

## ATSIFIO Function Reference – Version 0.2

### AT\_U32 AT\_SIF\_SetFileAccessMode(AT\_SIF\_ReadMode \_mode)

|                    |   |
|--------------------|---|
| <b>Description</b> | This function is used to select if the entire SIF file should be read or just the header section. The read mode is decided using the <code>ATSIF_ReadMode</code> enumeration which has the following values:- |
|--------------------|---|

ATSIF\_ReadAll  
ATSIF\_ReadHeaderOnly

|                  |                       |  |
|------------------|-----------------------|--|
| <b>Arguments</b> | ATSIF_ReadMode _mode: | The enumeration for selecting the SIF file read mode |
|------------------|-----------------------|--|

**Return** See list of possible return codes in this document

## AT\_U32 AT\_SIF\_ReadFromFile(AT\_C \* \_sz\_filename)

|                    |  |
|--------------------|--|
| <b>Description</b> | This function is used to open a SIF file where the file name and path are contained in the character array <code>_sz_filename</code> . |
|--------------------|--|

|                  |                      |  |
|------------------|----------------------|--|
| <b>Arguments</b> | AT_C * _sz_filename: | The character array containing the SIF file path and file name |
|------------------|----------------------|--|

**Return** See list of possible return codes in this document

**Note** If the file is opened with an access mode of `ATSIF_ReadAll` then `ATSIF_CloseFile` must be called to free access to the file.

## AT\_U32 AT\_SIF\_CloseFile()

|                    |   |
|--------------------|---|
| <b>Description</b> | This function is used to close the currently opened SIF file. This should be called whenever the SIF has been opened using the <code>ATSIF_ReadAll</code> enumeration and is no longer needed by the calling program. |
|--------------------|---|

**Arguments**            none

**Return** See list of possible return codes in this document

**AT U32 ATSIIF\_ReadFromByteArray(AT U8 \* buffer, AT U32 ui bufferSize)**

### Reserved Function

## AT\_U32 AT\_SIF\_IsLoaded(AT\_32 \* \_i\_loaded)

|                    |  |
|--------------------|--|
| <b>Description</b> | This function is used to determine if a SIF file is currently loaded. <code>_i_loaded</code> will be 0 if there is no file loaded and 1 if a file is loaded. |
|--------------------|--|

|                  |                    |   |
|------------------|--------------------|---|
| <b>Arguments</b> | AT_32 * _i_loaded: | 0 – No SIF file currently loaded<br>1 – SIF file currently loaded |
|------------------|--------------------|---|

**Return** See list of possible return codes in this document

## AT U32 AT\_SIF\_IsDataSourcePresent(AT\_SIF\_DataSource source, AT\_32 \* i\_present)

|                    |  |
|--------------------|--|
| <b>Description</b> | This function is used to determine if a particular data source is present in the SIF file. The data source is selected using the ATSIF_DataSource enumeration which has the following values:- |
|--------------------|--|

|                  |                          |  |
|------------------|--------------------------|--|
| <b>Arguments</b> | ATSIF_DataSource_source: | The enumeration for selecting the SIF file data source       |
|                  | AT_32 *_i_present:       | 0 – Data source is not present<br>1 – Data source is present |

```
AT_U32 ATSIF_GetStructureVersion(ATSIF_StructureElement _element, AT_U32 * _ui_versionHigh, AT_U32 *
_ui_versionLow)
```

ATSIF\_File  
ATSIF\_Insta  
ATSIF\_Calib  
ATSIF\_Andor

**AT\_U32 ATSIIF\_GetFrameSize(ATSIIF\_DataSource \_source, AT\_U32 \* \_ui\_size)**

ATSIF\_Signal  
ATSIF\_Reference  
ATSIF\_Background  
ATSIF\_Live  
ATSIF\_Source

**AT U32 AT\_SIF\_GetNumberFrames(AT\_SIF\_DataSource source, AT\_U32 \* ui\_images)**

ATSIF\_Signal

ATSIF\_Reference  
ATSIF\_Background  
ATSIF\_Live  
ATSIF\_Source

**Arguments**      ATSIF\_DataSource \_source:      The enumeration for selecting the SIF file data source  
                    AT\_U32 \* \_ui\_images:      The number of frames in the SIF file

**Return**            See list of possible return codes in this document

#### AT\_U32 ATSIF\_GetNumberSubImages(ATSIF\_DataSource \_source, AT\_U32 \* \_ui\_subimages)

**Description**      This function is used to retrieve the number of sub-images in each frame in the SIF file. The data source is selected using the ATSIF\_DataSource enumeration which has the following values:-

ATSIF\_Signal  
ATSIF\_Reference  
ATSIF\_Background  
ATSIF\_Live  
ATSIF\_Source

**Arguments**      ATSIF\_DataSource \_source:      The enumeration for selecting the SIF file data source  
                    AT\_U32 \* \_ui\_subimages:      The number of sub-images in each frame in the SIF file

**Return**            See list of possible return codes in this document

#### AT\_U32 ATSIF\_GetSubImageInfo(ATSIF\_DataSource \_source, AT\_U32 \_ui\_index, AT\_U32 \* \_ui\_left, AT\_U32 \* \_ui\_bottom, AT\_U32 \* \_ui\_right, AT\_U32 \* \_ui\_top, AT\_U32 \* \_ui\_hBin, AT\_U32 \* \_ui\_vBin)

**Description**      This function is used to retrieve the information about each sub-image in the SIF file. The data source is selected using the ATSIF\_DataSource enumeration which has the following values:-

ATSIF\_Signal  
ATSIF\_Reference  
ATSIF\_Background  
ATSIF\_Live  
ATSIF\_Source

**Arguments**      ATSIF\_DataSource \_source:      The enumeration for selecting the SIF file data source  
                    AT\_U32 \_ui\_index:      The sub-image index  
                    AT\_U32 \* \_ui\_left:      The left coordinate of the sub-image  
                    AT\_U32 \* \_ui\_bottom:      The bottom coordinate of the sub-image  
                    AT\_U32 \* \_ui\_right:      The right coordinate of the sub-image  
                    AT\_U32 \* \_ui\_top:      The top coordinate of the sub-image  
                    AT\_U32 \* \_ui\_hBin:      The horizontal binning used in the selected sub-image  
                    AT\_U32 \* \_ui\_vBin:      The vertical binning used in the selected sub-image

**Return**            See list of possible return codes in this document

#### AT\_U32 ATSIF\_GetAllFrames(ATSIF\_DataSource \_source, float \* \_pf\_data, AT\_U32 \_ui\_bufferSize)

**Description**      This function is used to retrieve all the frames of data in the SIF file. The data source is selected using the ATSIF\_DataSource enumeration which has the following values:-

ATSIF\_Signal  
ATSIF\_Reference

ATSIF\_Background  
ATSIF\_Live  
ATSIF\_Source

**Arguments**      ATSIF\_DataSource \_source:      The enumeration for selecting the SIF file data source  
float \* \_pf\_data:      The array of float data containing all frames in the SIF file  
AT\_U32 \_ui\_bufferSize:      The number of pixels in the float array

**Return**      See list of possible return codes in this document

**AT\_U32 ATSIF\_GetFrame(AT\_SIF\_DataSource \_source, AT\_U32 \_ui\_index, float \* \_pf\_data, AT\_U32 \_ui\_bufferSize)**

**Description**      This function is used to retrieve a single frame in the SIF file. The data source is selected using the ATSIF\_DataSource enumeration which has the following values:-

ATSIF\_Signal  
ATSIF\_Reference  
ATSIF\_Background  
ATSIF\_Live  
ATSIF\_Source

**Arguments**      ATSIF\_DataSource \_source:      The enumeration for selecting the SIF file data source  
float \* \_pf\_data:      The array of float data containing the selected frame in the SIF file  
AT\_U32 \_ui\_bufferSize:      The number of pixels in the float array

**Return**      See list of possible return codes in this document

AT\_U32 AT\_EXP\_CONV

**AT\_U32 ATSIF\_GetDataStartBytePosition(AT\_SIF\_DataSource \_source, AT\_32 \* \_ui\_startPosition)**

**Description**      This function is used to retrieve the starting byte position of the source data in the SIF file. The data source is selected using the ATSIF\_DataSource enumeration which has the following values:-

ATSIF\_Signal  
ATSIF\_Reference  
ATSIF\_Background  
ATSIF\_Live  
ATSIF\_Source

**Arguments**      ATSIF\_DataSource \_source:      The enumeration for selecting the SIF file data source  
AT\_U32 \_ui\_startPosition:      The start byte of the source data

**Return**      See list of possible return codes in this document

**AT\_U32 ATSIF\_GetPropertyValue(AT\_SIF\_DataSource \_source, const AT\_C \* \_sz\_propertyName, AT\_C \* \_sz\_propertyValue, AT\_U32 \_ui\_bufferSize)**

**Description**      This function is used to retrieve image information from the SIF file. The data source is selected using the ATSIF\_DataSource enumeration which has the following values:-

ATSIF\_Signal  
ATSIF\_Reference

ATSIF\_Background  
ATSIF\_Live  
ATSIF\_Source

The property name is selected using one of the property type #defines which are listed in this document (e.g. ATSIF\_PROP\_EXPOSURETIME). The property information will be copied into the user allocated character array.

|                  |                                |  |
|------------------|--------------------------------|--|
| <b>Arguments</b> | ATSIF_DataSource _source:      | The enumeration for selecting the SIF file data source       |
|                  | const AT_C * _sz_propertyName: | The selected property chosen from the list of property types |
|                  | AT_C * _sz_propertyValue:      | The value of the property                                    |
|                  | AT_U32 _ui_bufferSize:         | The number of characters allocated in the character array    |

**Return** See list of possible return codes in this document

**AT\_U32 ATSIF\_GetPropertyType(ATSIF\_DataSource \_source, const AT\_C \* \_sz\_propertyName, ATSIF\_PropertyType \* \_propertyType)**

**Description** This function is used to determine the type of each property listed in the property type #defines. The data source is selected using the ATSIF\_DataSource enumeration which has the following values:-

ATSIF\_Signal  
ATSIF\_Reference  
ATSIF\_Background  
ATSIF\_Live  
ATSIF\_Source

The property type is returned as one of the ATSIF\_PropertyType enumeration types which have the following values:-

ATSIF\_AT\_8  
ATSIF\_AT\_U8  
ATSIF\_AT\_32  
ATSIF\_AT\_U32  
ATSIF\_Float  
ATSIF\_Double  
ATSIF\_String

|                  |                                     |  |
|------------------|-------------------------------------|--|
| <b>Arguments</b> | ATSIF_DataSource _source:           | The enumeration for selecting the SIF file data source       |
|                  | const AT_C * _sz_propertyName:      | The selected property chosen from the list of property types |
|                  | ATSIF_PropertyType * _propertyType: | The property type for the selected property                  |

**Return** See list of possible return codes in this document

## Property Types

|                                    |                           |
|------------------------------------|---------------------------|
| ATSIF_PROP_TYPE                    | "Type"                    |
| ATSIF_PROP_ACTIVE                  | "Active"                  |
| ATSIF_PROP_VERSION                 | "Version"                 |
| ATSIF_PROP_TIME                    | "Time"                    |
| ATSIF_PROP_FORMATTED_TIME          | "FormattedTime"           |
| ATSIF_PROP_FILENAME                | "FileName"                |
| ATSIF_PROP_TEMPERATURE             | "Temperature"             |
| ATSIF_PROP_UNSTABILIZEDTEMPERATURE | "UnstabalizedTemperature" |
| ATSIF_PROP_HEAD                    | "Head"                    |
| ATSIF_PROP_HEADMODEL               | "HeadModel"               |
| ATSIF_PROP_STORETYPE               | "StoreType"               |
| ATSIF_PROP_DATATYPE                | "DataType"                |
| ATSIF_PROP_SIDISPLACEMENT          | "SIDisplacement"          |
| ATSIF_PROP_SINUMBERSUBFRAMES       | "SINumberSubFrames"       |
| ATSIF_PROP_PIXELREADOUTTIME        | "PixelReadOutTime"        |
| ATSIF_PROP_TRACKHEIGHT             | "TrackHeight"             |
| ATSIF_PROP_READPATTERN             | "ReadPattern"             |
| ATSIF_PROP_READPATTERN_FULLNAME    | "ReadPatternFullName"     |
| ATSIF_PROP_SHUTTERDELAY            | "ShutterDelay"            |
| ATSIF_PROP_CENTREROW               | "CentreRow"               |
| ATSIF_PROP_ROWOFFSET               | "RowOffset"               |
| ATSIF_PROP_OPERATION               | "Operation"               |
| ATSIF_PROP_MODE                    | "Mode"                    |
| ATSIF_PROP_MODE_FULLNAME           | "ModeFullName"            |
| ATSIF_PROP_TRIGGERSOURCE           | "TriggerSource"           |
| ATSIF_PROP_TRIGGERSOURCE_FULLNAME  | "TriggerSourceFullName"   |
| ATSIF_PROP_TRIGGERLEVEL            | "TriggerLevel"            |
| ATSIF_PROP_EXPOSURETIME            | "ExposureTime"            |
| ATSIF_PROP_DELAY                   | "Delay"                   |
| ATSIF_PROP_INTEGRATIONCYCLETIME    | "IntegrationCycleTime"    |
| ATSIF_PROP_NUMBERINTEGRATIONS      | "NumberIntegrations"      |
| ATSIF_PROP_KINETICCYLETIME         | "KineticCycleTime"        |
| ATSIF_PROP_FLIPX                   | "FlipX"                   |
| ATSIF_PROP_FLIPY                   | "FlipY"                   |

|                                 |                                |
|---------------------------------|--------------------------------|
| ATSIF_PROP_CLOCK                | "Clock"                        |
| ATSIF_PROP_ACLOCK               | "AClock"                       |
| ATSIF_PROP_IOC                  | "IOC"                          |
| ATSIF_PROP_FREQUENCY            | "Frequency"                    |
| ATSIF_PROP_NUMBERPULSES         | "NumberPulses"                 |
| ATSIF_PROP_FRAMETRANSFERACQMODE | "FrameTransferAcquisitionMode" |
| ATSIF_PROP_BASELINECLAMP        | "BaselineClamp"                |
| ATSIF_PROP_PRESCAN              | "PreScan"                      |
| ATSIF_PROP_EMREALGAIN           | "EMRealGain"                   |
| ATSIF_PROP_BASELINEOFFSET       | "BaselineOffset"               |
| ATSIF_PROP_SWVERSION            | "SWVersion"                    |
| ATSIF_PROP_SWVERSIONEX          | "SWVersionEx"                  |
| ATSIF_PROP_MCP                  | "MCP"                          |
| ATSIF_PROP_GAIN                 | "Gain"                         |
| ATSIF_PROP_VERTICALCLOCKAMP     | "VerticalClockAmp"             |
| ATSIF_PROP_VERTICALSHIFTSPEED   | "VerticalShiftSpeed"           |
| ATSIF_PROP_OUTPUTAMPLIFIER      | "OutputAmplifier"              |
| ATSIF_PROP_PREAMPLIFIERGAIN     | "PreAmplifierGain"             |
| ATSIF_PROP_SERIAL               | "Serial"                       |
| ATSIF_PROP_DETECTORFORMATX      | "DetectorFormatX"              |
| ATSIF_PROP_DETECTORFORMATZ      | "DetectorFormatZ"              |
| ATSIF_PROP_NUMBERIMAGES         | "NumberImages"                 |

#### Return Codes

|                         |       |
|-------------------------|-------|
| ATSIF_SUCCESS           | 22002 |
| ATSIF_SIF_FORMAT_ERROR  | 22003 |
| ATSIF_NO_SIF_LOADED     | 22004 |
| ATSIF_FILE_NOT_FOUND    | 22005 |
| ATSIF_FILE_ACCESS_ERROR | 22006 |
| ATSIF_DATA_NOT_PRESENT  | 22007 |
| ATSIF_P1INVALID         | 22101 |
| ATSIF_P2INVALID         | 22102 |
| ATSIF_P3INVALID         | 22103 |
| ATSIF_P4INVALID         | 22104 |
| ATSIF_P5INVALID         | 22105 |
| ATSIF_P6INVALID         | 22106 |
| ATSIF_P7INVALID         | 22107 |
| ATSIF_P8INVALID         | 22108 |