, 3] (this is the green scan field). Now we send the CAM command

```
/cli:test /app:matrix /sys:1 /cmd:skip /slide:0 /wellx:2 /welly:3 /fieldx:3 /fieldy:4 /mode:9
```



The system will skip the current process and will move to well [wellX, wellY] = [2, 3] and scan [fieldX, fieldY] = [3, 4].

Matrix Screener CAM Documentation

Mark And Find (MAF) Commands

Add a new X,Y,Z A Position to the MAF list

Command to send

```
/cli:test /app:matrix /sys:1 /cmd:maf /scmd:addyza /xpos:23.45 /ypos:1,23 /zpos:123.4 /alpha:2.3
```

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = *maf*
- /scmd: = *addyza*
- /xpos: = the X position of the MAF point (Unit = μm)
- /ypos: = the Y position of the MAF point (Unit = μm)
- /zpos: = the Z position of the MAF point (Unit = μm ; AF Z-Drive)
- /alpha: = angle of the scan field rotation (Abbe-Koenig prism)
(SP8 and if available)

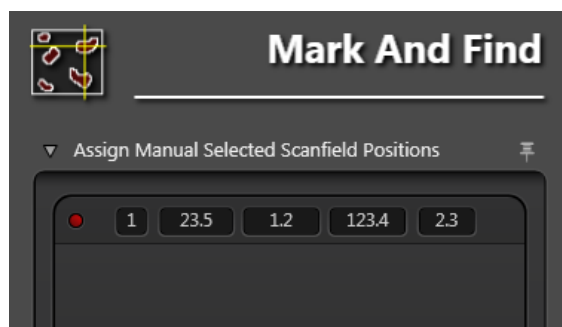
Short Name: MAF = Mark And Find

Available For: M4

CAM Command Description:

This command will add insert an x, y, z, a position to the MAF-List (Mark And Find - List). The command allows the user to define MAF positions externally and will create the possibility to generate any type of MAF pattern.

SAMPLE:



The CAM command above will add the new MAF position (center of the field)

- X = 23.5 μm (= 23.45 μm rounded)
- Y = 1.2 μm (= 1.23 μm rounded)
- Z = 123.4 μm (AF z-Drive value)
- A = 2.3 °

Matrix Screener CAM Documentation

Add a new X,Y,Z Position to the MAF list

Command to send

`/cli:test /app:matrix /sys:1 /cmd:maf /scmd:addxyz /xpos:3.4 /ypos:12,7 /zpos:12.3`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = *maf*
- `/scmd:` = *addxyz*
- `/xpos:` = the X position of the MAF point (Unit = μm)
- `/ypos:` = the Y position of the MAF point (Unit = μm)
- `/zpos:` = the Z position of the MAF point (Unit = μm ; AF Z-Drive)

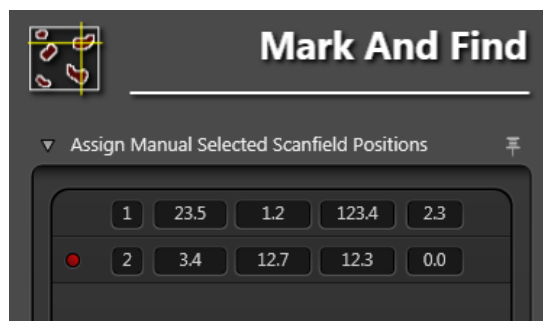
Short Name: MAF = Mark And Find

Available For: M4

CAM Command Description:

This command will add insert an x, y, z position to the MAF-List (Mark And Find - List). The command allows the definition of MAF positions externally and will create the possibility to generate any type of MAF pattern. The alpha value, so far an Abbe-Koenig prism available (a special add on for SP8 systems only), is the currently adjusted alpha value.

SAMPLE:



The CAM command above will add the new MAF position

- X = 3.4 μm
- Y = 12.7 μm
- Z = 12.3 μm (AF z-Drive value)

For the alpha value the system will overtake the currently adjusted angle of the Abbe-Koenig prism.

Matrix Screener CAM Documentation

Add a new X,Y Position to the MAF list

Command to send

/cli:test /app:matrix /sys:1 /cmd:maf /scmd:addy /xpos:34.1 /ypos:438.7

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = *maf*
- /scmd: = *addy*
- /xpos: = the X position of the MAF point (Unit = μm)
- /ypos: = the Y position of the MAF point (Unit = μm)

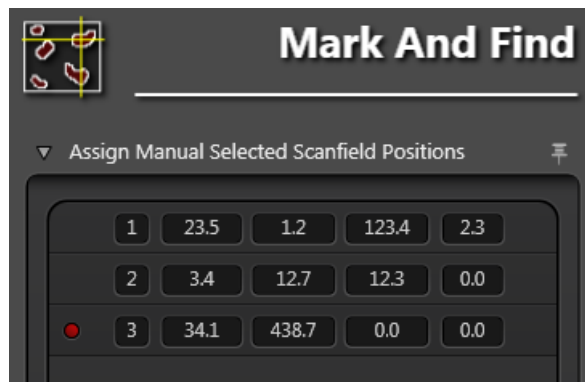
Short Name: MAF = Mark And Find

Available For: M4

CAM Command Description:

This command will add an x, y position to the MAF-List (Mark And Find - List). The command allows the definition of MAF positions externally and will create the possibility to generate any type of MAF pattern. The alpha value, so far an Abbe-Koenig prism available (a special add on for SP8 systems only), is the currently adjusted alpha value. The z-position will be the currently adjusted z-value of the z-drive of the autofocus job used.

SAMPLE:



The CAM command above will add the new MAF position

- X = 34.1 μm
- Y = 438.7 μm

For the alpha value the system will overtake the currently adjusted angle of the Abbe-Koenig prism. The z-value is the currently adjusted auto focus z-drive z value.

MatrixScreener CAM Documentation

Delete the current MAF list

Command to send

/cli:test /app:matrix /sys:1 /cmd:maf /scmd:delete

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = *maf*
- /scmd: = *delete*

Short Name: MAF = Mark And Find

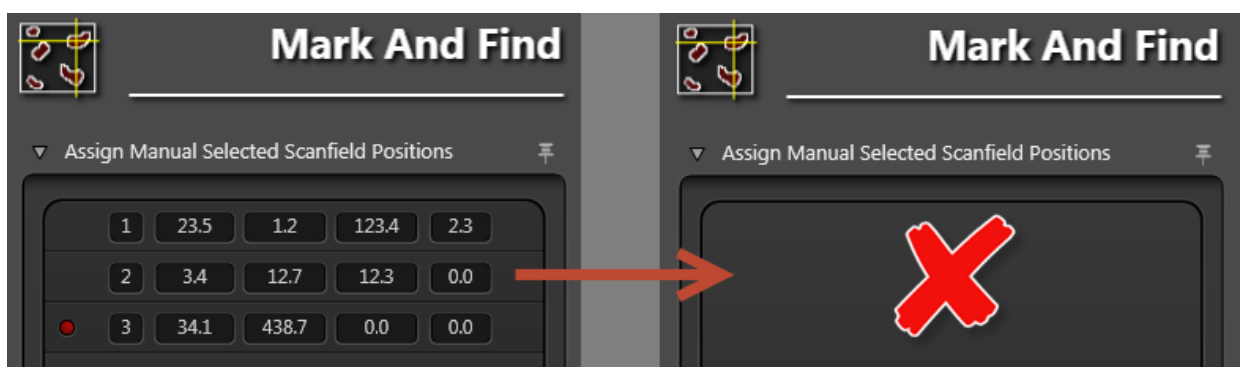
Available For: M4

CAM Command Description:

This command will delete the MAF-list (Mark And Find - List).

SAMPLE:

The CAM command above will delete the current MAF list



MatrixScreener CAM Documentation

Load an existing MAF file

Command to send

```
/cli:test /app:matrix /sys:1 /cmd:maf /scmd:load /fil:{MarkAndFind}MFTest.xml
```

Token Description:

- /cli = Client (the name of the client send this command)
- /app: = Application (the target application for this command)
- /cmd: = *maf*
- /scmd: = *load*
- /fil: = the file name of the MAF file incl. {MarkAndFind} prefix

Short Name: MAF = Mark And Find

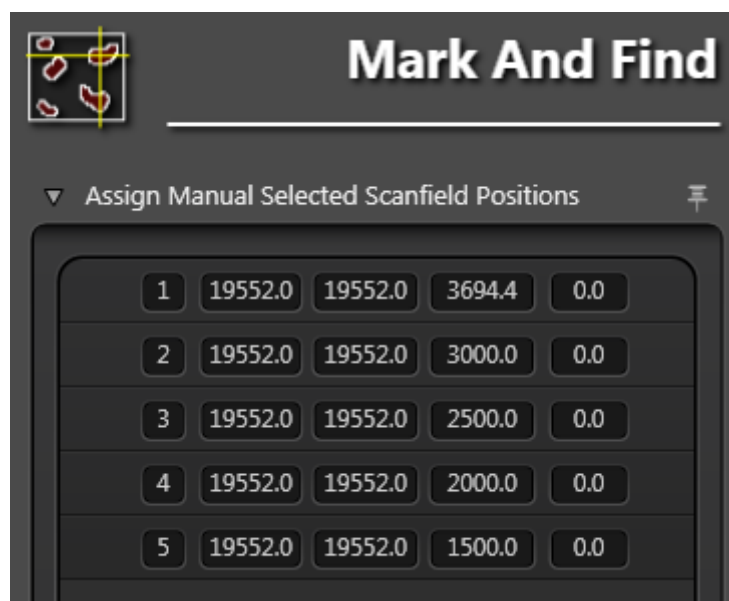
Available For: M4

CAM Command Description:

This command will load a previously saved MAF-file (Mark And Find - file). Please ensure that the prefix "{MarkAndFind}" and also the extension ".xml" is given in the file name. The folder where the MatrixScreener will save the MAF files, will automatically selected. It is the folder where the MAF-files typically saved.

SAMPLE:

The CAM command above will load the specified MAF-file



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MatrixScreener CAM Documentation

Save the current MAF-List to a MAF-File

Command to send

/cli:test /app:matrix /sys:1 /cmd:maf /scmd:save /fil:{MarkAndFind}MFTTest3.xml

Token Description:

- /cli = Client (the name of the client who sent this command)
- /app: = Application (the target application for this command)
- /cmd: = *maf*
- /scmd: = *save*
- /fil: = the file name of the MAF file to save

Short Name: MAF = Mark And Find

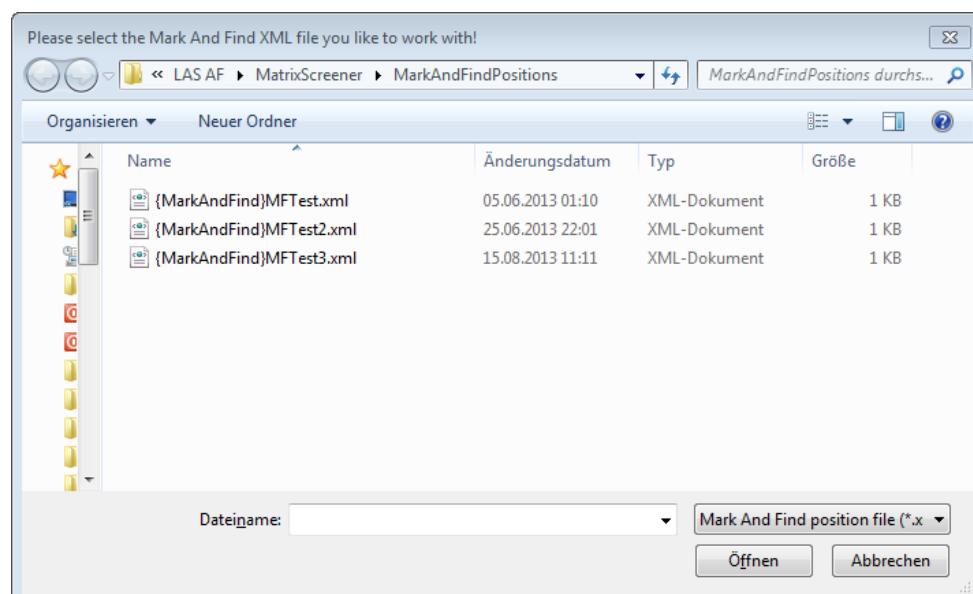
Available For: M4

CAM Command Description:

This command will save the current MAF-List (Mark And Find - list). Please ensure that the prefix “{MarkAndFind}” and also the extension “.xml” is given in the file name. The folder where the MatrixScreener will save the MAF files, will automatically selected.. The MAF-file will saved within the “MarkAndFindPositions” folder.

SAMPLE:

The CAM command above will save the current MAF-list with the name of the specified MAF-file



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MatrixScreener CAM Documentation

Assign the current MAF-List to a well

Command to send

`/cli:test /app:matrix /sys:1 /cmd:maf /scmd:toselected /wellx:2 /welly:2`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = *maf*
- `/scmd:` = *toselected*
- `/wellx:` = the well position in X-direction
- `/welly:` = the well position in Y-direction

Short Name: MAF = Mark And Find

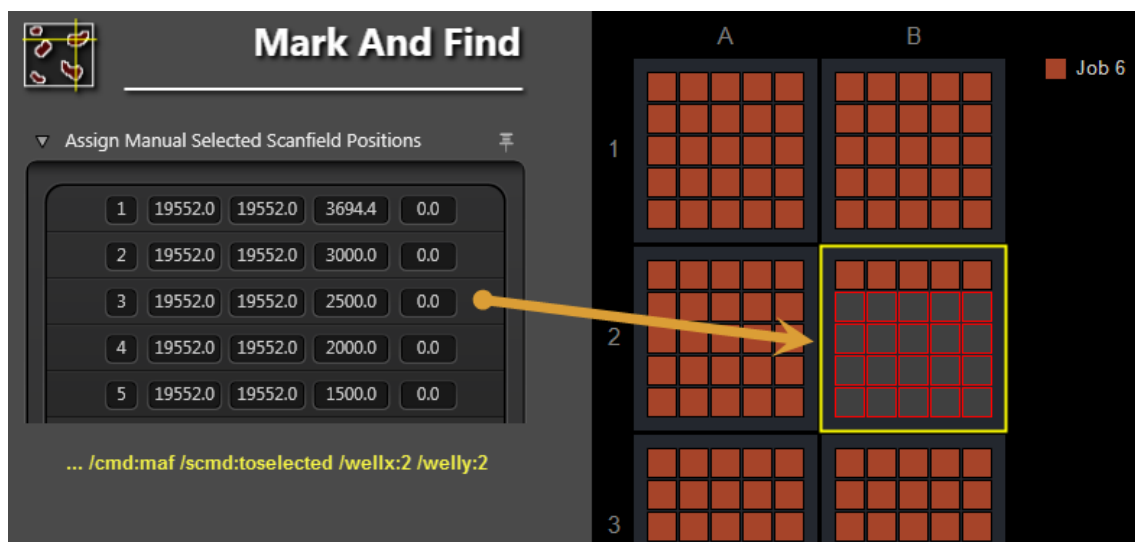
Available For: M4

CAM Command Description:

This command will assign the MAF-list (Mark And Find - List) positions to the defined well. The well position [wellx, welly] = [1,1] is the first well in the left, upper corner of the well plate!

SAMPLE:

The CAM command above will assign the current MAF-list to the well on position [wellx, welly] = [2, 2]



Matrix Screener CAM Documentation

Assign the current MAF-List to all wells

Command to send

`/cli:test /app:matrix /sys:1 /cmd:maf /scmd:toall`

Token Description:

- `/cli` = Client (the name of the client who sent this command)
- `/app:` = Application (the target application for this command)
- `/cmd:` = *maf*
- `/scmd:` = *toall*

Short Name: MAF = Mark And Find

Available For: M4

CAM Command Description:

This command will assign the MAF-list (Mark And Find - List) positions to all wells.

SAMPLE:

The CAM command above will assign the current MAF-list to all wells

