ATSIFIO Function Reference – Version 0.3

AT_U32 ATSIF_SetFileAccessMode(ATSIF_ReadMode _mode)

Description 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 ATSIF_ReadMode enumeration which has the following values:-

ATSIF_ReadAll
ATSIF_ReadHeaderOnly

Arguments ATSIF_ReadMode _mode: The enumeration for selecting the SIF file read mode

Return See list of possible return codes in this document

AT_U32 ATSIF_ReadFromFile(AT_C * _sz_filename)

Description This function is used to open a SIF file where the file name and path are contained in the character array _sz_filename.

Arguments 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 ATSIF_CloseFile()

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

Arguments none

Return See list of possible return codes in this document

AT_U32 ATSIF_ReadFromByteArray(AT_U8 * _buffer, AT_U32 _ui_bufferSize)

Reserved Function

AT_U32 ATSIF_IsLoaded(AT_32 * _i_loaded)

Description This function is used to determine if a SIF file is currently loaded. _i_loaded will be 0 if there is no file loaded and 1 if a file is loaded.

Arguments AT_32 * _i_loaded: 0 – No SIF file currently loaded
1 – SIF file currently loaded

Return See list of possible return codes in this document

AT_U32 ATSIF_IsDataSourcePresent(ATSIF_DataSource _source, AT_32 *_i_present)

Description 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:-

ATSIF_Signal
ATSIF_Reference
ATSIF_Background
ATSIF_Live
ATSIF_Source

Arguments		
	ATSIF_DataSource _source:	The enumeration for selecting the SIF file data source
	AT_32 *_i_present:	0 – Data source is not present 1 – Data source is present

Return See list of possible return codes in this document

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

Description This function is used to retrieve the version of each structure element in the SIF file. The structure element is selected using the ATSIF_StructureElement enumeration which has the following values:-

ATSIF_File
ATSIF_Insta
ATSIF_Calib
ATSIF_Andor

Arguments		
	ATSIF_ StructureElement _element:	The enumeration for selecting the SIF file structure element
	AT_U32 * _ui_versionHigh:	The high component of the version number
	AT_U32 * _ui_versionLow:	The low component of the version number

Return See list of possible return codes in this document

AT_U32 ATSIF_GetFrameSize(ATSIF_DataSource _source, AT_U32 * _ui_size)

Description This function is used to retrieve the number of pixels 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_size:	The number of pixels in each frame in the SIF file

Return See list of possible return codes in this document

AT_U32 ATSIF_GetNumberFrames(ATSIF_DataSource _source, AT_U32 * _ui_images)

Description This function is used to retrieve the number of frames 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_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(ATSIF_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 ATSIF**_GetDataStartBytePosition(ATSIF_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(ATSIF_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.

Arguments

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

Arguments

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

AT_U32 ATSIF_GetPixelCalibration (ATSIF_DataSource _source, ATSIF_CalibrationAxis _axis, AT_32 _i_pixel, double * _d_calibValue)

Description This function is used to retrieve the calibrated value (e.g. wavelength) for the corresponding pixel in the source data of 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 axis to probe is selected using the ATSIF_CalibrationAxis enumeration which has the following values:-

ATSIF_CalibX
ATSIF_CalibY
ATSIF_CalibZ

Arguments

ATSIF_DataSource _source:	The enumeration for selecting the SIF file data source
ATSIF_CalirationAxis:	The enumeration for selecting the axis value
AT_32 _i_pixel:	The pixel to interrogate
Double _d_calibValue	The corresponding pixel calibration

Return See list of possible return codes in this document

Note Spectrums can be calibrated in more than one way (e.g. Raman shift as opposed to wavelength). To get both the unit and type of calibration of the axis it is necessary to call the function ATSIF_GetPropertyValue.

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_KINETICCYCLETIME	"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"
ATSIF_PROP_NUMBERSUBIMAGES	"NumberSubImages"
ATSIF_PROP_SUBIMAGE_HBIN	"SubImageHBin"
ATSIF_PROP_SUBIMAGE_VBIN	"SubImageVBin"
ATSIF_PROP_SUBIMAGE_LEFT	"SubImageLeft"
ATSIF_PROP_SUBIMAGE_RIGHT	"SubImageRight"
ATSIF_PROP_SUBIMAGE_TOP	"SubImageTop"
ATSIF_PROP_SUBIMAGE_BOTTOM	"SubImageBottom"
ATSIF_PROP_BASELINE	"Baseline"
ATSIF_PROP_CCD_LEFT	"CCDLeft"
ATSIF_PROP_CCD_RIGHT	"CCDRight"
ATSIF_PROP_CCD_TOP	"CCDTop"
ATSIF_PROP_CCD_BOTTOM	"CCDBottom"
ATSIF_PROP_SENSITIVITY	"Sensitivity"
ATSIF_PROP_DETECTIONWAVELENGTH	"DetectionWavelength"
ATSIF_PROP_COUNTCONVERTMODE	"CountConvertMode"
ATSIF_PROP_ISCOUNTCONVERT	"IsCountConvert"
ATSIF_PROP_X_AXIS_TYPE	"XAxisType"
ATSIF_PROP_X_AXIS_UNIT	"XAxisUnit"
ATSIF_PROP_Y_AXIS_TYPE	"YAxisType"
ATSIF_PROP_Y_AXIS_UNIT	"YAxisUnit"
ATSIF_PROP_Z_AXIS_TYPE	"ZAxisType"
ATSIF_PROP_Z_AXIS_UNIT	"ZAxisUnit"
ATSIF_PROP_USERTEXT	"UserText"
ATSIF_PROP_ISPHOTONCOUNTINGENABLED	"IsPhotonCountingEnabled"
ATSIF_PROP_NUMBERTHRESHOLDS	"NumberThresholds"
ATSIF_PROP_THRESHOLD1	"Threshold1"
ATSIF_PROP_THRESHOLD2	"Threshold2"
ATSIF_PROP_THRESHOLD3	"Threshold3"
ATSIF_PROP_THRESHOLD4	"Threshold4"
ATSIF_PROP_AVERAGINGFILTERMODE	"AveragingFilterMode"
ATSIF_PROP_AVERAGINGFACTOR	"AveragingFactor"
ATSIF_PROP_FRAMECOUNT	"FrameCount"
ATSIF_PROP_NOISEFILTER	"NoiseFilter"
ATSIF_PROP_THRESHOLD	"Threshold"
ATSIF_PROP_TIME_STAMP	"TimeStamp"
ATSIF_PROP_OUTPUTA_ENABLED	"OutputAEnabled"
ATSIF_PROP_OUTPUTA_WIDTH	"OutputAWidth"
ATSIF_PROP_OUTPUTA_DELAY	"OutputADelay"
ATSIF_PROP_OUTPUTA_POLARITY	"OutputAPolarity"
ATSIF_PROP_OUTPUTB_ENABLED	"OutputBEnabled"
ATSIF_PROP_OUTPUTB_WIDTH	"OutputBWidth"
ATSIF_PROP_OUTPUTB_DELAY	"OutputBDelay"
ATSIF_PROP_OUTPUTB_POLARITY	"OutputBPolarity"
ATSIF_PROP_OUTPUTC_ENABLED	"OutputCEnabled"
ATSIF_PROP_OUTPUTC_WIDTH	"OutputCWidth"
ATSIF_PROP_OUTPUTC_DELAY	"OutputCDelay"
ATSIF_PROP_OUTPUTC_POLARITY	"OutputCPolarity"
ATSIF_PROP_GATE_MODE	"GateMode"
ATSIF_PROP_GATE_WIDTH	"GateWidth"
ATSIF_PROP_GATE_DELAY	"GateDelay"
ATSIF_PROP_GATE_DELAY_STEP	"GateDelayStep"
ATSIF_PROP_GATE_WIDTH_STEP	"GateWidthStep"

To retrieve the time stamp information create the property name like so:

"TimeStamp 0" will return the first frame time stamp (0 based index)
.
.
"TimeStamp n-1" will return the nth frame time stamp

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