

PARI (Paras Aquisition and Readout Initiation)

☐ Exp. Time

100

☐ Delay Exposure(sec)

0

☐ Multiple Exposure

1

☐ Open Shutter

Readout Time:

ABORT

EXPOSE

0%

Dir:

C:\Users\ryzen5\Pictures

Filename:

a0000.fits

Prefix

a

Sufix

0000

Source Name:

submit

Source Name:

Exposure Type:

Dark

RA/DEC:

Observers:

Comments

About

## PARAS2 Aquisition and Readout Initiation (PARI)

### Manual V1.0

1 | Page

# Index

S.No.	Item	Page No.
1.	GUI Anatomy	3
2.	Quick Action Panel	4
3.	Exposure Options Panel	6
4.	Image File Options Panel	7
5.	Source Details Panel	8
6.	Observation Details Panel	9
7.	Logger Panel	10
8.	Exposure cycle diagram	11

# 1. GUI Anatomy

Quick Actions panel contains function CCD controller related functions like power-on, power-off, setup-controller etc.

Details filled here goes into the header of fits file.

This window shows various updates and messages during the run cycle of the software.

The screenshot shows the PARI (Paras Acquisition and Readout Initiation) GUI. The window title is "PARI (Paras Acquisition and Readout Initiation)". The interface is divided into several panels:

- Quick Actions:** A panel with eight icons representing different functions like power-on, power-off, setup-controller, etc.
- Exposure Options:** A panel with checkboxes for "Exp. Time", "Delay Exposure(sec)", "Multiple Exposure", and "Open Shutter". It also has a "Readout Time:" section with "ABORT" and "EXPOSE" buttons and a progress bar showing "0%".
- Image File Options:** A panel with fields for "Dir:" (C:\Users\ryzen5\Pictures), "Filename:" (a0000.fits), "Prefix:" (a), and "Suffix:" (0000).
- Source Details:** A panel with a "Source Name:" field and a "submit" button.
- Observation Details:** A panel with fields for "Source Name:", "Exposure Type:" (Dark), "RA/DEC:", "Observers:", and "Comments".
- Logger:** A large panel on the right for displaying updates and messages during the run cycle.

Red arrows point from the text boxes to the corresponding GUI elements: from the "Quick Actions" panel to the "Quick Actions" panel, from the "Details filled here goes into the header of fits file." box to the "Observation Details" panel, from the "This window shows various updates and messages during the run cycle of the software." box to the "Logger" panel, from the "RA/DEC of target can be fetch from internet using its TOI name in this panel." box to the "Source Name:" field, from the "In this panel you can set filename name and directory where the fits file will be saved." box to the "Image File Options" panel, and from the "Exposure options like exposure time, delay, shutter etc. can be configured through this panel." box to the "Exposure Options" panel.

RA/DEC of target can be fetch from internet using its TOI name in this panel.

In this panel you can set filename name and directory where the fits file will be saved.

Exposure options like exposure time, delay, shutter etc. can be configured through this panel.  
To start/ abort exposure two buttons are available here.

## 2. Quick Action Panel

class [PARI](#) has the following functions to support functionality for the Quick Action Panel.

function	description
<code>setup_dialog()</code>	loads the <a href="#">tim lod</a> file to the controller and configures parameters as shown in image below.  
<code>reset_controller()</code>	resets the controller.
<code>power_on_controller()</code>	Powers the controller on.
<code>power_off_controller()</code>	Powers the controller off
<code>ds9_process()</code>	Opens DS9 fits viewer.
<code>btn_clr_array()</code>	Clears camera array.
<code>open_shutter()</code>	Opens the CCD shutter.
<code>close_shutter()</code>	Closes the CCD shutter.

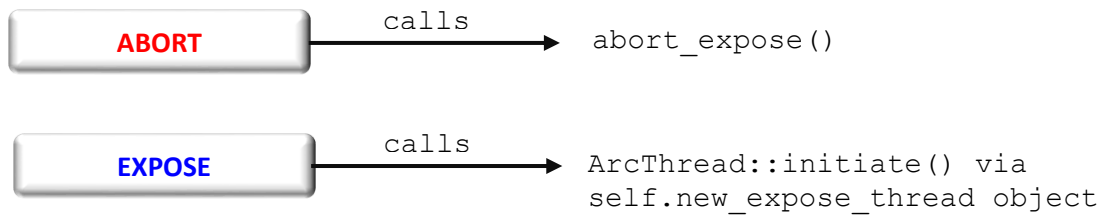
All above functions uses the Wrapper class [ArcWrapper](#) as interface between GUI and ARCAPI.

Table below shows which function of [ArcWrapper](#) is called respectively.

function	Function called in <a href="#">ArcWrapper</a>
<code>setup_dialog()</code>	<code>ArcWrapper:: apply_setup()</code>
<code>reset_controller()</code>	<code>ArcWrapper:: reset_controller()</code>
<code>power_on_controller()</code>	<code>ArcWrapper:: poweron()</code>
<code>power_off_controller()</code>	<code>ArcWrapper:: poweroff()</code>

<code>btn_clr_array()</code>	<code>ArcWrapper:: clear_camera_array()</code>
<code>open_shutter()</code>	<code>ArcWrapper:: open_shutter()</code>
<code>close_shutter()</code>	<code>ArcWrapper:: close_shutter()</code>

### 3. Exposure Options Panel

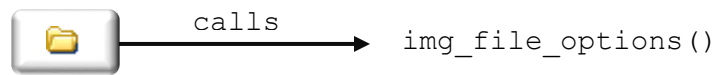


**ABORT** and **EXPOSE** buttons calls function as shown in illustraion above.

function	description
<code>abort_expose()</code>	<p>Creates a file named <code>exposure.dat</code>. This file is constantly checked ARCAPI thread, whenever during an exposure this file is found the ARCAPI thread aborts the exposure.</p> <p>Before starting exposure this file gets remove by <code>start_expose()</code>.</p>
<code>ArcThread::initiate()</code>	<p>Start the ARCAPI exposure thread with passed parameters.</p>

## 4. Image File Options Panel

You can select the output directory and filename in this panel.



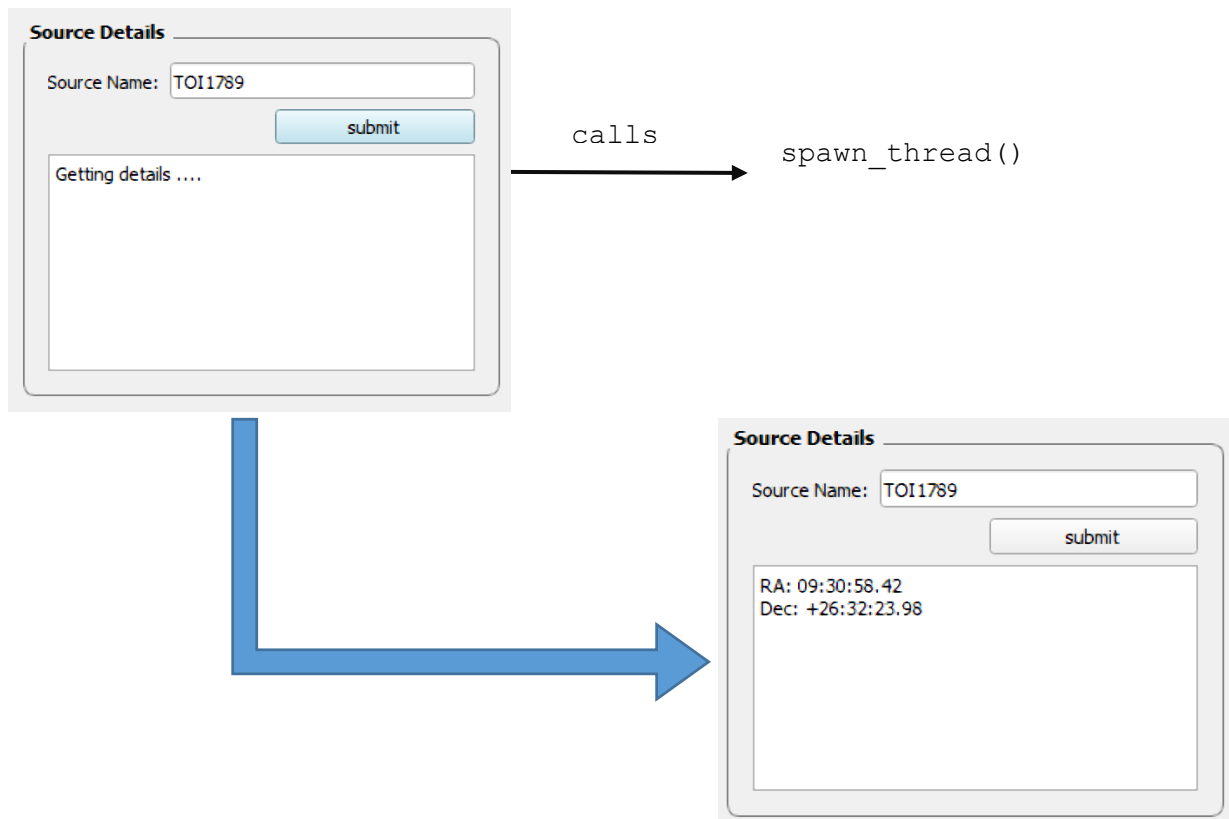
function	description
<code>img_file_options()</code>	Sets the output directory for saving the fits file. Uses <code>QFileDialog()</code> .

Input Fields prefix and suffix are validates using [QRegExpValidator](#) and [QIntValidator](#) as shown below

```
self.input_img_prefix.setValidator(QRegExpValidator(QRegExp("\\w*")))
self.input_img_suffix.setValidator(QIntValidator())
```

## 5. Source Details Panel

You can search RA/DEC of target using this panel. Just enter TOI ID and click submit as show in image below:



When  is clicked it calls the `spawn_thread()` as shown below:

```
self.spawn_thread(self.get_src_info, None, self.set_src_info))
```

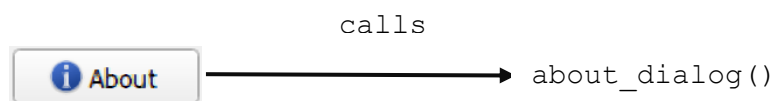
function	description
<code>spawn_thread()</code>	Takes 3 arguments  1. <code>fn_name</code> : a function which will be run in thread  2. <code>fn_progress</code> : a function that will perform UI updates during execution of thread  3. <code>fn_result_handler</code> : a functions which will run after thread completion.
<code>get_src_info()</code>	Calls <code>tess_api.get_planet_data()</code> from <code>modules/tess_api.py</code> .
<code>set_src_info()</code>	sets the view field with the output.



## 6. Observation Details Panel

Following input fields will be added to the fits image.

Input Field	Description
Source Name	Source name or target object name eg. TOI1789
Exposure Type	Type of the exposure from the following values: Dark  Dark+Tung Tung+Dark UAr+UAr UAr+Dark Dark+UAr ThAr+ThAr Dark+ThAr Star+UAr Star+ThAr Star+Dark
RA/DEC	RA (right ascension) and Dec (declination) of the target object.
Observers	Name of the observers who took the observations.
Comment	Any comments.



function	description
about_dialog()	Opens a QMessageBox() with a message.

## 7. Logger Panel

Displays various messages and info during the run life-cycle of the software. It uses the `log()` of the [PARI](#) class.

function	description
<code>log()</code>	Updates the logger windows using functions call <pre>self.txt_logger.textCursor().insertHtml()</pre>

## 8. Exposure cycle diagram

