

SOAR LASER Clear House Software User's Manual

SOAR Adaptive Module (SAM)

Revision 1.1

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Chapter: 1 Getting Things Running

This user manual is intended to describe the use of the SOAR LASER Clear House software (SLCH) from a user's point of view. It is not a programming manual.

1.1 Starting the SLCH Software

- a) In the AOM computer, log in the vnc session number 3 as user slch.
- b) Press the icon SLCH to automatically start the SLCH application
- c) Optionally open a shell window and invoke the SLCH starting script with the following command:

```
% cd /home/slch/APPROOT/SLCH
% ./SLCH.csh
```

- d) In case there is another SLCH application already running or any still pending SLCH process from a defunct previous execution, a dialog will appear asking for confirmation in stopping any already running SLCH process. After accepting that procedure, the starting command or starting button needs to be retried.

- e) Once the main GUI is displayed (SLCH_Devince.vi), press the INIT button to leave the Application STATE in RUNNING sand the Communications State in IDLE.

1.2 Stopping the Instrument Control Software

To stop the SLCH application press the button OFFLINE in the main GUI, wait until the Communications State gets to OFFLINE, and then press the button SHUTDOWN.

1.3 Environment Variable APPROOT

The location of the SLCH application is defined by the APPROOT environment variable included in the .cshrc file, plus the SLCH subdirectory. Right now this variable is pointed to the /home/slch/APPROOT directory.

Chapter: 2 GUI Reference

When the application starts the user is presented with 2 windows. The user interface of the application, SLCH_Device, and the environment interface for dealing with the devices of the application.

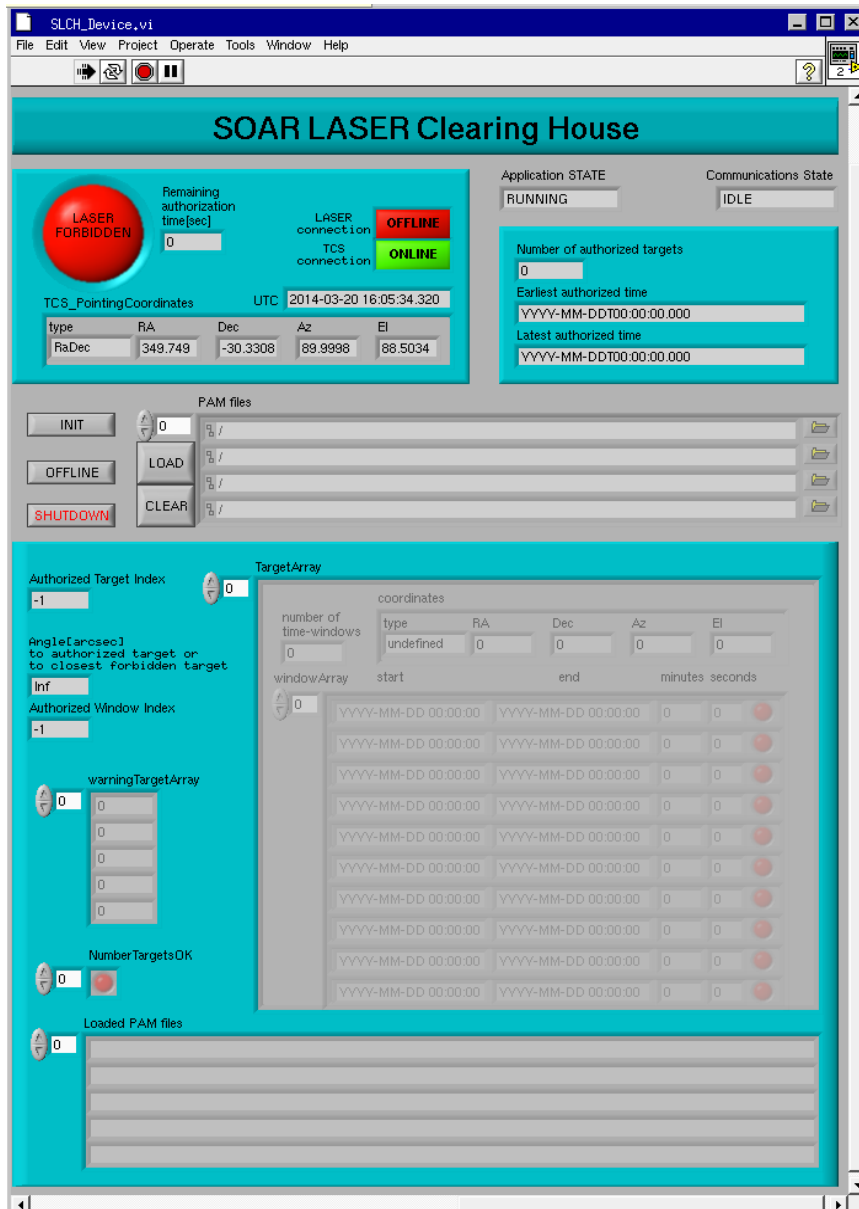


Figure : Main GUI. All the relevant status variables are displayed.

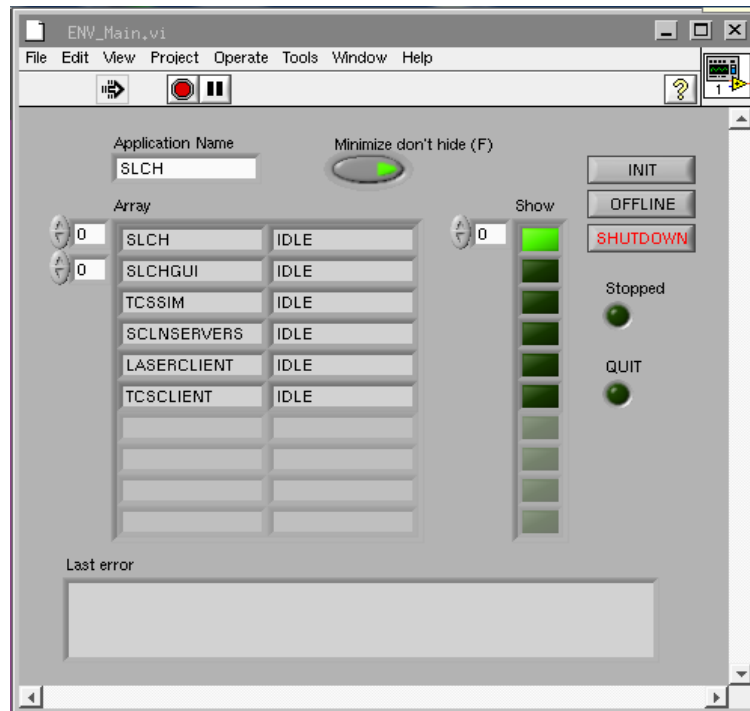


Figure : Environmet GUI. All the devices of the SCLH application are shown.

2.1 SLCH > Status

At the top of the main window there is a section displaying the main status of the SLCH application.

2.1.1 SLCH > Status > LASER permission

Big round LED type status displaying the authorization condition for the LASER, according to the SLCH rules.

Green LASER AUTHORIZED.

Red LASER FORBIDDEN.

2.1.2 SLCH > Status > Remaining authorization time

Seconds until current authorized time window closes.

2.1.3 SLCH > Status > LASER connection

Green ONLINE, SLCH application is successfully connected to the LASER control system. This means that the LASER control system is able to receive the authorization messages from SLCH.

Red OFFLINE, no communication is currently established. SLCH application runs and evaluates the authorization state for the LASER, regardless of this connection status.

2.1.4 SLCH > Status > TCS connection

Green ONLINE, SLCH application is successfully connected to the Telescope control system. This means that the SLCH application is able to receive the telescope pointing coordinates to evaluate the authorization condition for the LASER operation.

Red OFFLINE, no communication is currently established, meaning no LASER can be authorized due to the lack of pointing information.

2.1.5 SLCH > Status > UTC

Universal coordinated time sent by the Telescope.

2.1.6 SLCH > Status > TCS_PointingCoordinates

Current pointing coordinates sent by the TCS. Units in degrees. Right Ascension, Declination, Azimuth and Elevation.

2.1.7 SLCH > Status > Application STATE

Running state of the application.

OFF: the SLCH application is not running.

STANDBY: the SLCH application is running but not online.

RUNNING: the SLCH application is running and producing authorization conditions.

2.1.8 SLCH > Status > Communications State

Communications state of the command server of the application.

SHUTDOWN: the main device is not running.

OFFLINE: the main device is running uninitialized.

IDLE: the main device is online and waiting for commands.

ACTIVE: the main device is performing and action command.

ERROR: the main device is in error state and requires user intervention.

2.1.9 SLCH > Status > Number of authorized targets

Number of total targets accumulated from all the PAM files loaded in the application.

2.1.10 SLCH > Status > Earliest authorized time

The earliest opening time from the specified time windows in the PAM files.

2.1.11 SLCH > Status > Latest authorized time

The latest closing time from the specified time windows in the PAM files.

2.2 MAIN > Control

The second section in the top is the control area of the GUI. The application commanding buttons are located here.

2.2.1 MAIN > Control > INIT

Button for initialize the SLCH application from a OFFLINE Communications State. When the SLCH application is recently started up, this is the first operation needed for setting it in operational condition.

2.2.2 MAIN > Control > OFFLINE

Button for stopping the SLCH application and setting it in OFFLINE Communications State. This is the first step of a reinitialization, a shutdown, or recovery from an error condition.

2.2.3 MAIN > Control > SHUTDOWN

Button for shutting the SLCH application down. The Communications State needs to be OFFLINE prior to the shutdown command. Once the shutdown is complete, the application stops running and the GUIs disappear.

2.2.4 MAIN > Control > PAM files

List of PAM files for the LOAD command. Enter the complete path or browse the files using the dialog button. Multiple files can be loaded in one single command. And the list of PAM files loaded replaces any previously loaded files.

2.2.5 MAIN > Control > LOAD

Loads the list of PAM files into the SLCH process.

2.2.6 MAIN > Control > CLEAR

Clears the SLCH from any PAM file currently loaded.

2.3 MAIN > Targets

The lower half of the GUI gives details about the list of targets loaded from the PAM files and the current target being considered at any moment.

2.3.1 MAIN > Targets > Loaded PAM files

In the lowest section there is the array of currently loaded PAM files.

2.3.2 MAIN > Targets > NumberTargetsOK

Status arrays of warnings that verify if the actual number of targets defined in each PAM file matches the specified number in their headers.

2.3.3 MAIN > Targets > warningTargetArray

Status arrays of indexes of the targets with warnings, that verify the parameters of each defined target, checking if the time windows are correctly defined and consistent.

2.3.4 MAIN > Targets > TargetArray

Array of targets loaded from the PAM files. This array is an aggregation from all the loaded files, in the same file order. Using this composed array structure the user can examine the full content of the list of targets. For each entry, a single target, its coordinates, and the array of time windows. Each time window displays also a LED status with the eventual warning of any inconsistency.

2.3.5 MAIN > Targets > Authorized Target Index

Index in the array for the target that is currently being considered due to the telescope coordinates.

A value of -1 means that no target has been found inside the emission cone of the telescope coordinates.

A valid value, ≥ 0 , points to the first target found in that cone.

2.3.6 MAIN > Targets > Angle to authorized target of to closest forbidden target

If the SLCH is authorizing the current target for LASER emission, then this value indicates the angle in arcseconds from the pointing of the telescope to the authorized target coordinate.

If the SLCH is not authorizing the LASER emission, this value indicates the angle in arcseconds from the pointing of the telescope to the closest target in the array.

2.3.7 MAIN > Targets > Authorized Window Index

A value of -1 means that no time window matches the current time for the current target, or that there is no target close enough for the current pointing.

A valid value, ≥ 0 , points to the corresponding time window index for the current target.

Chapter: 3 Common Operations

3.1 Starting up the SLCH application

1. From the command line or the desktop button, start the SLCH application.
2. After the SOAR LASER Clearing House GUI is displayed, press the INIT button.
3. Load the PAM files created for the operation.

3.2 Loading new PAM files

1. Clear the PAM files entries from the control panel section.
2. Write the absolute path for the list of PAM files to load or select them from the browsing dialog box enabled with the right buttons.
3. Press the LOAD button.

Chapter: 4 Configuration Files

Configuration files provide a mean to set multiple system parameters to some predefined value. The common path for the SLCH configuration files is:

```
/home/slch/APPROOT/config/SLCH
```

which depends from the value of APPROOT environment variable.

4.1 Configuration Files

Most configuration files follow a common format. Files are divided in multiple sections, each one beginning with a keyword enclosed in square brackets. Each section lists a parameter name followed by an equal sign and its value. A semicolon marks the beginning of a short parameter description.

```
[Section Keyword]
Parameter = Value           ; this is the parameter description
```

4.1.1 ENV_Defaul.cfg

Application structure configuration file. Software engineers only.

This configuration file gives the structure of devices for the application and the aliases for the internal command processors.

```
[ENVIRONMENT]
MainVisible=False

[DEVICES]
SLCH=SLCH/public/vis/SLCH_Device.vi
SLCHGUI=SLCHGUI/public/vis/SLCHGUI_Device.vi
TCSSIM=SLCH/test/SLCH_TcsDevice.vi
SCLNSERVERS=SML/ENVSCLN/public/vis/ENVSCLN_ServersDevice.vi
LASERCLIENT=SLCH/public/vis/SLCH_LaserClient.vi
TCSCLIENT=SLCH/public/vis/SLCH_TcsClient.vi

[VISIBLEDEVICES]
SLCH=""

[SERVERS]

[TRANSLATIONS]
LASER="LASERCLIENT TX"
TCS="TCSCLIENT TX"
#TCS=TCSSIM
```

4.1.2 ENVSCLN_Default.cfg

SCLN framework communications configuration file. Software engineers only.

This configuration file defines the IP addresses for the command servers in the SCLN protocol.

```
[CommLib]
```

```
Version=1.2.1.1
```

```
[LASER]
```

```
IP_Server=139.229.15.32
```

```
IP_Client=139.229.15.32
```

```
IP_Port=30080
```

```
[TCS]
```

```
IP_Server=139.229.15.2
```

```
IP_Client=139.229.15.32
```

```
IP_Port=38220
```

For more information on the SCLN and its protocol read the document “SOAR Communication Library New” available at the SAM web site archive.

4.1.3 SLCH_Params.cfg

SLCH application configuration file. Users accesible.

This configuration files defines the value for the operational parameters of the SLCH application.

```
[PARAMS]
```

```
OperationPeriod_ms=500
```

```
PointingRange_arcsec=120
```

```
OpenTimeRange_s=1
```

```
CloseTimeRange_s=5
```

Chapter: 5 Log Files

APPROOT environment variable also defines the path for the operational log file of SLCH.

/home/slch/APPROOT/logs/SLCH/SLCH_2012-02-06T16:25:17.log

Every time the SLCH is initialized (OFFLINE->INIT command), a new operations log file is created with the current time stamp as part of its name, in the same \$APPROOT/logs/SLCH directory.

This log file follows this format:

2012-02-25T05:08:51 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:51.490
RA=156.983262 DEC=-20.270729 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26136.96

2012-02-25T05:08:52 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:51.490
RA=156.983262 DEC=-20.270729 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26136.96

2012-02-25T05:08:52 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:52.290
RA=156.986604 DEC=-20.270727 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26133.31

2012-02-25T05:08:53 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:52.890
RA=156.989108 DEC=-20.270724 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26130.57

2012-02-25T05:08:53 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:52.890
RA=156.989108 DEC=-20.270724 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26130.57

2012-02-25T05:08:54 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:53.690
RA=156.992450 DEC=-20.270722 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26126.93

2012-02-25T05:08:54 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:54.490
RA=156.995792 DEC=-20.270719 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26123.29

2012-02-25T05:08:55 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:54.490
RA=156.995792 DEC=-20.270719 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26123.29

2012-02-25T05:08:55 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:55.290
RA=156.999129 DEC=-20.270717 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26119.66

2012-02-25T05:08:56 LASER FORBIDDEN REMAIN=0.000 UTC=2012-02-25T05:08:56.090
RA=157.002471 DEC=-20.270714 AZ=340.229200 EL=79.123300 T=-1 W=-1 ANG=26116.02

where there is an entry line for each time tick of conditions evaluated, the time stamp, the LASER permission state, the basic coordinates received from TCS, and the indexes for the target (T) and the time window (W) alongside the angle between the pointing and the closest target from the loaded array.