

ZEN API Documentation

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ExperimentDescriptor

Descriptors for experiment.

Field	Type	Label	Description
name	string		Experiment name.

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ExperimentServiceCloneRequest

The ExperimentServiceCloneRequest class.

Field	Type	Label	Description
experiment_id	string		Id of the experiment to be cloned.

ExperimentServiceCloneResponse

Response object of the method for cloning an experiment.

Field	Type	Label	Description
experiment_id	string		The experiment id which is used to reference the cloned experiment.

ExperimentServiceDeleteRequest

The ExperimentServiceDeleteRequest class.

Field	Type	Label	Description
experiment_name	string		Name of the experiment to be deleted.

ExperimentServiceDeleteResponse

The ExperimentServiceDeleteResponse class.

ExperimentServiceExportRequest

The ExperimentServiceExportRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.

ExperimentServiceExportResponse

Response object of the method for exporting an experiment.

Field	Type	Label	Description
xml	string		Xml string of experiment.

ExperimentServiceGetAvailableExperimentsRequest

The ExperimentServiceGetAvailableExperimentsRequest class.

ExperimentServiceGetAvailableExperimentsResponse

Response object of available experiments.

Field	Type	Label	Description
experiments	ExperimentDescriptor	repeated	List of available experiments.

ExperimentServiceGetImageOutputPathRequest

The ExperimentServiceGetImageOutputPathRequest class.

ExperimentServiceGetImageOutputPathResponse

Response object of the method for getting the image output path.

Field	Type	Label	Description
image_output_path	string		The image output path.

ExperimentServiceGetStatusRequest

The ExperimentServiceGetStatusRequest class.

Field	Type	Label	Description
experiment_id	string		ID of an experiment for which status is requested. If ID is provided, the status can be retrieved for both active and finished experiments. If ID is not provided, status of one of the active experiments is returned. If ID is not provided and there are no active experiments, an exception is thrown.

ExperimentServiceGetStatusResponse

Response object representing the status of an experiment.

Field	Type	Label	Description
status	ExperimentStatus		The experiment status.

ExperimentServiceImportRequest

The ExperimentServiceImportRequest class.

Field	Type	Label	Description
xml_string	string		Xml string of the experiment.

ExperimentServiceImportResponse

Response object of the method for importing an experiment.

Field	Type	Label	Description
experiment_id	string		The experiment id which is used to reference the imported experiment.

ExperimentServiceLoadRequest

The ExperimentServiceLoadRequest class.

Field	Type	Label	Description
experiment_name	string		Name of the experiment.

ExperimentServiceLoadResponse

Response object of the method for loading an experiment.

Field	Type	Label	Description
experiment_id	string		The experiment id which is used to reference the loaded experiment.

ExperimentServiceRegisterOnStatusChangedRequest

The ExperimentServiceRegisterOnStatusChangedRequest class.

Field	Type	Label	Description
experiment_id	string		ID of an active experiment for which status is monitored. If ID is not provided, status of one of the active experiments is monitored.

ExperimentServiceRegisterOnStatusChangedResponse

Response object representing the status of an experiment.

It contains full set of status information, which can consist a single or multiple new states.

Field	Type	Label	Description
status	ExperimentStatus		The experiment status.

ExperimentServiceRunExperimentRequest

The ExperimentServiceRunExperimentRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
output_name	string		Optional name of the experiment's output. If a null or an empty name is provided, the output name will be created automatically, otherwise the output name must be in a format of a file name without a file extension.

ExperimentServiceRunExperimentResponse

Information about execution of an experiment.

Field	Type	Label	Description
output_name	string		The name of the experiment's output (in a format of a file name without a file extension).

ExperimentServiceRunSnapRequest

The ExperimentServiceRunSnapRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
output_name	string		Optional name of the experiment's output. If a null or an empty name is provided, the output name will be created automatically, otherwise the output name must be in a format of a file name without a file extension.

ExperimentServiceRunSnapResponse

Information about execution of a snap experiment.

Field	Type	Label	Description
output_name	string		The name of the snap's output (in a format of a file name without a file extension).

ExperimentServiceSaveRequest

The ExperimentServiceSaveRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
experiment_name	string		Name to be used when saving the experiment.
allow_override	bool		Allow override of already existing experiment with the same name.

ExperimentServiceSaveResponse

The ExperimentServiceSaveResponse class.

ExperimentServiceStartContinuousRequest

The ExperimentServiceStartContinuousRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.

ExperimentServiceStartExperimentRequest

The ExperimentServiceStartExperimentRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
output_name	string		Optional name of the experiment's output. If a null or an empty name is provided, the output name will be created automatically, otherwise the output name must be in a format of a file name without a file extension.

ExperimentServiceStartExperimentResponse

Information about execution of an experiment.

Field	Type	Label	Description
output_name	string		The name of the experiment's output (in a format of a file name without a file extension).

ExperimentServiceStartLiveRequest

The ExperimentServiceStartLiveRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
track_index	google.protobuf.Int32Value		Optional track index. When index is not provided the first selected or activated track (in that order) will be used, but when the index is provided the track with than index will be selected. The track index starts with "0".

ExperimentServiceStartSnapRequest

The ExperimentServiceStartSnapRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
output_name	string		Optional name of the experiment's output. If a null or an empty name is provided, the output name will be created automatically, otherwise the output name must be in a format of a file name without a file extension.

ExperimentServiceStartSnapResponse

Information about execution of a snap experiment.

Field	Type	Label	Description
output_name	string		The name of the snap's output (in a format of a file name without a file extension).

ExperimentServiceStopRequest

The ExperimentServiceStopRequest class.

Field	Type	Label	Description
experiment_id	string		ID of an experiment to stop or an empty GUID to stop one of the active experiments.

ExperimentServiceStopResponse

Information about execution of an experiment.

Field	Type	Label	Description
experiment_id	string		The ID of the experiment which is used to reference the stopped experiment.

ExperimentService

The IExperimentService interface.

K i n d	Method Name	Request Type	Response Type	Description
	Clone	ExperimentServiceCloneRequest	ExperimentServiceCloneResponse	Clones an already loaded experiment. Useful when one wants to clone an experiment before modifying it in order to preserve the original experiment. This method returns the info needed to reference the cloned experiment.
	Delete	ExperimentServiceDeleteRequest	ExperimentServiceDeleteResponse	Deletes an experiment file from the predefined location on disk. It does not delete the corresponding loaded experiment instance.
	Export	ExperimentServiceExportRequest	ExperimentServiceExportResponse	Returns xml representation of an experiment.
	GetAvailableExperiments	ExperimentServiceGetAvailableExperimentRequest	ExperimentServiceGetAvailableExperimentResponse	Retrieves a list of all available experiments of the system.
	GetImageOutputPath	ExperimentServiceGetImageOutputPathRequest	ExperimentServiceGetImageOutputPathResponse	Gets the location where the images will be stored on the machine where ZEN Client is running.
	GetStatus	ExperimentServiceGetStatusRequest	ExperimentServiceGetStatusResponse	Gets status of an experiment. The information is updated in interval (several times per seconds). As a result, some status updates could be skipped.
	Import	ExperimentServiceImportRequest	ExperimentServiceImportResponse	Imports an experiment from the provided experiment xml string. This method returns the info needed to reference the imported experiment.
	Load	ExperimentServiceLoadRequest	ExperimentServiceLoadResponse	Loads an experiment from the available experiments. Consequently, the experiment is ready to be executed or modified. This method returns the info needed to reference the loaded experiment.
	RegisterOnStatusChanged	ExperimentServiceRegisterOnStatusChangedRequest	ExperimentServiceRegisterOnStatusChangedResponse stream	Register on experiment status changed events. The information is updated in interval (several times per seconds). As a result, some status updates could be skipped. The notifications can be retrieved for experiments which are active at the time the method is invoked. If the method is invoked after an experiment is finished, the call will throw an exception.
	RunExperiment	ExperimentServiceRunExperimentRequest	ExperimentServiceRunExperimentResponse	Executes an experiment and waits until the experiment execution is finished. This means that the method will block until the experiment was successfully completed, it fails, or it is cancelled. If the call is interrupted (e.g., caller is not available anymore) the experiment will be stopped.
	RunSnap	ExperimentServiceRunSnapRequest	ExperimentServiceRunSnapResponse	Acquires a single snap image with the activated channels in the specified experiment and waits until the process of acquiring snap is finished. This means that the method will block until the experiment was successfully completed, it fails, or it is cancelled. If the call is interrupted (e.g., caller is not available anymore) the snap will be stopped.
	Save	ExperimentServiceSaveRequest	ExperimentServiceSaveResponse	Saves a loaded experiment to the predefined location on disk.

K i n d	Method Name	Request Type	Response Type	Description
	StartContinuous	ExperimentServiceStartContinuousRequest	.google.protobuf.Empty	Starts the continuous with the activated channels in the specified experiment and waits for the acquisition to start. After that point continuous will run until it is explicitly stopped or it fails - even if the caller is not available anymore.
	StartExperiment	ExperimentServiceStartExperimentRequest	ExperimentServiceStartExperimentResponse	Starts the process of executing an experiment and waits for the acquisition to start. After that point the experiment will either run to completion (successful or not) or until it is explicitly stopped - even if the caller is not available anymore.
	StartLive	ExperimentServiceStartLiveRequest	.google.protobuf.Empty	Starts live with the requested track in the specified experiment and waits for the acquisition to start. After that point live will run until it is explicitly stopped or it fails - even if the caller is not available anymore.
	StartSnap	ExperimentServiceStartSnapRequest	ExperimentServiceStartSnapResponse	Starts the process of acquiring a single snap image with the activated channels in the specified experiment and waits for the acquisition to start. After that point the snap will either run to completion (successful or not) or until it is explicitly stopped - even if the caller is not available anymore.
	Stop	ExperimentServiceStopRequest	ExperimentServiceStopResponse	Stops the specified experiment or one of the active experiments if the experiment ID is not provided. This will stop any type of experiment (i.e., experiment, snap, continuous, live) if it is active and known to this service. This method returns the info needed to reference the stopped experiment.

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ExperimentStatus

Status of an experiment.

The index properties are 0-based.

If a value is 0 or -1 it means the value is not initialized or

the running experiment does not have the corresponding dimension.

In case of indices, 0 value can also refer to the first element.

Field	Type	Label	Description
tiles_index	int32		The current or already acquired (depending of the dimension order) tiles position index of the currently acquired scene.
tiles_count	int32		The tiles count of the currently acquired scene.
cumulated_tiles_count	int32		The total tiles count of all scenes.
scenes_index	int32		The current or already acquired (depending of the dimension order) scene index (= tile region/position index).
scenes_count	int32		The total scene count (= tile region/position count).
time_points_index	int32		The current or already acquired (depending of the dimension order) time point index in time series.
time_points_count	int32		The number of time points in time series.
zstack_slices_index	int32		The current or already acquired (depending of the dimension order) z-stack slice index.
zstack_slices_count	int32		The total count of z-stack slices.
channels_index	int32		The current or already acquired (depending of the dimension order) channel index.
channels_count	int32		The total channel count.
images_acquired_index	int32		The number of acquired images over all dimensions (channels, time series, z-stack, cumulated tiles).
images_count	int32		The images count over all dimensions (channels, time series, z-stack, cumulated tiles). This value is relevant only for acquisition where end is determined (standard experiment and Snap), therefore it is not relevant for Continuous and Live.
is_experiment_running	bool		A value indicating whether the experiment is currently running.
is_acquisition_running	bool		A value indicating whether an acquisition is currently running.
			The total time that elapsed since the start of the running experiment.

Field	Type	Label	Description
total_elapsed_time	google.protobuf.Duration		

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ExperimentStreamingServiceMonitorAllExperimentsRequest

The ExperimentStreamingServiceMonitorAllExperimentsRequest class.

Field	Type	Label	Description
channel_index	google.protobuf.Int32Value		Optional parameter for filtering by specific channel. If the channel index is provided, then only that channel will be monitored, but if the channel index is not provided, then all channels will be monitored.
enable_raw_data	bool		Value indicating whether the streamed frame data contains raw frames as received from the acquisition (when set), which can be either full or partial frames (e.g., in general LM cameras produce full frames and LSM and EM detectors produce partial frames/lines). Otherwise (when not set) the streamed frame data contains only full frames, which means that in the case of partial frames/lines, they would be assembled into full frames.

ExperimentStreamingServiceMonitorAllExperimentsResponse

Response object of the method for monitoring all experiments.

Field	Type	Label	Description
frame_data	FrameData		The experiment's frame data.

ExperimentStreamingServiceMonitorExperimentRequest

The ExperimentStreamingServiceMonitorExperimentRequest class.

Field	Type	Label	Description
experiment_id	string		ID of the experiment to monitor.
channel_index	google.protobuf.Int32Value		Optional parameter for filtering by specific channel. If the channel index is provided, then only that channel will be monitored, but if the channel index is not provided, then all channels will be monitored.
enable_raw_data	bool		Value indicating whether the streamed frame data contains raw frames as received from the acquisition (when set), which can be either full or partial frames (e.g., in general LM cameras produce full frames and LSM and EM detectors produce partial frames/lines). Otherwise (when not set) the streamed frame data contains only full frames, which means that in the case of partial frames/lines, they would be assembled into full frames.

ExperimentStreamingServiceMonitorExperimentResponse

Response object of the method for monitoring an experiment.

Field	Type	Label	Description
frame_data	FrameData		The experiment's frame data.

ExperimentStreamingService

The IExperimentStreamingService interface.

K i n d	Method Name	Request Type	Response Type	Description
	MonitorAllExperiments	ExperimentStreamingServiceMonitorAllExperimentsRequest	ExperimentStreamingServiceMonitorAllExperimentsResponse stream	Starts monitoring all experiments.
	MonitorExperiment	ExperimentStreamingServiceMonitorExperimentRequest	ExperimentStreamingServiceMonitorExperimentResponse	Starts monitoring the specified experiment.

K i n d	Method Name	Request Type	Response Type	Description
			mentResponse stream	

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FrameData

A simple container for the frame data. This can contain either a full frame or only a part of it (e.g., in case of partial acquisition when working with EM and LSM).

Field	Type	Label	Description
experiment_id	string		The ID of the experiment.
frame_number	int32		The frame sequence number. One frame can represent either a single image taken by the camera or one full scan in case of partial acquisition. One frame can also contain multiple channels if they are acquired in the same image or scan.
frame_position	FramePosition		The position of the full frame.
frame_size	zen_api.common.v1.IntSize		The size of the full frame (in pixels).
frame_stage_position	FrameStagePosition		The stage position of the acquired full frame.
scaling	Scaling		The scaling of the frame.
pixel_data	FramePixelData		The pixel data of the frame. This can contain either the pixels of a full frame or only a part of it (e.g., a line or a rectangle in case of partial acquisition when working with EM and LSM).

zen_api/acquisition/v1beta/frame_pixel_data.proto

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FramePixelData

A simple container for the frame pixel data. This can contain either the pixels of a full frame or only a part of it (e.g., a line or a rectangle in case of partial acquisition when working with EM and LSM).

Field	Type	Label	Description
start_position	zen_api.common.v1.IntPoint		The start position (in pixels) of the pixel data in the frame. Together with the size property, this represents the rectangle where the pixels are located inside the full frame. For ordinary acquisition this will be the top left corner of the frame, but for partial acquisition this can be any position inside the full frame relative to the top left corner.
size	zen_api.common.v1.IntSize		Size (in pixels) of the pixel data. Together with the start position property, this represents the rectangle where the pixels are located inside the full frame. For ordinary acquisition this will be the full frame size, but for partial acquisition this can be just one part of the full frame.
pixel_type	PixelType		The pixel type of the frame.
raw_data	bytes		The raw pixel data. The value of individual pixels is contained in this container. The pixel values need to be extracted from the raw byte data. The number of bits needed to extract a single pixel from the raw byte data and the format it is stored in is determined by the pixel type property.

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FramePosition

Defines the position of the frame in multiple dimensions.

Field	Type	Label	Description
x	int32		The pixel index in X direction of the top left corner of the frame.
y	int32		The pixel index in Y direction of the top left corner of the frame.
z	int32		The Z slice index of the of the frame.
t	int32		The time point of the frame in a sequentially acquired series of data. Note that this doesn't represents the exact time of acquisition but only the sequence of the acquired image.
s	int32		The scene index.
m	int32		The mosaic tile index.
c	int32		The channel index in a multi-channel data set.
h	int32		The raw data index.

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FrameStagePosition

Defines the stage position of the acquired frame.

Field	Type	Label	Description
x	google.protobuf.DoubleValue		The stage position in X direction (unit: m).
y	google.protobuf.DoubleValue		The stage position in Y direction (unit: m).
z	google.protobuf.DoubleValue		The stage position in Z direction (unit: m).

zen_api/acquisition/v1beta/pixel_type.proto

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PixelType

Pixel type of image data.

Name	Number	Description
PIXEL_TYPE_UNSPECIFIED	0	Default value if status is not specified.
PIXEL_TYPE_GRAY8	1	8 bit unsigned.
PIXEL_TYPE_GRAY16	2	16 bit unsigned.
PIXEL_TYPE_BGR24	4	8 bit triples, representing the color channels Blue, Green and Red.
PIXEL_TYPE_BGR48	5	16 bit triples, representing the color channels Blue, Green and Red.

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Scaling

Defines the scaling of the acquired frame.

Field	Type	Label	Description
x	double		The scaling in X dimension (unit: m/pixel).
y	double		The scaling in Y dimension (unit: m/pixel).

CompositionServiceCreateModuleRequest

The CompositionServiceCreateModuleRequest class.

Field	Type	Label	Description
module_id	string		The id of the module.
display_name	string		The display name of the module.
description	string		The description of the module.
license_string	string		The license string.
minimum_required_version	string		The minimum required feature version.

CompositionServiceCreateModuleResponse

The CompositionServiceCreateModuleResponse class.

CompositionServiceIsModuleAvailableRequest

The CompositionServiceIsModuleAvailableRequest class.

Field	Type	Label	Description
module_id	string		The module id.

IsModuleAvailableResponse

Response object of the method for checking the availability state of a composition module.

Field	Type	Label	Description
is_available	bool		A value indicating whether the module is available or not.

CompositionService

The ICompositionService interface.

K i n d	Method Name	Request Type	Response Type	Description
	CreateModule	CompositionServiceCreateModuleRequest	CompositionServiceCreateModuleResponse	Creates a module and adds it to the selected profile. With this method, a client can 'inject' a new module at runtime (e.g. via OAD script or ZEN API). After adding the module, it will appear as optional module of the selected profile just as any other module. The Module Manager can be used to verify this. After adding the module, the client can make use of the 'normal' license infrastructure to check the availability of the newly added module. Note: A module is available, if the module is licensed AND the user has enabled it (via the Module Manager). In case a module gets added via this method, the module is enabled by default.
	IsModuleAvailable	CompositionServiceIsModuleAvailableRequest	IsModuleAvailableResponse	Returns the availability state of the given module.

zen_api/common/v1/double_point.proto

DoublePoint

Double-based point object.

Field	Type	Label	Description
x	double		The coordinate X of a point.
y	double		The coordinate Y of a point.

zen_api/common/v1/int_point.proto

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IntPoint

Integer-based point.

Field	Type	Label	Description
x	int32		The coordinate X of a point.
y	int32		The coordinate Y of a point.

zen_api/common/v1/int_size.proto

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IntSize

Integer-based size.

Field	Type	Label	Description
width	int32		The width.
height	int32		The height.

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AxisIdentifier

Unique identifier for axis.

Name	Number	Description
AXIS_IDENTIFIER_UNSPECIFIED	0	Default enum value.
AXIS_IDENTIFIER_X	1	X axis (translation axis). Controlled by length, default unit is meters.
AXIS_IDENTIFIER_Y	2	Y axis (translation axis). Controlled by length, default unit is meters.
AXIS_IDENTIFIER_Z	3	Z axis (translation axis). Controlled by length, default unit is meters.
AXIS_IDENTIFIER_R	4	R axis (rotation axis). Controlled by angle, default unit is radians.
AXIS_IDENTIFIER_T	5	T axis (rotation axis). Controlled by angle, default unit is radians.
AXIS_IDENTIFIER_M	6	M axis (translation axis). Controlled by length, default unit is meters.

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StageAxis

Abstract representation of an arbitrary axis.

Field	Type	Label	Description
axis	AxisIdentifier		The axis identifier.
position	double		The position of the axis in meters or radians.

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StageMotionState

Stage motion state for ZenApi.

Name	Number	Description
STAGE_MOTION_STATE_UNSPECIFIED	0	Default enum value.
STAGE_MOTION_STATE_UNKNOWN	1	Should not occur in a well configured system.
STAGE_MOTION_STATE_ERROR	2	The stage cannot perform any task. Software restart and/or physical intervention is required.
STAGE_MOTION_STATE_IDLE	3	The stage is not moving.
STAGE_MOTION_STATE_MOVING	4	The stage is in motion.

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StageServiceAxisVelocityResponse

Abstract representation of an arbitrary axis and it's velocity.

Field	Type	Label	Description
axis	AxisIdentifier		The axis identifier.
velocity	double		The velocity of the axis in meters per second or radians per second.

StageServiceGetAvailableStageAxisRequest

The StageServiceGetAvailableStageAxisRequest class.

StageServiceGetAvailableStageAxisResponse

Response object of available stage axis.

Field	Type	Label	Description
available_axis	AxisIdentifier	repeated	

StageServiceGetAxisPositionRequest

The StageServiceGetAxisPositionRequest class.

Field	Type	Label	Description
axis_id	AxisIdentifier		The requested axe.

StageServiceGetAxisPositionResponse

Abstract representation of an arbitrary axis.

Field	Type	Label	Description
axis	AxisIdentifier		The axis identifier.
position	double		The position of the axis in meters or radians.

StageServiceGetAxisVelocityRequest

The StageServiceGetAxisVelocityRequest class.

Field	Type	Label	Description
axis_id	AxisIdentifier		The requested axis.

StageServiceGetAxisVelocityResponse

Abstract representation of an arbitrary axis and it's velocity.

Field	Type	Label	Description
axis	AxisIdentifier		The axis identifier.
velocity	double		The velocity of the axis in meters per second or radians per second.

StageServiceGetStageMotionStateRequest

The StageServiceGetStageMotionStateRequest class.

StageServiceGetStageMotionStateResponse

StageMotionState enum response.

Field	Type	Label	Description
state	StageMotionState		The stage motion state.

StageServiceGetStagePositionRequest

The StageServiceGetStagePositionRequest class.

StageServiceGetStagePositionResponse

Response object of stage axis positions.

Field	Type	Label	Description
axis_positions	StageAxis	repeated	The available axis and their positions.

StageServiceGetStageStateRequest

The StageServiceGetStageStateRequest class.

StageServiceGetStageStateResponse

StageState enum response.

Field	Type	Label	Description
state	StageState		The stage state.

StageServiceGetStageVelocityRequest

The StageServiceGetStageVelocityRequest class.

StageServiceGetStageVelocityResponse

Response object of stage axis velocities.

Field	Type	Label	Description
axis_velocities	StageServiceAxisVelocityResponse	repeated	The available axis and their velocities.

StageServiceInitializeStageRequest

The StageServiceInitializeStageRequest class.

StageServiceInitializeStageResponse

Response object of the initialize stage method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to initialize the stage succeeded or not.

StageServiceMoveToRequest

The StageServiceMoveToRequest class.

Field	Type	Label	Description
axis_to_move	StageAxis	repeated	The stage axis that should move. The position is in meters.

StageServiceMoveToResponse

Response object of the MoveStage method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to move the stage succeeded or not.

StageServiceRegisterOnStageMotionStateChangedRequest

The StageServiceRegisterOnStageMotionStateChangedRequest class.

StageServiceRegisterOnStageMotionStateChangedResponse

StageMotionState enum response.

Field	Type	Label	Description
state	StageMotionState		The stage motion state.

StageServiceRegisterOnStagePositionChangedRequest

The StageServiceRegisterOnStagePositionChangedRequest class.

StageServiceRegisterOnStagePositionChangedResponse

Abstract representation of an arbitrary axis.

Field	Type	Label	Description
axis	AxisIdentifier		The axis identifier.
position	double		The position of the axis in meters or radians.

StageServiceRegisterOnStageStateChangedRequest

The StageServiceRegisterOnStageStateChangedRequest class.

StageServiceRegisterOnStageStateChangedResponse

StageState enum response.

Field	Type	Label	Description
state	StageState		The stage state.

StageServiceRegisterOnStageVelocityChangedRequest

The StageServiceRegisterOnStageVelocityChangedRequest class.

StageServiceRegisterOnStageVelocityChangedResponse

Abstract representation of an arbitrary axis and it's velocity.

Field	Type	Label	Description
axis	AxisIdentifier		The axis identifier.
velocity	double		The velocity of the axis in meters per second or radians per second.

StageServiceStopRequest

The StageServiceStopRequest class.

StageServiceStopResponse

The StageServiceStopResponse class.

StageService

The IStageService interface.

Kind	Method Name	Request Type	Response Type	Description
	GetAvailableStageAxes	StageServiceGetAvailableStageAxisRequest	StageServiceGetAvailableStageAxisResponse	Retrieves all available stage axis on this system.
	GetAxisPosition	StageServiceGetAxisPositionRequest	StageServiceGetAxisPositionResponse	Gets the current position of an axis of the stage.
	GetAxisVelocity	StageServiceGetAxisVelocityRequest	StageServiceGetAxisVelocityResponse	Gets the current velocity of an axis of the stage.
	GetStageMotionState	StageServiceGetStageMotionStateRequest	StageServiceGetStageMotionStateResponse	Retrieves the current stage motion state.
	GetStagePosition	StageServiceGetStagePositionRequest	StageServiceGetStagePositionResponse	Retrieves the current stage position. This will return the positions of all available axis..
	GetStageState	StageServiceGetStageStateRequest	StageServiceGetStageStateResponse	Retrieves the current stage state.
	GetStageVelocity	StageServiceGetStageVelocityRequest	StageServiceGetStageVelocityResponse	Retrieves the current stage velocity. This will return the velocity of all available axis.
	InitializeStage	StageServiceInitializeStageRequest	StageServiceInitializeStageResponse	Starts an initialization routine for the stage to initialize all stage axis. This may take a while and the stage is moving in this time.
	MoveTo	StageServiceMoveToRequest	StageServiceMoveToResponse	Moves the stage.
	RegisterOnStageMotionStateChanged	StageServiceRegisterOnStageMotionStateChangedRequest	StageServiceRegisterOnStageMotionStateChangedResponse stream	Notification about changes of the stage motion state.
	RegisterOnStagePositionChanged	StageServiceRegisterOnStagePositionChangedRequest	StageServiceRegisterOnStagePositionChangedResponse stream	Notification about changes of all stage axis positions.
	RegisterOnStageStateChange	StageServiceRegisterOnStageStateChangeRequest	StageServiceRegisterOnStageStateChangeResponse stream	Notification about changes of the stage state.
	RegisterOnStageVelocityChanged	StageServiceRegisterOnStageVelocityChangedRequest	StageServiceRegisterOnStageVelocityChangedResponse stream	Notification about changes of all stage axis velocities.
	Stop	StageServiceStopRequest	StageServiceStopResponse	Immediately stops the stage.

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StageState

Stage state for ZenApi.

Name	Number	Description
STAGE_STATE_UNSPECIFIED	0	Default enum value.
STAGE_STATE_UNKNOWN	1	Should not occur in a well configured system.
STAGE_STATE_ERROR	2	The stage cannot perform any task. Software restart and/or physical intervention is required.
STAGE_STATE_NORMAL	3	The state is functioning normally and can be used.
STAGE_STATE_INITIALIZING	4	The stage is in the process of reinitializing one or more axes, should not be used, and will ignore value sets and commands other than stop.

Name	Number	Description
STAGE_STATE_INITIALIZATION_NEEDED	5	The stage will respond to motion commands, but positions may be reported erroneously, and the stage should be initialized before further use.

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StartJobOptions

Start Job options.

Field	Type	Label	Description
result_path	string		A value indicating a path for saving a Job results in the file system. -- If value is given than Job output will be copied to given path in filesystem and not uploaded to ZEN Archive. Have to be in the Windows-supported directory path format (local drive or network share). -- If value is null (or empty/whitespace) than Job output will be uploaded to ZEN Archive and not copied to anywhere.

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JobResourcesServiceGetAvailableResourcesRequest

The JobResourcesServiceGetAvailableResourcesRequest class.

JobResourcesServiceGetAvailableResourcesResponse

Response containing the list of all available resource workflow parameters.

Field	Type	Label	Description
resources	string	repeated	The list of all available resource workflow parameters.

JobResourcesServiceGetBooleanValueRequest

The JobResourcesServiceGetBooleanValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceGetBooleanValueResponse

Response containing the resource's value.

Field	Type	Label	Description
value	bool		The resource's value.

JobResourcesServiceGetDateTimeValueRequest

The JobResourcesServiceGetDateTimeValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceGetDateTimeValueResponse

Response containing the resource's value.

Field	Type	Label	Description
value	string		The resource's date and time string value in ISO 8601 format.

JobResourcesServiceGetDateValueRequest

The JobResourcesServiceGetDateValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceGetDateValueResponse

Response containing the resource's value.

Field	Type	Label	Description
value	string		The resource's date string value in ISO 8601 format.

JobResourcesServiceGetDoubleValueRequest

The JobResourcesServiceGetDoubleValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceGetDoubleValueResponse

Response containing the resource's value.

Field	Type	Label	Description
value	double		The resource's value.

JobResourcesServiceGetFloatValueRequest

The JobResourcesServiceGetFloatValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceGetFloatValueResponse

Response containing the resource's value.

Field	Type	Label	Description
value	float		The resource's value.

JobResourcesServiceGetIntegerValueRequest

The JobResourcesServiceGetIntegerValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceGetIntegerValueResponse

Response containing the resource's value.

Field	Type	Label	Description
value	int32		The resource's value.

JobResourcesServiceGetLongValueRequest

The JobResourcesServiceGetLongValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceGetLongValueResponse

Response containing the resource's value.

Field	Type	Label	Description
value	int64		The resource's value.

JobResourcesServiceGetStringValueRequest

The JobResourcesServiceGetStringValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceGetStringValueResponse

Response containing the resource's value.

Field	Type	Label	Description
value	string		The resource's value.

JobResourcesServiceGetTimeValueRequest

The JobResourcesServiceGetTimeValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceGetTimeValueResponse

Response containing the resource's value.

Field	Type	Label	Description
value	string		The resource's time string value in ISO 8601 format.

JobResourcesServiceHasResourceRequest

The JobResourcesServiceHasResourceRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

JobResourcesServiceHasResourceResponse

Response containing information if the current job has a resource with the specified ID.

Field	Type	Label	Description
has_resource	bool		A value indicating whether the current job has a resource with the specified ID.

JobResourcesServiceIsJobLoadedRequest

The JobResourcesServiceIsJobLoadedRequest class.

JobResourcesServiceIsJobLoadedResponse

Response containing information if a job is loaded.

Field	Type	Label	Description
is_job_loaded	bool		A value indicating whether a job is loaded.

JobResourcesServiceSetBooleanValueRequest

The JobResourcesServiceSetBooleanValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.

Field	Type	Label	Description
value	bool		The resource's value.

JobResourcesServiceSetBooleanValueResponse

The JobResourcesServiceSetBooleanValueResponse class.

JobResourcesServiceSetDateTimeValueRequest

The JobResourcesServiceSetDateTimeValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.
value	string		The resource's value.

JobResourcesServiceSetDateTimeValueResponse

The JobResourcesServiceSetDateTimeValueResponse class.

JobResourcesServiceSetDateValueRequest

The JobResourcesServiceSetDateValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.
value	string		The resource's value.

JobResourcesServiceSetDateValueResponse

The JobResourcesServiceSetDateValueResponse class.

JobResourcesServiceSetDoubleValueRequest

The JobResourcesServiceSetDoubleValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.
value	double		The resource's value.

JobResourcesServiceSetDoubleValueResponse

The JobResourcesServiceSetDoubleValueResponse class.

JobResourcesServiceSetFloatValueRequest

The JobResourcesServiceSetFloatValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.
value	float		The resource's value.

JobResourcesServiceSetFloatValueResponse

The JobResourcesServiceSetFloatValueResponse class.

JobResourcesServiceSetIntegerValueRequest

The JobResourcesServiceSetIntegerValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.
value	int32		The resource's value.

JobResourcesServiceSetIntegerValueResponse

The JobResourcesServiceSetIntegerValueResponse class.

JobResourcesServiceSetLongValueRequest

The JobResourcesServiceSetLongValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.
value	int64		The resource's value.

JobResourcesServiceSetLongValueResponse

The JobResourcesServiceSetLongValueResponse class.

JobResourcesServiceSetStringValueRequest

The JobResourcesServiceSetStringValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.
value	string		The resource's value.

JobResourcesServiceSetStringValueResponse

The JobResourcesServiceSetStringValueResponse class.

JobResourcesServiceSetTimeValueRequest

The JobResourcesServiceSetTimeValueRequest class.

Field	Type	Label	Description
resource_id	string		The ID of the resource.
value	string		The resource's value.

JobResourcesServiceSetTimeValueResponse

The JobResourcesServiceSetTimeValueResponse class.

JobResourcesService

The IJobResourcesService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetAvailableResources	JobResourcesServiceGetAvailableResourcesRequest	JobResourcesServiceGetAvailableResourcesResponse	Retrieves a list of all available resource workflow parameters.
	GetBooleanValue	JobResourcesServiceGetBooleanValueRequest	JobResourcesServiceGetBooleanValueResponse	Gets the value of the resource with the specified ID from the current job as a boolean value.
	GetDateTimeValue	JobResourcesServiceGetDateTimeValueRequest	JobResourcesServiceGetDateTimeValueResponse	Gets the value of the resource with the specified ID from the current job as a date and time string value in ISO 8601 format.
	GetDateValue	JobResourcesServiceGetDateValueRequest	JobResourcesServiceGetDateValueResponse	Gets the value of the resource with the specified ID from the current job as a date string value in ISO 8601 format.
	GetDoubleValue	JobResourcesServiceGetDoubleValueRequest	JobResourcesServiceGetDoubleValueResponse	Gets the value of the resource with the specified ID from the current job as a double precision floating point value.
	GetFloatValue	JobResourcesServiceGetFloatValueRequest	JobResourcesServiceGetFloatValueResponse	Gets the value of the resource with the specified ID from the current job as a single precision floating point value.

K i n d	Method Name	Request Type	Response Type	Description
	GetIntegerValue	JobResourcesServiceGetIntegerValueRequest	JobResourcesServiceGetIntegerValueResponse	Gets the value of the resource with the specified ID from the current job as an integer value.
	GetLongValue	JobResourcesServiceGetLongValueRequest	JobResourcesServiceGetLongValueResponse	Gets the value of the resource with the specified ID from the current job as a long integer value.
	GetStringValue	JobResourcesServiceGetStringValueRequest	JobResourcesServiceGetStringValueResponse	Gets the value of the resource with the specified ID from the current job as a string value.
	GetTimeValue	JobResourcesServiceGetTimeValueRequest	JobResourcesServiceGetTimeValueResponse	Gets the value of the resource with the specified ID from the current job as a time string value in ISO 8601 format.
	HasResource	JobResourcesServiceHasResourceRequest	JobResourcesServiceHasResourceResponse	Checks if the current job has a resource with the specified ID.
	IsJobLoaded	JobResourcesServiceIsJobLoadedRequest	JobResourcesServiceIsJobLoadedResponse	Checks if a job is loaded.
	SetBooleanValue	JobResourcesServiceSetBooleanValueRequest	JobResourcesServiceSetBooleanValueResponse	Sets the value of the resource with the specified ID in the current job as a boolean value or creates the resource if it doesn't exist.
	SetDateTimeValue	JobResourcesServiceSetDateTimeValueRequest	JobResourcesServiceSetDateTimeValueResponse	Sets the value of the resource with the specified ID in the current job as a date and time string value in ISO 8601 format or creates the resource if it doesn't exist.
	SetDateValue	JobResourcesServiceSetDateValueRequest	JobResourcesServiceSetDateValueResponse	Sets the value of the resource with the specified ID in the current job as a date string value in ISO 8601 format or creates the resource if it doesn't exist.
	SetDoubleValue	JobResourcesServiceSetDoubleValueRequest	JobResourcesServiceSetDoubleValueResponse	Sets the value of the resource with the specified ID in the current job as a double precision floating point value or creates the resource if it doesn't exist.
	SetFloatValue	JobResourcesServiceSetFloatValueRequest	JobResourcesServiceSetFloatValueResponse	Sets the value of the resource with the specified ID in the current job as a single precision floating point value or creates the resource if it doesn't exist.
	SetIntegerValue	JobResourcesServiceSetIntegerValueRequest	JobResourcesServiceSetIntegerValueResponse	Sets the value of the resource with the specified ID in the current job as an integer value or creates the resource if it doesn't exist.
	SetLongValue	JobResourcesServiceSetLongValueRequest	JobResourcesServiceSetLongValueResponse	Sets the value of the resource with the specified ID in the current job as a long integer value or creates the resource if it doesn't exist.
	SetStringValue	JobResourcesServiceSetStringValueRequest	JobResourcesServiceSetStringValueResponse	Sets the value of the resource with the specified ID in the current job as a string value or creates the resource if it doesn't exist.
	SetTimeValue	JobResourcesServiceSetTimeValueRequest	JobResourcesServiceSetTimeValueResponse	Sets the value of the resource with the specified ID in the current job as a time string value in ISO 8601 format or creates the resource if it doesn't exist.

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JobInfo

Information about Job executed by the workflow runner contains a real-time updates and Job's events with Job state.

Field	Type	Label	Description
job_id	string		A Job unique runtime ID.
create_date	google.protobuf.Timestamp		A date and time when JobInfo was created.
status	JobStatus		A Job execution state.
start_options	zen_api.workflows.v1.StartJobOptions		A Job starting options.

JobStatus

Runtime status of the Job.

Name	Number	Description
JOB_STATUS_UNSPECIFIED	0	Default value if status is not specified.
JOB_STATUS_RUNNING	1	Job is currently executed by the workflow runner.
JOB_STATUS_PAUSED	2	Job execution is paused (not supported for now and reserved only for future purposes for saving numeration sequence).
JOB_STATUS_COMPLETED	3	Job execution is successfully completed.
JOB_STATUS_FAILED	4	Job execution was failed.
JOB_STATUS_CANCELLED	5	Job execution was interrupted (cancelled).
JOB_STATUS_PENDING	6	Job is created but still not started and waiting for beginning of execution.

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WorkflowServiceGetJobInfoRequest

The WorkflowServiceGetJobInfoRequest class.

Field	Type	Label	Description
job_id	string		Target Job ID.

WorkflowServiceGetJobInfoResponse

Response object representing the job info.

Field	Type	Label	Description
job_info	JobInfo		The job info.

WorkflowServiceStartJobRequest

The WorkflowServiceStartJobRequest class.

Field	Type	Label	Description
job_name	string		Job display name.
options	zen_api.workflows.v1.StartJobOptions		Job starting options.

WorkflowServiceStartJobResponse

Response object representing the starting of a job.

Field	Type	Label	Description
job_info	JobInfo		The job info.

WorkflowServiceStopJobRequest

The WorkflowServiceStopJobRequest class.

Field	Type	Label	Description
job_id	string		Target Job ID.

WorkflowServiceStopJobResponse

The WorkflowServiceStopJobResponse class.

WorkflowServiceWaitJobRequest

The WorkflowServiceWaitJobRequest class.

Field	Type	Label	Description
job_id	string		Target Job ID.

WorkflowServiceWaitJobResponse

The WorkflowServiceWaitJobResponse class.

WorkflowService

The IWorkflowService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetJobInfo	WorkflowServiceGetJobInfoRequest	WorkflowServiceGetJobInfoResponse	Get Job information.
	StartJob	WorkflowServiceStartJobRequest	WorkflowServiceStartJobResponse	Start Job execution.
	StopJob	WorkflowServiceStopJobRequest	WorkflowServiceStopJobResponse	Stop the Job execution.
	WaitJob	WorkflowServiceWaitJobRequest	WorkflowServiceWaitJobResponse	Wait for the Job execution will be finished.

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JobStatus

Enumerates possible job statuses.

Name	Number	Description
JOB_STATUS_UNSPECIFIED	0	Default enum value.
JOB_STATUS_NOT_LOADED	1	Job template is not loaded.
JOB_STATUS_LOADED	2	Job template is loaded.
JOB_STATUS_RUNNING	3	Job is running.
JOB_STATUS_FINALIZING	4	Finalizing job results after the job was completed successfully.
JOB_STATUS_ARCHIVING	5	Archiving job results after they were finalized.
JOB_STATUS_COMPLETED	6	Job was completed successfully.
JOB_STATUS_ABORTED	7	Job was aborted.
JOB_STATUS_CANCELED	8	Job was canceled.

JobTemplateInfo

Contains information about a job template.

Field	Type	Label	Description
name	string		The job template's name.
description	string		The job template's description.
category	string		The job template's category.
subcategory	string		The job template's subcategory.

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WorkflowServiceGetAvailableJobTemplatesRequest

The WorkflowServiceGetAvailableJobTemplatesRequest class.

Field	Type	Label	Description
category	string		Optional filter for job templates. If category is provided then only job templates that are in the specified category will be listed.
subcategory	string		Optional filter for job templates. If subcategory is provided then only job templates that are in the specified subcategory will be listed.

WorkflowServiceGetAvailableJobTemplatesResponse

Represents a list of all available job templates.

Field	Type	Label	Description
job_templates	JobTemplateInfo	repeated	The available job templates.

WorkflowServiceGetStatusRequest

The WorkflowServiceGetStatusRequest class.

WorkflowServiceGetStatusResponse

Response containing the job status.

Field	Type	Label	Description
job_status	JobStatus		The job status.

WorkflowServiceIsJobRunningRequest

The WorkflowServiceIsJobRunningRequest class.

WorkflowServiceIsJobRunningResponse

Response object representing the return value of IsJobRunning() method of the Workflow service.

Field	Type	Label	Description
is_job_running	bool		A value indicating whether the loaded job is currently running.

WorkflowServiceIsJobTemplateLoadedRequest

The WorkflowServiceIsJobTemplateLoadedRequest class.

WorkflowServiceIsJobTemplateLoadedResponse

Response object representing the return value of IsJobTemplateLoaded() method of the Workflow service.

Field	Type	Label	Description
is_job_template_loaded	bool		A value indicating whether a job template is loaded.

WorkflowServiceLoadJobTemplateRequest

The WorkflowServiceLoadJobTemplateRequest class.

Field	Type	Label	Description
job_template_name	string		The name of the job template.
result_path	string		Optional parameter for storing the result outside of ZEN archive. If provided the job result will be stored in the selected location and will not be uploaded to the archive.

WorkflowServiceLoadJobTemplateResponse

The WorkflowServiceLoadJobTemplateResponse class.

WorkflowServiceRegisterOnStatusChangedRequest

The WorkflowServiceRegisterOnStatusChangedRequest class.

WorkflowServiceRegisterOnStatusChangedResponse

Response containing the job status.

Field	Type	Label	Description
job_status	JobStatus		The job status.

WorkflowServiceRunJobRequest

The WorkflowServiceRunJobRequest class.

WorkflowServiceRunJobResponse

Response object representing the return value of RunJob() method of the Workflow service.

WorkflowServiceStartJobRequest

The WorkflowServiceStartJobRequest class.

WorkflowServiceStartJobResponse

The WorkflowServiceStartJobResponse class.

WorkflowServiceStopJobRequest

The WorkflowServiceStopJobRequest class.

WorkflowServiceStopJobResponse

Response object representing the return value of StopJob() method of the Workflow service.

WorkflowServiceUnloadJobTemplateRequest

The WorkflowServiceUnloadJobTemplateRequest class.

WorkflowServiceUnloadJobTemplateResponse

The WorkflowServiceUnloadJobTemplateResponse class.

WorkflowServiceWaitJobRequest

The WorkflowServiceWaitJobRequest class.

WorkflowServiceWaitJobResponse

Response object representing the return value of WaitJob() method of the Workflow service.

WorkflowService

The IWorkflowService interface.

Kind	Method Name	Request Type	Response Type	Description
	GetAvailableJobTemplates	WorkflowServiceGetAvailableJobTemplatesRequest	WorkflowServiceGetAvailableJobTemplatesResponse	Retrieves a list of all available job templates.
	GetStatus	WorkflowServiceGetStatusRequest	WorkflowServiceGetStatusResponse	Gets the job status.
	IsJobRunning	WorkflowServiceIsJobRunningRequest	WorkflowServiceIsJobRunningResponse	Checks if the loaded job is currently running.
	IsJobTemplateLoaded	WorkflowServiceIsJobTemplateLoadedRequest	WorkflowServiceIsJobTemplateLoadedResponse	Checks if a job template is loaded.
	LoadJobTemplate	WorkflowServiceLoadJobTemplateRequest	WorkflowServiceLoadJobTemplateResponse	Loads a job template and prepares it for execution.
	RegisterOnStatusChanged	WorkflowServiceRegisterOnStatusChangedRequest	WorkflowServiceRegisterOnStatusChangedResponse stream	Register on job status changed events.
	RunJob	WorkflowServiceRunJobRequest	WorkflowServiceRunJobResponse	Runs the loaded job template to completion.
	StartJob	WorkflowServiceStartJobRequest	WorkflowServiceStartJobResponse	Starts the loaded job template but it doesn't wait for it to complete.
	StopJob	WorkflowServiceStopJobRequest	WorkflowServiceStopJobResponse	Stops the currently running job and waits for it to complete.
Kind	UnloadJobTemplate	WorkflowServiceUnloadJobTemplateRequest	WorkflowServiceUnloadJobTemplateResponse	Unloads the loaded job template.
	WaitJob	WorkflowServiceWaitJobRequest	WorkflowServiceWaitJobResponse	Waits for currently running job to complete.

zen_api/em/hardware/v1/acquisition_response_type.proto

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AcquisitionResponseType

Indicates the type of response returned by the camera live image acquisition stream.

Name	Number	Description
ACQUISITION_RESPONSE_TYPE_UNSPECIFIED	0	Unspecified type.
ACQUISITION_RESPONSE_TYPE_FRAME_START	1	The response is the first data buffer of a new frame. The response will include the image meta-data.
ACQUISITION_RESPONSE_TYPE_FRAME_CONTINUATION	2	The response is a continuation of the previous frame. The response will not include the image meta-data.

AcquisitionSettings

Request object to set the simple acquisition settings.

Field	Type	Label	Description
detector_name	string		The detector to use. Null will take the detector from the previous acquisition.
width	int32		The image width in pixels.
height	int32		The image height in pixels.
dwelt_time	double		The dwell time in seconds. The closest dwell time to the selected one will be chosen.
frame_averages	int32		The number of frames to average. 1 means no averaging.
line_averages	int32		The number of lines to average. 1 means no averaging.

zen_api/em/hardware/v1/acquisition_status.proto

AcquisitionStatus

Acquisition states.

Name	Number	Description
ACQUISITION_STATUS_UNSPECIFIED	0	Default enum value.
ACQUISITION_STATUS_IDLE	1	No acquisition task is running, available for next acquisition.
ACQUISITION_STATUS_BUSY	2	Acquisition hardware is occupied by another task. No acquisition possible at the moment.
ACQUISITION_STATUS_LIVE_RUNNING	3	Live acquisition is currently running.
ACQUISITION_STATUS_ACQUISITION_RUNNING	4	Acquisition task is currently running.

zen_api/em/hardware/v1/beam_state.proto

BeamState

Possible beam operating states.

Name	Number	Description
BEAM_STATE_UNSPECIFIED	0	Default enum value.
BEAM_STATE_UNKNOWN	1	Unknown indicates that this variable hasn't been assigned yet. This value should never occur. If you read this value, it's a bug.
BEAM_STATE_ERROR	2	There is an error with the Gun or EHT and the beam cannot be used.
BEAM_STATE_OFF	3	EHT is off. On FE-SEMs, the gun may be on, gun interfaces must be checked to discover gun state. On C-SEMs the EHT and gun are off, and there is no current on the filament.
BEAM_STATE_TURNING_ON	4	The EHT (and gun for C-SEM) is turning on.
BEAM_STATE_ON	5	Gun is on. Filament (if it exists) has full current. EHT is on. The beam can be used.
BEAM_STATE_GOING_TO_STANDBY	6	The beam is going into the standby state.
BEAM_STATE_STANDBY	7	Not all devices support this mode. This represents an intermediate state. The EVO and the FIB have standby states.
BEAM_STATE_TURNING_OFF	8	The EHT is ramping down. On C-SEM, the gun and filament may also be shutting down.

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CameraAcquisitionSettings

Field	Type	Label	Description
camera_name	string		The camera to use.
width	int32		The image width in pixels.
height	int32		The image height in pixels.

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CameraAcquisitionStatus

Acquisition states.

Name	Number	Description
CAMERA_ACQUISITION_STATUS_UNSPECIFIED	0	Default enum value.
CAMERA_ACQUISITION_STATUS_UNKNOWN	1	Should not occur in an initialized system.
CAMERA_ACQUISITION_STATUS_ERROR	2	The image acquisition device is in an error state and cannot be used.
CAMERA_ACQUISITION_STATUS_IDLE	3	The image acquisition device is ready to perform a task.
CAMERA_ACQUISITION_STATUS_BUSY	4	The image acquisition device is busy with other tasks and cannot be used for image acquisition.
CAMERA_ACQUISITION_STATUS_LIVE_ACQUISITION	5	The system is performing a scan and will continue until explicitly asked to stop. We use the term "Live" instead of "Continuous" because in ZIS, "Continuous" means "a time series of snaps with no delay between and no scheduled end".
CAMERA_ACQUISITION_STATUS_SINGLE_ACQUISITION	6	The system is performing a scan that has a scheduled termination such as "at the end of the frame".

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CameraServiceGetAcquisitionStatusRequest

The CameraServiceGetAcquisitionStatusRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.

CameraServiceGetAcquisitionStatusResponse

Response object for the get acquisition state.

Field	Type	Label	Description
status	CameraAcquisitionStatus		The acquisition status.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceGetAvailableCamerasRequest

The CameraServiceGetAvailableCamerasRequest class.

CameraServiceGetAvailableCamerasResponse

Response object representing a list of available cameras.

Field	Type	Label	Description
camera_names	string	repeated	The available cameras on the system.

CameraServiceGetBrightnessRequest

The CameraServiceGetBrightnessRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.

CameraServiceGetBrightnessResponse

Response object for the get brightness.

Field	Type	Label	Description
brightness	double		The brightness.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceGetCcdModeRequest

The CameraServiceGetCcdModeRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.

CameraServiceGetCcdModeResponse

Response object for the get CCD mode.

Field	Type	Label	Description
mode	CcdMode		The CCD mode.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceGetContrastRequest

The CameraServiceGetContrastRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.

CameraServiceGetContrastResponse

Response object for the get contrast.

Field	Type	Label	Description
contrast	double		The contrast.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceRegisterOnAcquisitionStatusChangedRequest

The CameraServiceRegisterOnAcquisitionStatusChangedRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.

CameraServiceRegisterOnAcquisitionStatusChangedResponse

Response object for the get acquisition state.

Field	Type	Label	Description
status	CameraAcquisitionStatus		The acquisition status.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceRegisterOnBrightnessChangedRequest

The CameraServiceRegisterOnBrightnessChangedRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.

CameraServiceRegisterOnBrightnessChangedResponse

Response object for the get brightness.

Field	Type	Label	Description
brightness	double		The brightness.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceRegisterOnCcdModeChangedRequest

The CameraServiceRegisterOnCcdModeChangedRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.

CameraServiceRegisterOnCcdModeChangedResponse

Response object for the get CCD mode.

Field	Type	Label	Description
mode	CcdMode		The CCD mode.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceRegisterOnContrastChangedRequest

The CameraServiceRegisterOnContrastChangedRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.

CameraServiceRegisterOnContrastChangedResponse

Response object for the get contrast.

Field	Type	Label	Description
contrast	double		The contrast.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceSetBrightnessRequest

The CameraServiceSetBrightnessRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.
brightness	double		The brightness to set[0..100]%.

CameraServiceSetBrightnessResponse

Response object for the set brightness.

Field	Type	Label	Description
brightness	double		The brightness.
success	bool		A value indicating whether setting the brightness was successful.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceSetCcdModeRequest

The CameraServiceSetCcdModeRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.
mode	CcdMode		The CCD mode to set.

CameraServiceSetCcdModeResponse

Response object for the set CCD mode.

Field	Type	Label	Description
mode	CcdMode		The CCD mode.
success	bool		A value indicating whether setting the CCD mode was successful.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceSetContrastRequest

The CameraServiceSetContrastRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.
contrast	double		The contrast to set[0..100] %.

CameraServiceSetContrastResponse

Response object for the set contrast.

Field	Type	Label	Description
contrast	double		The contrast.
success	bool		A value indicating whether setting the contrast was successful.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraServiceStartLiveAcquisitionRequest

The CameraServiceStartLiveAcquisitionRequest class.

Field	Type	Label	Description
settings	CameraAcquisitionSettings		The imaging settings used to acquire multiple frames.

CameraServiceStartLiveAcquisitionResponse

Response object of the camera live image acquisition.

Field	Type	Label	Description
result_type	AcquisitionResponseType		A value indicating the type of response returned by the camera live image acquisition stream.
width	int32		The overall width of the image. This is only valid when the ResultType is FrameStart, otherwise it will be set to zero and not transmitted.
height	int32		The overall height of the image. This is only valid when the ResultType is FrameStart, otherwise it will be set to zero and not transmitted.
bytes_per_pixel	uint32		The number of bytes per pixel. This is only valid when the ResultType is FrameStart, otherwise it will be set to zero and not transmitted.

Field	Type	Label	Description
total_image_size	int32		The total size of the image. This is only valid when the ResultType is FrameStart, otherwise it will be set to zero and not transmitted.
image_data	bytes		The data buffer of this part of the image. This may be less than the total image size, in which case the client should expect more data to follow.

CameraServiceStartSingleAcquisitionRequest

The CameraServiceStartSingleAcquisitionRequest class.

Field	Type	Label	Description
settings	CameraAcquisitionSettings		The imaging settings used to acquire a frame.

CameraServiceStartSingleAcquisitionResponse

Response object of the camera single image acquisition.

Field	Type	Label	Description
result_type	AcquisitionResponseType		A value indicating the type of response returned by the camera live image acquisition stream.
width	int32		The overall width of the image. This is only valid when the ResultType is FrameStart, otherwise it will be set to zero and not transmitted.
height	int32		The overall height of the image. This is only valid when the ResultType is FrameStart, otherwise it will be set to zero and not transmitted.
bytes_per_pixel	uint32		The number of bytes per pixel. This is only valid when the ResultType is FrameStart, otherwise it will be set to zero and not transmitted.
total_image_size	int32		The total size of the image. This is only valid when the ResultType is FrameStart, otherwise it will be set to zero and not transmitted.
image_data	bytes		The data buffer of this part of the image. This may be less than the total image size, in which case the client should expect more data to follow.

CameraServiceStopLiveAcquisitionRequest

The CameraServiceStopLiveAcquisitionRequest class.

Field	Type	Label	Description
camera_id	string		The camera ID.

CameraServiceStopLiveAcquisitionResponse

Response object of the camera stop acquisition.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to acquire an image succeeded or not.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

CameraService

The ICameraService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetAcquisitionStatus	CameraServiceGetAcquisitionStatusRequest	CameraServiceGetAcquisitionStatusResponse	Gets the acquisition status for the specified camera.
	GetAvailableCameras	CameraServiceGetAvailableCamerasRequest	CameraServiceGetAvailableCamerasResponse	Gets the available cameras/
	GetBrightness	CameraServiceGetBrightnessRequest	CameraServiceGetBrightnessResponse	Gets the brightness for the specified camera.
	GetCcdMode	CameraServiceGetCcdModeRequest	CameraServiceGetCcdModeResponse	Gets the CCD mode for the specified camera.
				Gets the contrast for the specified camera.

K i n d	Method Name	Request Type	Response Type	Description
	GetContrast	CameraServiceGetContrastRequest	CameraServiceGetContrastResponse	
	RegisterOnAcquisitionStatusChanged	CameraServiceRegisterOnAcquisitionStatusChangedRequest	CameraServiceRegisterOnAcquisitionStatusChangedResponse stream	Registers a subscriber on acquisition status changes for the specified camera.
	RegisterOnBrightnessChanged	CameraServiceRegisterOnBrightnessChangedRequest	CameraServiceRegisterOnBrightnessChangedResponse stream	Registers a subscriber on brightness changes for the specified camera.
	RegisterOnCcdModeChanged	CameraServiceRegisterOnCcdModeChangedRequest	CameraServiceRegisterOnCcdModeChangedResponse stream	Registers a subscriber on CCD mode changes for the specified camera.
	RegisterOnContrastChanged	CameraServiceRegisterOnContrastChangedRequest	CameraServiceRegisterOnContrastChangedResponse stream	Registers a subscriber on contrast changes for the specified camera.
	SetBrightness	CameraServiceSetBrightnessRequest	CameraServiceSetBrightnessResponse	Sets the brightness for the specified camera.
	SetCcdMode	CameraServiceSetCcdModeRequest	CameraServiceSetCcdModeResponse	Sets the CCD mode for the specified camera.
	SetContrast	CameraServiceSetContrastRequest	CameraServiceSetContrastResponse	Sets the contrast for the specified camera.
	StartLiveAcquisition	CameraServiceStartLiveAcquisitionRequest	CameraServiceStartLiveAcquisitionResponse stream	Starts a live acquisition with the given settings.
	StartSingleAcquisition	CameraServiceStartSingleAcquisitionRequest	CameraServiceStartSingleAcquisitionResponse stream	Starts a single frame acquisition for the specified camera. The image is streamed to the same destination as live acquisition.
	StopLiveAcquisition	CameraServiceStopLiveAcquisitionRequest	CameraServiceStopLiveAcquisitionResponse	Stops any ongoing live acquisition. Only has an effect if <code>ZenApi.EM.Hardware.V1.ICameraApi.GetAcquisitionStatus(System.String)</code> returns <code>ZenApi.EM.Hardware.V1.AcquisitionStatus.LiveRunning</code> .

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CcdMode

The CCD mode enumeration.

Name	Number	Description
CCD_MODE_UNSPECIFIED	0	Default enum value.
CCD_MODE_OFF	1	Illumination is off.
CCD_MODE_AUTO	2	Illumination mode is determined based on detector selection.
CCD_MODE_GREYSCALE	3	Illumination is Infra-red, producing greyscale images.
CCD_MODE_COLOR	4	Illumination is White light, producing color images.

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CommandId

Name	Number	Description
COMMAND_ID_UNSPECIFIED	0	framework required, not used for communication.
COMMAND_ID_EXECUTE	1	The external procedure is currently executing.

Name	Number	Description
COMMAND_ID_STOP	2	The external procedure is about to stop it's execution.
COMMAND_ID_PAUSE	3	The external procedure is paused from execution.
COMMAND_ID_CONTINUE	4	The external procedure is continued from pause.
COMMAND_ID_CLOSE	5	The external procedure is about to close .

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DetectorServiceGetAvailableDetectorsRequest

The DetectorServiceGetAvailableDetectorsRequest class.

DetectorServiceGetAvailableDetectorsResponse

Response object representing a list of available detectors.

Field	Type	Label	Description
detector_names	string	repeated	The available detectors on the system.

DetectorServiceGetBrightnessRequest

The DetectorServiceGetBrightnessRequest class.

Field	Type	Label	Description
detector_name	string		The unique name of the detector to control as string. Must be part of ZenApi.EM.Hardware.V1.IDetectorApi.GetAvailableDetectors.

DetectorServiceGetBrightnessResponse

Response object representing a detector brightness value.

Field	Type	Label	Description
brightness	double		The brightness in percentage [0, 100].

DetectorServiceGetContrastRequest

The DetectorServiceGetContrastRequest class.

Field	Type	Label	Description
detector_name	string		The unique name of the detector to control as string. Must be part of ZenApi.EM.Hardware.V1.IDetectorApi.GetAvailableDetectors.

DetectorServiceGetContrastResponse

Response object representing a detector contrast value.

Field	Type	Label	Description
contrast	double		The contrast in percentage [0, 100].

DetectorServiceRegisterOnBrightnessChangedRequest

The DetectorServiceRegisterOnBrightnessChangedRequest class.

Field	Type	Label	Description
detector_name	string		The unique name of the detector to control as string. Must be part of ZenApi.EM.Hardware.V1.IDetectorApi.GetAvailableDetectors.

DetectorServiceRegisterOnBrightnessChangedResponse

Response object representing a detector brightness value.

Field	Type	Label	Description
brightness	double		The brightness in percentage [0, 100].

DetectorServiceRegisterOnContrastChangedRequest

The DetectorServiceRegisterOnContrastChangedRequest class.

Field	Type	Label	Description
detector_name	string		The unique name of the detector to control as string. Must be part of ZenApi.EM.Hardware.V1.IDetectorApi.GetAvailableDetectors.

DetectorServiceRegisterOnContrastChangedResponse

Response object representing a detector contrast value.

Field	Type	Label	Description
contrast	double		The contrast in percentage [0, 100].

DetectorServiceSetBrightnessRequest

The DetectorServiceSetBrightnessRequest class.

Field	Type	Label	Description
detector_name	string		The unique name of the detector to control as string. Must be part of ZenApi.EM.Hardware.V1.IDetectorApi.GetAvailableDetectors.
brightness	double		The brightness value to apply in percentage [0, 1].

DetectorServiceSetBrightnessResponse

Response object representing a detector brightness value.

Field	Type	Label	Description
brightness	double		The brightness in percentage [0, 100].

DetectorServiceSetContrastRequest

The DetectorServiceSetContrastRequest class.

Field	Type	Label	Description
detector_name	string		The unique name of the detector to control as string. Must be part of ZenApi.EM.Hardware.V1.IDetectorApi.GetAvailableDetectors.
contrast	double		The contrast value to apply in percentage [0, 1].

DetectorServiceSetContrastResponse

Response object representing a detector contrast value.

Field	Type	Label	Description
contrast	double		The contrast in percentage [0, 100].

DetectorService

The IDetectorService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetAvailableDetectors	DetectorServiceGetAvailableDetectorsRequest	DetectorServiceGetAvailableDetectorsResponse	Retrieves a list of all available detectors of the system. Their name serves as an identifier for this API service.
	GetBrightness	DetectorServiceGetBrightnessRequest	DetectorServiceGetBrightnessResponse	Retrieves the brightness value applied to a specific detector in percentage.

K i n d	Method Name	Request Type	Response Type	Description
	GetContrast	DetectorServiceGetContrastRequest	DetectorServiceGetContrastResponse	Retrieves the contrast value applied to a specific detector in percentage.
	RegisterOnBrightnessChanged	DetectorServiceRegisterOnBrightnessChangedRequest	DetectorServiceRegisterOnBrightnessChangedResponse stream	Registers a subscriber on brightness changes of a specific detector.
	RegisterOnContrastChanged	DetectorServiceRegisterOnContrastChangedRequest	DetectorServiceRegisterOnContrastChangedResponse stream	Registers a subscriber on contrast changes of a specific detector.
	SetBrightness	DetectorServiceSetBrightnessRequest	DetectorServiceSetBrightnessResponse	Applies a brightness value to a specified detector. The brightness value is applied immediately and has to be in [0, 1].
	SetContrast	DetectorServiceSetContrastRequest	DetectorServiceSetContrastResponse	Applies a contrast value to a specified detector. The contrast value is applied immediately and has to be in [0, 1].

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ElectronColumnServiceGetActualVoltageRequest

The ElectronColumnServiceGetActualVoltageRequest class.

ElectronColumnServiceGetActualVoltageResponse

Response object representing the eht/voltage.

Field	Type	Label	Description
voltage	double		The eht/voltage in volts.

ElectronColumnServiceGetBeamShiftRequest

The ElectronColumnServiceGetBeamShiftRequest class.

ElectronColumnServiceGetBeamShiftResponse

Response object describing the beam shift values.

Field	Type	Label	Description
shift_x	double		The x beam shift in meters.
shift_y	double		The y beam shift in meters.

ElectronColumnServiceGetBeamStateRequest

The ElectronColumnServiceGetBeamStateRequest class.

ElectronColumnServiceGetBeamStateResponse

BeamState enum wrapper.

Field	Type	Label	Description
state	BeamState		The beam state.
task_success	bool		A value indicating whether the task to change beam state succeeded or not.

ElectronColumnServiceGetFocusLimitsRequest

The ElectronColumnServiceGetFocusLimitsRequest class.

ElectronColumnServiceGetFocusLimitsResponse

Response object representing the column focus.

Field	Type	Label	Description
focus_min	double		The minimum focus in meters.
focus_max	double		The maximum focus in meters.

ElectronColumnServiceGetFocusRequest

The ElectronColumnServiceGetFocusRequest class.

ElectronColumnServiceGetFocusResponse

Response object representing the column focus.

Field	Type	Label	Description
focus	double		The focus in meters.

ElectronColumnServiceGetFovRequest

The ElectronColumnServiceGetFovRequest class.

ElectronColumnServiceGetFovResponse

Response object representing the field of view expansion.

Field	Type	Label	Description
fov	double		The fov expansion in meters.

ElectronColumnServiceGetFovRotationRequest

The ElectronColumnServiceGetFovRotationRequest class.

ElectronColumnServiceGetFovRotationResponse

Response object representing the field of view rotation.

Field	Type	Label	Description
rotation	double		The field of view rotation in radians.

ElectronColumnServiceGetProbeCurrentRequest

The ElectronColumnServiceGetProbeCurrentRequest class.

ElectronColumnServiceGetProbeCurrentResponse

Response object representing the probe current.

Field	Type	Label	Description
probe_current	double		The probe current value in Amps.

ElectronColumnServiceGetSemiAngleRequest

The ElectronColumnServiceGetSemiAngleRequest class.

ElectronColumnServiceGetSemiAngleResponse

Response object describing the semi angle value.

Field	Type	Label	Description
angle	double		The semi angle in radians.

ElectronColumnServiceGetSpotSizeRequest

The ElectronColumnServiceGetSpotSizeRequest class.

ElectronColumnServiceGetSpotSizeResponse

Response object representing the spot size.

Field	Type	Label	Description
spot_size	double		The spot size in meters.

ElectronColumnServiceGetStigmatorRequest

The ElectronColumnServiceGetStigmatorRequest class.

ElectronColumnServiceGetStigmatorResponse

Response object representing the stigmator value of the electron column.

Field	Type	Label	Description
stigmator_x	double		The stigmator x in percent [0,1].
stigmator_y	double		The stigmator y in percent [0,1].

ElectronColumnServiceGetTargetVoltageRequest

The ElectronColumnServiceGetTargetVoltageRequest class.

ElectronColumnServiceGetTargetVoltageResponse

Response object representing the eht/voltage.

Field	Type	Label	Description
voltage	double		The eht/voltage in volts.

ElectronColumnServiceGoToStandbyRequest

The ElectronColumnServiceGoToStandbyRequest class.

ElectronColumnServiceGoToStandbyResponse

BeamState enum wrapper.

Field	Type	Label	Description
state	BeamState		The beam state.
task_success	bool		A value indicating whether the task to change beam state succeeded or not.

ElectronColumnServiceRegisterOnBeamShiftChangedRequest

The ElectronColumnServiceRegisterOnBeamShiftChangedRequest class.

ElectronColumnServiceRegisterOnBeamShiftChangedResponse

Response object describing the beam shift values.

Field	Type	Label	Description
shift_x	double		The x beam shift in meters.
shift_y	double		The y beam shift in meters.

ElectronColumnServiceRegisterOnBeamStateChangedRequest

The ElectronColumnServiceRegisterOnBeamStateChangedRequest class.

ElectronColumnServiceRegisterOnBeamStateChangedResponse

BeamState enum wrapper.

Field	Type	Label	Description
state	BeamState		The beam state.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to change beam state succeeded or not.

ElectronColumnServiceRegisterOnFocusChangedRequest

The ElectronColumnServiceRegisterOnFocusChangedRequest class.

ElectronColumnServiceRegisterOnFocusChangedResponse

Response object representing the column focus.

Field	Type	Label	Description
focus	double		The focus in meters.

ElectronColumnServiceRegisterOnFovChangedRequest

The ElectronColumnServiceRegisterOnFovChangedRequest class.

ElectronColumnServiceRegisterOnFovChangedResponse

Response object representing the field of view expansion.

Field	Type	Label	Description
fov	double		The fov expansion in meters.

ElectronColumnServiceRegisterOnFovRotationChangedRequest

The ElectronColumnServiceRegisterOnFovRotationChangedRequest class.

ElectronColumnServiceRegisterOnFovRotationChangedResponse

Response object representing the field of view rotation.

Field	Type	Label	Description
rotation	double		The field of view rotation in radians.

ElectronColumnServiceRegisterOnProbeCurrentChangedRequest

The ElectronColumnServiceRegisterOnProbeCurrentChangedRequest class.

ElectronColumnServiceRegisterOnProbeCurrentChangedResponse

Response object representing the probe current.

Field	Type	Label	Description
probe_current	double		The probe current value in Amps.

ElectronColumnServiceRegisterOnSemiAngleChangedRequest

The ElectronColumnServiceRegisterOnSemiAngleChangedRequest class.

ElectronColumnServiceRegisterOnSemiAngleChangedResponse

Response object describing the semi angle values.

Field	Type	Label	Description
angle	double		The semi angle in radians.

ElectronColumnServiceRegisterOnSpotSizeChangedRequest

The ElectronColumnServiceRegisterOnSpotSizeChangedRequest class.

ElectronColumnServiceRegisterOnSpotSizeChangedResponse

Response object representing the spot size.

Field	Type	Label	Description
spot_size	double		The spot size in meters.

ElectronColumnServiceRegisterOnStigmatorChangedRequest

The ElectronColumnServiceRegisterOnStigmatorChangedRequest class.

ElectronColumnServiceRegisterOnStigmatorChangedResponse

Response object representing stigmator changes of the electron column.

Field	Type	Label	Description
stigmator_x	double		The stigmator x in percent [0,1].
stigmator_y	double		The stigmator y in percent [0,1].

ElectronColumnServiceRegisterOnVoltageChangedRequest

The ElectronColumnServiceRegisterOnVoltageChangedRequest class.

ElectronColumnServiceRegisterOnVoltageChangedResponse

Response object representing the eht/voltage.

Field	Type	Label	Description
voltage	double		The eht/voltage in volts.

ElectronColumnServiceSetBeamShiftRequest

The ElectronColumnServiceSetBeamShiftRequest class.

Field	Type	Label	Description
xshift	google.protobuf.DoubleValue		The new beam shift x in meters. null if it should not be changed.
yshift	google.protobuf.DoubleValue		The new beam shift y in meters. null if it should not be changed.

ElectronColumnServiceSetBeamShiftResponse

Response object describing the beam shift values.

Field	Type	Label	Description
shift_x	double		The x beam shift in meters.
shift_y	double		The y beam shift in meters.

ElectronColumnServiceSetFocusRequest

The ElectronColumnServiceSetFocusRequest class.

Field	Type	Label	Description
focus	double		The new focus in meters.

ElectronColumnServiceSetFocusResponse

Response object representing the column focus.

Field	Type	Label	Description
focus	double		The focus in meters.

ElectronColumnServiceSetFovRequest

The ElectronColumnServiceSetFovRequest class.

Field	Type	Label	Description
fov	double		The size of the new FOV in meters.

ElectronColumnServiceSetFovResponse

Response object representing the field of view expansion.

Field	Type	Label	Description
fov	double		The fov expansion in meters.

ElectronColumnServiceSetFovRotationRequest

The ElectronColumnServiceSetFovRotationRequest class.

Field	Type	Label	Description
fov_rotation	double		The rotation in radians, clockwise.

ElectronColumnServiceSetFovRotationResponse

Response object representing the field of view rotation.

Field	Type	Label	Description
rotation	double		The field of view rotation in radians.

ElectronColumnServiceSetStigmatorRequest

The ElectronColumnServiceSetStigmatorRequest class.

Field	Type	Label	Description
stigmator_x	google.protobuf.DoubleValue		The stigmator x value in percent [0, 1] or null if is not supposed to change.
stigmator_y	google.protobuf.DoubleValue		The stigmator y value in percent [0, 1] or null if is not supposed to change.

ElectronColumnServiceSetStigmatorResponse

Response object representing the stigmator set value.

Field	Type	Label	Description
stigmator_x	double		The stigmator x in percent [0,1].
stigmator_y	double		The stigmator y in percent [0,1].

ElectronColumnServiceSetVoltageRequest

The ElectronColumnServiceSetVoltageRequest class.

Field	Type	Label	Description
voltage	double		The new eht/voltage in volts.

ElectronColumnServiceSetVoltageResponse

Response object representing the eht/voltage.

Field	Type	Label	Description
voltage	double		The eht/voltage in volts.

ElectronColumnServiceTurnOffRequest

The ElectronColumnServiceTurnOffRequest class.

ElectronColumnServiceTurnOffResponse

BeamState enum wrapper.

Field	Type	Label	Description
state	BeamState		The beam state.
task_success	bool		A value indicating whether the task to change beam state succeeded or not.

ElectronColumnServiceTurnOnRequest

The ElectronColumnServiceTurnOnRequest class.

ElectronColumnServiceTurnOnResponse

BeamState enum wrapper.

Field	Type	Label	Description
state	BeamState		The beam state.
task_success	bool		A value indicating whether the task to change beam state succeeded or not.

ElectronColumnService

The IElectronColumnService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetActualVoltage	ElectronColumnServiceGetActualVoltageRequest	ElectronColumnServiceGetActualVoltageResponse	Retrieves the current eht/voltage.
	GetBeamShift	ElectronColumnServiceGetBeamShiftRequest	ElectronColumnServiceGetBeamShiftResponse	Gets the current beam shift in meters.
	GetBeamState	ElectronColumnServiceGetBeamStateRequest	ElectronColumnServiceGetBeamStateResponse	Retrieves the current beam working state.
	GetFocus	ElectronColumnServiceGetFocusRequest	ElectronColumnServiceGetFocusResponse	Gets the current focus (working distance) in meters.
	GetFocusLimits	ElectronColumnServiceGetFocusLimitsRequest	ElectronColumnServiceGetFocusLimitsResponse	Gets the limits of the current focus (working distance) in meters.
	GetFov	ElectronColumnServiceGetFovRequest	ElectronColumnServiceGetFovResponse	Retrieves the current Field Of View.
	GetFovRotation	ElectronColumnServiceGetFovRotationRequest	ElectronColumnServiceGetFovRotationResponse	Gets the rotation of the Field Of View.
	GetProbeCurrent	ElectronColumnServiceGetProbeCurrentRequest	ElectronColumnServiceGetProbeCurrentResponse	Get the probe current.
	GetSemiAngle	ElectronColumnServiceGetSemiAngleRequest	ElectronColumnServiceGetSemiAngleResponse	Gets the current semi angle in radians.
	GetSpotSize	ElectronColumnServiceGetSpotSizeRequest	ElectronColumnServiceGetSpotSizeResponse	Gets the spot size in meters.
	GetStigmator	ElectronColumnServiceGetStigmatorRequest	ElectronColumnServiceGetStigmatorResponse	Gets the current stigmator x and y values in percent [0, 1].
	GetTargetVoltage	ElectronColumnServiceGetTargetVoltageRequest	ElectronColumnServiceGetTargetVoltageResponse	Retrieves the target eht/voltage.
	GoToStandby	ElectronColumnServiceGoToStandbyRequest	ElectronColumnServiceGoToStandbyResponse	Bring the column into standby mode. This call triggers the column to go into standby mode. Emission will still be on.
	RegisterOnBeamShiftChanged	ElectronColumnServiceRegisterOnBeamShiftChangedRequest	ElectronColumnServiceRegisterOnBeamShiftChangedResponsestream	Register on column beam shift changed events.
	RegisterOnBeamStateChanged	ElectronColumnServiceRegisterOnBeamStateChangedRequest	ElectronColumnServiceRegisterOnBeamStateChangedResponsestream	Register on beam state changed events.
	RegisterOnFocusChanged	ElectronColumnServiceRegisterOnFocusChangedRequest	ElectronColumnServiceRegisterOnFocusChangedResponsestream	Register on column focus (working distance) changed events.

K i n d	Method Name	Request Type	Response Type	Description
	RegisterOnFovChanged	ElectronColumnServiceRegisterOnFovChangedRequest	ElectronColumnServiceRegisterOnFovChangedResponse stream	Register on column FOV changed events.
	RegisterOnFovRotationChanged	ElectronColumnServiceRegisterOnFovRotationChangedRequest	ElectronColumnServiceRegisterOnFovRotationChangedResponse stream	Register on FOV rotation changed events.
	RegisterOnProbeCurrentChanged	ElectronColumnServiceRegisterOnProbeCurrentChangedRequest	ElectronColumnServiceRegisterOnProbeCurrentChangedResponse stream	Register on column probe current changed events.
	RegisterOnSemiAngleChanged	ElectronColumnServiceRegisterOnSemiAngleChangedRequest	ElectronColumnServiceRegisterOnSemiAngleChangedResponse stream	Register on column semi angle changed events.
	RegisterOnSpotSizeChanged	ElectronColumnServiceRegisterOnSpotSizeChangedRequest	ElectronColumnServiceRegisterOnSpotSizeChangedResponse stream	Register on beam spot size changed events.
	RegisterOnStigmatorChanged	ElectronColumnServiceRegisterOnStigmatorChangedRequest	ElectronColumnServiceRegisterOnStigmatorChangedResponse stream	Register on stigmator x and y changed events.
	RegisterOnVoltageChanged	ElectronColumnServiceRegisterOnVoltageChangedRequest	ElectronColumnServiceRegisterOnVoltageChangedResponse stream	Register on column (current/actual) eht/voltage changed events.
	SetBeamShift	ElectronColumnServiceSetBeamShiftRequest	ElectronColumnServiceSetBeamShiftResponse	Set the beam shift of this column. Values can be null if they should not be updated.
	SetFocus	ElectronColumnServiceSetFocusRequest	ElectronColumnServiceSetFocusResponse	Applies a new focus (working distance) to the column.
	SetFov	ElectronColumnServiceSetFovRequest	ElectronColumnServiceSetFovResponse	Applies a new FOV.
	SetFovRotation	ElectronColumnServiceSetFovRotationRequest	ElectronColumnServiceSetFovRotationResponse	Rotates the Field Of View. If scan rotation is not enabled, it would be enabled.
	SetStigmator	ElectronColumnServiceSetStigmatorRequest	ElectronColumnServiceSetStigmatorResponse	Applies a new stigmator x and / or y value to the column.
	SetVoltage	ElectronColumnServiceSetVoltageRequest	ElectronColumnServiceSetVoltageResponse	Applies a new target eht/voltage to the column.
	TurnOff	ElectronColumnServiceTurnOffRequest	ElectronColumnServiceTurnOffResponse	Turns the column off. This call initiates ramping down of emission and brings the column into off state.
	TurnOn	ElectronColumnServiceTurnOnRequest	ElectronColumnServiceTurnOnResponse	Bring the column into working mode. This call initiates ramping of emission and brings the column into working condition.

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ExtendedAcquisitionSettings

Request object to set the simple acquisition settings.

Field	Type	Label	Description
detector_name	string		The detector to use. Null will take the detector from the previous acquisition.
width	int32		The image width in pixels.
height	int32		The image height in pixels.
dwelt_time	double		The dwell time in seconds. The closest dwell time to the selected one will be chosen.
frame_averages	int32		The number of frames to average. 1 means no averaging.
line_averages	int32		The number of lines to average. 1 means no averaging.

Field	Type	Label	Description
scan_size_x	double		The relative size of the scan field in x direction proportional to the full field of view, where the FOV equals 1. Range (0, 1].
scan_size_y	double		The relative size of the scan field in y direction proportional to the full field of view, where the FOV equals 1. Range (0, 1].
scan_center_x	double		The relative position of the scan field in x direction proportional to the full field of view, where the optical axis is at (0,0) and the FOV ranges from -0.5 to 0.5. Range (-0.5, 0.5).
scan_center_y	double		The relative position of the scan field in y direction proportional to the full field of view, where the optical axis is at (0,0) and the FOV ranges from -0.5 to 0.5. Range (-0.5, 0.5).

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ExternalProcedureServiceRegisterExternalProcedureRequest

The ExternalProcedureServiceRegisterExternalProcedureRequest class.

ExternalProcedureServiceRegisterExternalProcedureResponse

transfer object definition used to send commands to external procedures

Field	Type	Label	Description
parameters	string	repeated	An array of string parameters, may be empty
id	string		The System.Guid of the external procedure the command is for, needs to be filtered by external procedures, as all procedures use the same channel to listen for commands default value could not be applied: 00000000-0000-0000-0000-000000000000
command_id	CommandId		The ZenApi.EM.Hardware.V1.ExternalProcedureServiceRegisterExternalProcedureResponse. CommandId telling the external procedure what to do

ExternalProcedureServiceReportCommandFailureRequest

The ExternalProcedureServiceReportCommandFailureRequest class.

Field	Type	Label	Description
id	string		the System.Guid of a given running script a command has been send to. default value could not be applied: 00000000-0000-0000-0000-000000000000
command_id	CommandId		the ZenApi.EM.Hardware.V1.CommandId of a given command.

ExternalProcedureServiceReportCommandFailureResponse

The ExternalProcedureServiceReportCommandFailureResponse class.

ExternalProcedureServiceReportCommandSuccessRequest

The ExternalProcedureServiceReportCommandSuccessRequest class.

Field	Type	Label	Description
id	string		the System.Guid of a given running script a command has been send to. default value could not be applied: 00000000-0000-0000-0000-000000000000
command_id	CommandId		the ZenApi.EM.Hardware.V1.CommandId of a given command.

ExternalProcedureServiceReportCommandSuccessResponse

The ExternalProcedureServiceReportCommandSuccessResponse class.

ExternalProcedureServiceReportInitializationErrorRequest

The ExternalProcedureServiceReportInitializationErrorRequest class.

Field	Type	Label	Description
id	string		the id as System.Guid of the external procedure. default value could not be applied: 00000000-0000-0000-0000-000000000000

Field	Type	Label	Description
error_message	string		a System.String error message.

ExternalProcedureServiceReportInitializationErrorResponse

The ExternalProcedureServiceReportInitializationErrorResponse class.

ExternalProcedureServiceReportProgressRequest

The ExternalProcedureServiceReportProgressRequest class.

Field	Type	Label	Description
id	string		the id as System.Guid of the external procedure. default value could not be applied: 00000000-0000-0000-0000-000000000000
progress	double		The progress to be reported i the range [0, 1]. Alternatively, -1 for undetermined progress.

ExternalProcedureServiceReportProgressResponse

The ExternalProcedureServiceReportProgressResponse class.

ExternalProcedureServiceReportReadyRequest

The ExternalProcedureServiceReportReadyRequest class.

Field	Type	Label	Description
id	string		the id as System.Guid of the external procedure. default value could not be applied: 00000000-0000-0000-0000-000000000000
error_message	string		a nullable System.String to report an error during the execution of the last run.

ExternalProcedureServiceReportReadyResponse

The ExternalProcedureServiceReportReadyResponse class.

ExternalProcedureServiceReportStatusRequest

The ExternalProcedureServiceReportStatusRequest class.

Field	Type	Label	Description
id	string		the id as System.Guid of the external procedure. default value could not be applied: 00000000-0000-0000-0000-000000000000
message	string		the System.String to be reported.

ExternalProcedureServiceReportStatusResponse

The ExternalProcedureServiceReportStatusResponse class.

ExternalProcedureService

The IExternalProcedureService interface.

K i n d	Method Name	Request Type	Response Type	Description
	RegisterExternalProcedure	ExternalProcedureServiceRegisterExternalProcedureRequest	ExternalProcedureServiceRegisterExternalProcedureResponse stream	Registers the caller to get notified about ZenApi.EM.Hardware.V1.ExternalProcedureServiceRegisterExternalProcedureResponse's (for all external procedures; filtering must be done by the caller).
	ReportCommandFailure	ExternalProcedureServiceReportCommandFailureRequest	ExternalProcedureServiceReportCommandFailureResponse	Reports the failure of execution of the given ZenApi.EM.Hardware.V1.ExternalProcedureServiceRegisterExternalProcedureResponse.
	ReportCommandSuccess	ExternalProcedureServiceReportCommandSuccessRequest	ExternalProcedureServiceReportCommandSuccessResponse	Reports the successful execution of the given ZenApi.EM.Hardware.V1.ExternalProcedureServiceRegisterExternalProcedureResponse.
	ReportInitializationError			Reports an error that has occurred during the initialization of an external procedure, leads to error state.

K i n d	Method Name	Request Type	Response Type	Description
		ExternalProcedureServiceReportInitializationErrorRequest	ExternalProcedureServiceReportInitializationErrorResponse	
	ReportProgress	ExternalProcedureServiceReportProgressRequest	ExternalProcedureServiceReportProgressResponse	reports the progress of the external procedure with the given id.
	ReportReady	ExternalProcedureServiceReportReadyRequest	ExternalProcedureServiceReportReadyResponse	Reports, that the external procedure with the given id is ready to be executed.
	ReportStatus	ExternalProcedureServiceReportStatusRequest	ExternalProcedureServiceReportStatusResponse	reports a status message to zen.

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IlluminationServiceGetIlluminationIRRequest

The IlluminationServiceGetIlluminationIRRequest class.

IlluminationServiceGetIlluminationIRResponse

Response object for the illuminator get illumination IR.

Field	Type	Label	Description
illumination_ir	double		The illumination IR.

IlluminationServiceGetIlluminationWhiteRequest

The IlluminationServiceGetIlluminationWhiteRequest class.

IlluminationServiceGetIlluminationWhiteResponse

Response object for the illuminator get illumination white.

Field	Type	Label	Description
illumination_white	double		The illumination white.

IlluminationServiceRegisterOnIlluminationIRChangedRequest

The IlluminationServiceRegisterOnIlluminationIRChangedRequest class.

IlluminationServiceRegisterOnIlluminationIRChangedResponse

Response object for register on illumination IR changed.

Field	Type	Label	Description
illumination_ir	double		The illumination IR.

IlluminationServiceRegisterOnIlluminationWhiteChangedRequest

The IlluminationServiceRegisterOnIlluminationWhiteChangedRequest class.

IlluminationServiceRegisterOnIlluminationWhiteChangedResponse

Response object for register on illumination white changed.

Field	Type	Label	Description
illumination_white	double		The illumination white.

IlluminationServiceSetIlluminationIRRequest

The IlluminationServiceSetIlluminationIRRequest class.

Field	Type	Label	Description
illumination_ir	double		The illumination IR value to set [0..100]%.

IlluminationServiceSetIlluminationIRResponse

Response object for the illuminator set illumination IR.

Field	Type	Label	Description
illumination_ir	double		The illumination IR.
success	bool		A value indicating whether setting the brightness was successful.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

IlluminationServiceSetIlluminationWhiteRequest

The IlluminationServiceSetIlluminationWhiteRequest class.

Field	Type	Label	Description
illumination_white	double		The illumination white value to set [0..100]%.

IlluminationServiceSetIlluminationWhiteResponse

Response object for the illuminator set illumination white.

Field	Type	Label	Description
illumination_white	double		The illumination white.
success	bool		A value indicating whether setting the brightness was successful.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

IlluminationService

The IlluminationService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetIlluminationIR	IlluminationServiceGetIlluminationIRRequest	IlluminationServiceGetIlluminationIRResponse	Gets the illumination IR value. Returns the current illumination IR value [0..100]%.
	GetIlluminationWhite	IlluminationServiceGetIlluminationWhiteRequest	IlluminationServiceGetIlluminationWhiteResponse	Gets the illumination white value. Returns the current illumination white value [0..100]%.
	RegisterOnIlluminationIRChanged	IlluminationServiceRegisterOnIlluminationIRChangedRequest	IlluminationServiceRegisterOnIlluminationIRChangedResponse stream	Registers a subscriber on illumination IR changes. returns the current illumination IR value [0..100]%.
	RegisterOnIlluminationWhiteChanged	IlluminationServiceRegisterOnIlluminationWhiteChangedRequest	IlluminationServiceRegisterOnIlluminationWhiteChangedResponse stream	Registers a subscriber on illumination white changes. Returns the current illumination white value [0..100]%.
	SetIlluminationIR	IlluminationServiceSetIlluminationIRRequest	IlluminationServiceSetIlluminationIRResponse	Sets the illumination IR value. Returns the current illumination IR value [0..100]%.
	SetIlluminationWhite	IlluminationServiceSetIlluminationWhiteRequest	IlluminationServiceSetIlluminationWhiteResponse	Sets the illumination white value. Returns the current illumination white value [0..100]%.

SimpleAcquisitionServiceAcquireExtendedSingleFrameRequest

The SimpleAcquisitionServiceAcquireExtendedSingleFrameRequest class.

Field	Type	Label	Description
settings	ExtendedAcquisitionSettings		The imaging settings used to acquire a frame.

SimpleAcquisitionServiceAcquireExtendedSingleFrameResponse

Response object of the AcquireExtendedSingleFrame method of the ZenApi.EM.Hardware.V1.ISimpleAcquisitionApi.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to initialize the stage succeeded or not.
width	int32		The width in pixels of the image.
height	int32		The height in pixels of the image.
image_data	bytes		The image raw data, 1 frame. Frame data as 16 bit per pixel, #pixels = ZenApi.EM.Hardware.V1.SimpleAcquisitionServiceAcquireExtendedSingleFrameResponse.Width * ZenApi.EM.Hardware.V1.SimpleAcquisitionServiceAcquireExtendedSingleFrameResponse.Height. Total length in byte = #pixels * 2.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

SimpleAcquisitionServiceAcquireSingleFrameRequest

The SimpleAcquisitionServiceAcquireSingleFrameRequest class.

Field	Type	Label	Description
settings	AcquisitionSettings		The imaging settings used to acquire a frame.

SimpleAcquisitionServiceAcquireSingleFrameResponse

Response object of the AcquireSingleFrame method of the ZenApi.EM.Hardware.V1.ISimpleAcquisitionApi.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to initialize the stage succeeded or not.
width	int32		The width in pixels of the image.
height	int32		The height in pixels of the image.
image_data	bytes		The image raw data, 1 frame. Frame data as 16 bit per pixel, #pixels = ZenApi.EM.Hardware.V1.SimpleAcquisitionServiceAcquireSingleFrameResponse.Width * ZenApi.EM.Hardware.V1.SimpleAcquisitionServiceAcquireSingleFrameResponse.Height. Total length in byte = #pixels * 2.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

SimpleAcquisitionServiceGetAcquisitionStatusRequest

The SimpleAcquisitionServiceGetAcquisitionStatusRequest class.

SimpleAcquisitionServiceGetAcquisitionStatusResponse

Response object representing the current acquisition status.

Field	Type	Label	Description
status	AcquisitionStatus		A value indicating whether the task to initialize the stage succeeded or not.

SimpleAcquisitionServiceGetBrightnessRequest

The SimpleAcquisitionServiceGetBrightnessRequest class.

SimpleAcquisitionServiceGetBrightnessResponse

Response object representing a detector brightness value.

Field	Type	Label	Description
brightness	double		The brightness in percentage [0, 100].

SimpleAcquisitionServiceGetContrastRequest

The SimpleAcquisitionServiceGetContrastRequest class.

SimpleAcquisitionServiceGetContrastResponse

Response object representing a detector contrast value.

Field	Type	Label	Description
contrast	double		The contrast in percentage [0, 100].

SimpleAcquisitionServiceRegisterOnAcquisitionStatusChangedRequest

The SimpleAcquisitionServiceRegisterOnAcquisitionStatusChangedRequest class.

SimpleAcquisitionServiceRegisterOnAcquisitionStatusChangedResponse

Response object representing the current acquisition status.

Field	Type	Label	Description
status	AcquisitionStatus		A value indicating whether the task to initialize the stage succeeded or not.

SimpleAcquisitionServiceSetBrightnessRequest

The SimpleAcquisitionServiceSetBrightnessRequest class.

Field	Type	Label	Description
brightness	double		The brightness value to apply in percentage [0, 1].

SimpleAcquisitionServiceSetBrightnessResponse

Response object representing a detector brightness value.

Field	Type	Label	Description
brightness	double		The brightness in percentage [0, 100].

SimpleAcquisitionServiceSetContrastRequest

The SimpleAcquisitionServiceSetContrastRequest class.

Field	Type	Label	Description
contrast	double		The contrast value to apply in percentage [0, 1].

SimpleAcquisitionServiceSetContrastResponse

Response object representing a detector contrast value.

Field	Type	Label	Description
contrast	double		The contrast in percentage [0, 100].

SimpleAcquisitionServiceStartExtendedLiveAcquisitionRequest

The SimpleAcquisitionServiceStartExtendedLiveAcquisitionRequest class.

Field	Type	Label	Description
settings	ExtendedAcquisitionSettings		The imaging settings used to acquire multiple frames.

SimpleAcquisitionServiceStartExtendedLiveAcquisitionResponse

Response object of the StartExtendedLiveAcquisition method of the ZenApi.EM.Hardware.V1.ISimpleAcquisitionApi.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to acquire an image succeeded or not.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

SimpleAcquisitionServiceStartLiveAcquisitionRequest

The SimpleAcquisitionServiceStartLiveAcquisitionRequest class.

Field	Type	Label	Description
settings	AcquisitionSettings		The imaging settings used to acquire multiple frames.

SimpleAcquisitionServiceStartLiveAcquisitionResponse

Response object of the StartLiveAcquisition method of the ZenApi.EM.Hardware.V1.ISimpleAcquisitionApi.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to acquire an image succeeded or not.
message	string		A string message for display to the customer in failure case. This is only for display purpose and the message may change. Empty string on success.

SimpleAcquisitionServiceStopLiveAcquisitionRequest

The SimpleAcquisitionServiceStopLiveAcquisitionRequest class.

SimpleAcquisitionServiceStopLiveAcquisitionResponse

The SimpleAcquisitionServiceStopLiveAcquisitionResponse class.

SimpleAcquisitionService

The ISimpleAcquisitionService interface.

K i n d	Method Name	Request Type	Response Type	Description
	AcquireExtendedSingleFrame	SimpleAcquisitionServiceAcquireExtendedSingleFrameRequest	SimpleAcquisitionServiceAcquireExtendedSingleFrameResponse	Call to start single channel acquisition of a single frame with given settings. The task returned represents the ongoing acquisition. The resulting image is send once the acquisition completed.
	AcquireSingleFrame	SimpleAcquisitionServiceAcquireSingleFrameRequest	SimpleAcquisitionServiceAcquireSingleFrameResponse	Call to start single channel acquisition of a single frame with given settings. The task returned represents the ongoing acquisition. The resulting image is send once the acquisition completed.
	GetAcquisitionStatus	SimpleAcquisitionServiceGetAcquisitionStatusRequest	SimpleAcquisitionServiceGetAcquisitionStatusResponse	Retrieves the current state of the acquisition hardware. Allows to deduce if the hardware is available for a new acquisition, is blocked by some other task, or acquires currently images.
	GetBrightness	SimpleAcquisitionServiceGetBrightnessRequest	SimpleAcquisitionServiceGetBrightnessResponse	Retrieves the brightness value applied to a specific detector in percentage.
	GetContrast	SimpleAcquisitionServiceGetContrastRequest	SimpleAcquisitionServiceGetContrastResponse	Retrieves the contrast value applied to a specific detector in percentage.
	RegisterOnAcquisitionStatusChanged	SimpleAcquisitionServiceRegisterOnAcquisitionStatusChangedRequest	SimpleAcquisitionServiceRegisterOnAcquisitionStatusChangedResponse stream	Subscribes to acquisition status changed events.
	SetBrightness	SimpleAcquisitionServiceSetBrightnessRequest	SimpleAcquisitionServiceSetBrightnessResponse	Applies a brightness value to a specified detector. The brightness value is applied immediately and has to be in [0, 1].
	SetContrast	SimpleAcquisitionServiceSetContrastRequest	SimpleAcquisitionServiceSetContrastResponse	Applies a contrast value to a specified detector. The contrast value is applied immediately and has to be in [0, 1].
	StartExtendedLiveAcquisition			This starts a live single channel acquisition with the given settings.

K i n d	Method Name	Request Type	Response Type	Description
		SimpleAcquisitionServiceStartExtendedLiveAcquisitionRequest	SimpleAcquisitionServiceStartExtendedLiveAcquisitionResponse	
	StartLiveAcquisition	SimpleAcquisitionServiceStartLiveAcquisitionRequest	SimpleAcquisitionServiceStartLiveAcquisitionResponse	This starts a live single channel acquisition with the given settings.
	StopLiveAcquisition	SimpleAcquisitionServiceStopLiveAcquisitionRequest	SimpleAcquisitionServiceStopLiveAcquisitionResponse	Stops any ongoing live acquisition. Has only an effect if ZenApi.EM.Hardware.V1.ISimpleAcquisitionApi.GetAcquisitionStatus returns ZenApi.EM.Hardware.V1.AcquisitionStatus.LiveRunning.

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VacuumMode

Possible vacuum modes supported by our tools.

Name	Number	Description
VACUUM_MODE_UNSPECIFIED	0	Default enum value.
VACUUM_MODE_HIGH_VACUUM	1	Standard vacuum mode is ZenApi.EM.Hardware.V1.VacuumMode.HighVacuum. Target chamber pressure can not be adjusted.
VACUUM_MODE_VARIABLE_PRESSURE	2	The optional ZenApi.EM.Hardware.V1.VacuumMode.VariablePressure mode allows to specify a target chamber pressure.

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VacuumServiceCloseValveRequest

The VacuumServiceCloseValveRequest class.

Field	Type	Label	Description
valve	Valve		The valve identifier of the valve to close.

VacuumServiceCloseValveResponse

Response object of
ZenApi.EM.Hardware.V1.IVacuumApi.CloseValve(ZenApi.EM.Hardware.V1.Valve,System.Threading.CancellationToken) method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to close a valve succeeded or not.

VacuumServiceGetAvailableVacuumModesRequest

The VacuumServiceGetAvailableVacuumModesRequest class.

VacuumServiceGetAvailableVacuumModesResponse

AvailableVacuumModes enum collection response.

Field	Type	Label	Description
available_modes	VacuumMode	repeated	

VacuumServiceGetAvailableValvesRequest

The VacuumServiceGetAvailableValvesRequest class.

VacuumServiceGetAvailableValvesResponse

AvailableValves enum collection response.

Field	Type	Label	Description
available_valves	Valve	repeated	

VacuumServiceGetChamberPressureRequest

The VacuumServiceGetChamberPressureRequest class.

VacuumServiceGetChamberPressureResponse

Response to represent the chamber pressure.

Field	Type	Label	Description
pressure	double		The chamber pressure in [pascal].

VacuumServiceGetTargetChamberPressureRequest

The VacuumServiceGetTargetChamberPressureRequest class.

VacuumServiceGetTargetChamberPressureResponse

Response to represent the chamber pressure.

Field	Type	Label	Description
pressure	double		The chamber pressure in [pascal].

VacuumServiceGetVacuumModeRequest

The VacuumServiceGetVacuumModeRequest class.

VacuumServiceGetVacuumModeResponse

VacuumMode enum response.

Field	Type	Label	Description
mode	VacuumMode		The vacuum mode.

VacuumServiceGetVacuumStateRequest

The VacuumServiceGetVacuumStateRequest class.

VacuumServiceGetVacuumStateResponse

VacuumState enum response.

Field	Type	Label	Description
state	VacuumState		The vacuum state.

VacuumServiceGetValveStateRequest

The VacuumServiceGetValveStateRequest class.

Field	Type	Label	Description
valve	Valve		The valve to get the status of.

VacuumServiceGetValveStateResponse

ValveState enum response.

Field	Type	Label	Description
valve	Valve		The valve identifier.
state	ValveState		The valves state.

VacuumServiceOpenValveRequest

The VacuumServiceOpenValveRequest class.

Field	Type	Label	Description
valve	Valve		The valve identifier of the valve to open.

VacuumServiceOpenValveResponse

Response object of
ZenApi.EM.Hardware.V1.IVacuumApi.OpenValve(ZenApi.EM.Hardware.V1.Valve,System.Threading.CancellationToken) method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to open a valve succeeded or not.

VacuumServicePumpRequest

The VacuumServicePumpRequest class.

VacuumServicePumpResponse

Response object of the ZenApi.EM.Hardware.V1.IVacuumApi.Pump(System.Threading.CancellationToken) method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to pump the chamber succeeded or not.

VacuumServiceRegisterOnChamberPressureChangedRequest

The VacuumServiceRegisterOnChamberPressureChangedRequest class.

VacuumServiceRegisterOnChamberPressureChangedResponse

Response to represent the chamber pressure.

Field	Type	Label	Description
pressure	double		The chamber pressure in [pascal].

VacuumServiceRegisterOnTargetChamberPressureChangedRequest

The VacuumServiceRegisterOnTargetChamberPressureChangedRequest class.

VacuumServiceRegisterOnTargetChamberPressureChangedResponse

Response to represent the chamber pressure.

Field	Type	Label	Description
pressure	double		The chamber pressure in [pascal].

VacuumServiceRegisterOnVacuumModeChangedRequest

The VacuumServiceRegisterOnVacuumModeChangedRequest class.

VacuumServiceRegisterOnVacuumModeChangedResponse

VacuumMode enum response.

Field	Type	Label	Description
mode	VacuumMode		The vacuum mode.

VacuumServiceRegisterOnVacuumStateChangedRequest

The VacuumServiceRegisterOnVacuumStateChangedRequest class.

VacuumServiceRegisterOnVacuumStateChangedResponse

VacuumState enum response.

Field	Type	Label	Description
state	VacuumState		The vacuum state.

VacuumServiceRegisterOnValveStateChangedRequest

The VacuumServiceRegisterOnValveStateChangedRequest class.

VacuumServiceRegisterOnValveStateChangedResponse

ValveState enum response.

Field	Type	Label	Description
valve	Valve		The valve identifier.
state	ValveState		The valves state.

VacuumServiceSetTargetChamberPressureRequest

The VacuumServiceSetTargetChamberPressureRequest class.

Field	Type	Label	Description
target_pressure	double		The target chamber pressure if in ZenApi.EM.Hardware.V1.VacuumMode.VariablePressure mode in [pascal].

VacuumServiceSetTargetChamberPressureResponse

Response object of the
ZenApi.EM.Hardware.V1.IVacuumApi.SetTargetChamberPressure(System.Double,System.Threading.CancellationToken) method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to set the chamber pressure succeeded or not.

VacuumServiceSetVacuumModeRequest

The VacuumServiceSetVacuumModeRequest class.

Field	Type	Label	Description
mode	VacuumMode		The ZenApi.EM.Hardware.V1.VacuumMode to apply.

VacuumServiceSetVacuumModeResponse

Response object of the
ZenApi.EM.Hardware.V1.IVacuumApi.SetVacuumMode(ZenApi.EM.Hardware.V1.VacuumMode,System.Threading.CancellationToken) method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to set the vacuum mode succeeded or not.

VacuumServiceVentRequest

The VacuumServiceVentRequest class.

VacuumServiceVentResponse

Response object of ZenApi.EM.Hardware.V1.IVacuumApi.Vent(System.Threading.CancellationToken) method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to vent the chamber succeeded or not.

VacuumService

The IVacuumService interface.

K i n d	Method Name	Request Type	Response Type	Description
	CloseValve	VacuumServiceCloseValveRequest	VacuumServiceCloseValveResponse	Closes a valve on the system.
	GetAvailableVacuumModes	VacuumServiceGetAvailableVacuumModesRequest	VacuumServiceGetAvailableVacuumModesResponse	Retrieves a collection of available vacuum modes, like HV and VP. Available modes depend on the tool configuration and don't change during runtime. Note: TargetChamberPressure functionality is only working for VP mode.
	GetAvailableValves	VacuumServiceGetAvailableValvesRequest	VacuumServiceGetAvailableValvesResponse	Retrieves all available valves of the system that can be controlled. Possible values are listed in ZenApi.EM.Hardware.V1.Valve enumeration.
	GetChamberPressure	VacuumServiceGetChamberPressureRequest	VacuumServiceGetChamberPressureResponse	Retrieves the current chamber pressure in [pascal].
	GetTargetChamberPressure	VacuumServiceGetTargetChamberPressureRequest	VacuumServiceGetTargetChamberPressureResponse	Retrieves the target chamber pressure for ZenApi.EM.Hardware.V1.VacuumMode.VariablePressure mode. Unspecified return value on non VP configurations.
	GetVacuumMode	VacuumServiceGetVacuumModeRequest	VacuumServiceGetVacuumModeResponse	Retrieves the currently active Vacuum Mode.
	GetVacuumState	VacuumServiceGetVacuumStateRequest	VacuumServiceGetVacuumStateResponse	Retrieves the current vacuum state.
	GetValveState	VacuumServiceGetValveStateRequest	VacuumServiceGetValveStateResponse	Retrieves the current state of a valve. Only states of available valves are defined. See ZenApi.EM.Hardware.V1.IVacuumApi.GetAvailableValves.
	OpenValve	VacuumServiceOpenValveRequest	VacuumServiceOpenValveResponse	Opens a valve on the system.
	Pump	VacuumServicePumpRequest	VacuumServicePumpResponse	Starts the pumping process to evacuate the chamber and install a stable vacuum.
	RegisterOnChamberPressureChanged	VacuumServiceRegisterOnChamberPressureChangedRequest	VacuumServiceRegisterOnChamberPressureChangedResponse stream	Notifications on chamber pressure. Events are fired every time the current chamber pressure changes.
	RegisterOnTargetChamberPressureChanged	VacuumServiceRegisterOnTargetChamberPressureChangedRequest	VacuumServiceRegisterOnTargetChamberPressureChangedResponse stream	Notifications about changes to the target chamber pressure value. Only enabled on systems supporting ZenApi.EM.Hardware.V1.VacuumMode.VariablePressure mode.
	RegisterOnVacuumModeChanged	VacuumServiceRegisterOnVacuumModeChangedRequest	VacuumServiceRegisterOnVacuumModeChangedResponse stream	Notification about changes of the active vacuum mode. See ZenApi.EM.Hardware.V1.VacuumMode.
	RegisterOnVacuumStateChanged	VacuumServiceRegisterOnVacuumStateChangedRequest	VacuumServiceRegisterOnVacuumStateChangedResponse stream	Notification about changes of the vacuum system state. See ZenApi.EM.Hardware.V1.VacuumState.
	RegisterOnValveStateChange	VacuumServiceRegisterOnValveStateChangeRequest	VacuumServiceRegisterOnValveStateChangeResponse stream	Notifications about any valves state changes.
	SetTargetChamberPressure	VacuumServiceSetTargetChamberPressureRequest	VacuumServiceSetTargetChamberPressureResponse	Sets and if in ZenApi.EM.Hardware.V1.VacuumMode.VariablePressure also applies a new chamber pressure.
	SetVacuumMode	VacuumServiceSetVacuumModeRequest	VacuumServiceSetVacuumModeResponse	Sets the active vacuum mode. No op if the vacuum mode does not change, otherwise the process to switch to the other vacuum mode is initiated.
	Vent	VacuumServiceVentRequest	VacuumServiceVentResponse	Starts the venting process to vent the chamber and allow the chamber door to be opened.

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VacuumState

Possible states of the vacuum system.

TODO enum states must be reviewed by application, maybe Christian Hendrich

what is really needed on customer side, keep it simple

Name	Number	Description
VACUUM_STATE_UNSPECIFIED	0	Default enum value.
VACUUM_STATE_READY	1	Vacuum is ready.
VACUUM_STATE_NOT_READY	2	Vacuum is not ready. Maybe vented, pumping, venting, ...

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Valve

Enumeration of all possibles valves to control.

Name	Number	Description
VALVE_UNSPECIFIED	0	The default enum value.
VALVE_SEM_ISOLATION_VALVE	1	SEM column chamber isolation valve.
VALVE_FIB_ISOLATION_VALVE	2	FIB column chamber isolation valve.

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ValveState

Possible states of any valve.

TODO enum states must be reviewed by application, maybe Christian Hendrich
what is really needed on customer side, keep it simple

Name	Number	Description
VALVE_STATE_UNSPECIFIED	0	Default enum value.
VALVE_STATE_OPEN	1	Valve is open.
VALVE_STATE_CLOSED	2	Valve is closed.

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CreateWorkflowServiceAddAbsoluteTiltingActionRequest

The CreateWorkflowServiceAddAbsoluteTiltingActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
tilt_angle	double		The angle in degrees to which the tilting should occur. Defaults to 0 if not specified.

CreateWorkflowServiceAddAbsoluteTiltingActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddAcquireNavCamImageActionRequest

The CreateWorkflowServiceAddAcquireNavCamImageActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
em_region_of_interest	EmRegionOfInterest		An ZenApi.EM.Workflow.V1.EmRegionOfInterest object specifying the region of interest for the NavCam image acquisition.
file_name	string		The name of the file where the acquired NavCam image will be saved.

CreateWorkflowServiceAddAcquireNavCamImageActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddAcquireStoreImageActionRequest

The CreateWorkflowServiceAddAcquireStoreImageActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
em_region_of_interest	EmRegionOfInterest		An ZenApi.EM.Workflow.V1.EmRegionOfInterest object specifying the region of interest for the image acquisition.
image_key	string		A unique key identifier for the image to be stored.
position_name	string		An optional name for the position associated with the image acquisition. Default is an empty string.
xoffset	double		An optional X-coordinate offset for the image acquisition. Default is System.Double.NaN.
yoffset	double		An optional Y-coordinate offset for the image acquisition. Default is System.Double.NaN.
file_name	string		An optional file name for storing the acquired image. Default is an empty string.

CreateWorkflowServiceAddAcquireStoreImageActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddChangeBeamStateActionRequest

The CreateWorkflowServiceAddChangeBeamStateActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
desired_state	zen_api.em.hardware.v1.BeamState		The desired state of the beam, specified as a ZenApi.EM.Hardware.V1.BeamState enumeration.

CreateWorkflowServiceAddChangeBeamStateActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddChangeCurrentActionRequest

The CreateWorkflowServiceAddChangeCurrentActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
target_current	double		The target current level to which the current should be adjusted.

CreateWorkflowServiceAddChangeCurrentActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddChangeEhtActionRequest

The CreateWorkflowServiceAddChangeEhtActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
target_voltage	double		The target voltage level to which the EHT should be changed.

CreateWorkflowServiceAddChangeEhtActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddEdsAcquisitionSettingsParameterActionRequest

The CreateWorkflowServiceAddEdsAcquisitionSettingsParameterActionRequest class.

Field	Type	Label	Description
workflow_id	string		The unique identifier of the workflow to which the EDS acquisition settings action will be appended.
acquisition_settings	EdsSpectrumAcquisitionSettings		The EDS acquisition settings to be applied, provided as an ZenApi.EM.Workflow.V1.EdsSpectrumAcquisitionSettings interface.

CreateWorkflowServiceAddEdsAcquisitionSettingsParameterActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddFocusAndFovActionRequest

The CreateWorkflowServiceAddFocusAndFovActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
focus	double		The focus value to be set.
fov	double		The field of view value to be set.
is_sem	bool		A boolean indicating whether the setting is for a SEM (true) or not (false).

CreateWorkflowServiceAddFocusAndFovActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddGoToStoredPositionActionRequest

The CreateWorkflowServiceAddGoToStoredPositionActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
id	int32		Id of the stage position stored.

CreateWorkflowServiceAddGoToStoredPositionActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddInitializeActionRequest

The CreateWorkflowServiceAddInitializeActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.

CreateWorkflowServiceAddInitializeActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddMoveStageRelativeActionRequest

The CreateWorkflowServiceAddMoveStageRelativeActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
axis_to_move	zen_api.hardware.v1.StageAxis	repeated	The stage axis that should move. The position is in meters.

CreateWorkflowServiceAddMoveStageRelativeActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddPositionControlledTiltActionRequest

The CreateWorkflowServiceAddPositionControlledTiltActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
start_angle	double		The starting angle in degrees for the tilt action.
target_angle	double		The target angle in degrees the tilt action aims to reach.
large_step	double		The size of the large step in degrees for tilting.
small_step	double		The size of the small step in degrees for finer tilting adjustments.

CreateWorkflowServiceAddPositionControlledTiltActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddRestoreFibProbeActionRequest

The CreateWorkflowServiceAddRestoreFibProbeActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
fib_probe_storage_name	string		The name of the storage location from which the FIB probe state will be restored.

CreateWorkflowServiceAddRestoreFibProbeActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddSetFibProbeActionRequest

The CreateWorkflowServiceAddSetFibProbeActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
probe_name	string		The name of the FIB probe to be set.

CreateWorkflowServiceAddSetFibProbeActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddSetFibWithValuesActionRequest

The CreateWorkflowServiceAddSetFibWithValuesActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
voltage	string		The voltage value to set for the FIB.
current	string		The current value to set for the FIB.

CreateWorkflowServiceAddSetFibWithValuesActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddSetVacuumParameterActionRequest

The CreateWorkflowServiceAddSetVacuumParameterActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
vacuum_parameter	VacuumParameter		The vacuum parameter to be set, specified as a ZenApi.EM.Workflow.V1.VacuumParameter enumeration.
value	double		The value to which the specified vacuum parameter should be set.

CreateWorkflowServiceAddSetVacuumParameterActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddSpotParameterActionRequest

The CreateWorkflowServiceAddSpotParameterActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
spot_id	string		The identifier of the spot to be configured.
position_x	double		The X-coordinate of the beam position for the spot.
			The Y-coordinate of the beam position for the spot.

Field	Type	Label	Description
position_y	double		

CreateWorkflowServiceAddSpotParameterActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddStoreFibProbeActionRequest

The CreateWorkflowServiceAddStoreFibProbeActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
fib_probe_storage_name	string		The name for the storage location of the FIB probe state.

CreateWorkflowServiceAddStoreFibProbeActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddTouchAlarmGeneratorActionRequest

The CreateWorkflowServiceAddTouchAlarmGeneratorActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
disable_alarm	bool		A boolean indicating whether to disable (true) or enable (false) the touch alarm.

CreateWorkflowServiceAddTouchAlarmGeneratorActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowServiceAddVacuumCommandActionRequest

The CreateWorkflowServiceAddVacuumCommandActionRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow to which action should be added.
command	string		The vacuum command to be sent.

CreateWorkflowServiceAddVacuumCommandActionResponse

ActionResponse response.

Field	Type	Label	Description
action_id	string		The action id which was created.

CreateWorkflowService

The ICreateWorkflowService interface.

K i n d	Method Name	Request Type	Response Type	Description
	AddAbsoluteTiltingAction			Creates an absolute tilting action.

K i n d	Method Name	Request Type	Response Type	Description
		CreateWorkflowServiceAddAbsoluteTiltingActionRequest	CreateWorkflowServiceAddAbsoluteTiltingActionResponse	
	AddAcquireNavCamImageAction	CreateWorkflowServiceAddAcquireNavCamImageActionRequest	CreateWorkflowServiceAddAcquireNavCamImageActionResponse	Creates an action to acquire a navigation camera image for a specified region of interest in an automated engine workflow. This method generates an action for capturing a NavCam image based on the provided EM region of interest and appends it to an existing workflow.
	AddAcquireStoreImageAction	CreateWorkflowServiceAddAcquireStoreImageActionRequest	CreateWorkflowServiceAddAcquireStoreImageActionResponse	Creates an action to acquire and store an image based on a specified region of interest in an automated engine workflow. This method generates an action for capturing and storing an image, including optional position and offset parameters, and appends it to an existing workflow.
	AddChangeBeamStateAction	CreateWorkflowServiceAddChangeBeamStateActionRequest	CreateWorkflowServiceAddChangeBeamStateActionResponse	Creates an action to change the beam state in an automated engine workflow. This method generates a beam state change action based on the desired state and appends it to an existing workflow.
	AddChangeCurrentAction	CreateWorkflowServiceAddChangeCurrentActionRequest	CreateWorkflowServiceAddChangeCurrentActionResponse	Creates an action to change the current level in an automated engine workflow. This method generates a current change action based on the specified target current and appends it to an existing workflow.
	AddChangeEhtAction	CreateWorkflowServiceAddChangeEhtActionRequest	CreateWorkflowServiceAddChangeEhtActionResponse	Creates an action to change the EHT voltage in an automated engine workflow. This method generates an EHT voltage change action and appends it to an existing workflow.
	AddEdsAcquisitionSettingsParameterAction	CreateWorkflowServiceAddEdsAcquisitionSettingsParameterActionRequest	CreateWorkflowServiceAddEdsAcquisitionSettingsParameterActionResponse	Creates an action to set Energy-Dispersive X-ray Spectroscopy (EDS) acquisition settings in an automated engine workflow. This method generates an action for configuring EDS acquisition settings and appends it to an existing workflow.
	AddFocusAndFovAction	CreateWorkflowServiceAddFocusAndFovActionRequest	CreateWorkflowServiceAddFocusAndFovActionResponse	Creates an action to adjust the focus and field of view (FOV) in an automated engine workflow. This method generates an action for setting focus and FOV values, and appends it to an existing workflow.
	AddGoToStoredPositionAction	CreateWorkflowServiceAddGoToStoredPositionActionRequest	CreateWorkflowServiceAddGoToStoredPositionActionResponse	Adds an action that moves the stage to a stored point.
	AddInitializeAction	CreateWorkflowServiceAddInitializeActionRequest	CreateWorkflowServiceAddInitializeActionResponse	Add action that initializes the stage.
	AddMoveStageRelativeAction	CreateWorkflowServiceAddMoveStageRelativeActionRequest	CreateWorkflowServiceAddMoveStageRelativeActionResponse	Add Move Stage Relative action to the specified workflow. The action will be added at the last position of the specified workflow. When specified workflow is not present, it will be automatically created.
	AddPositionControlledTiltAction	CreateWorkflowServiceAddPositionControlledTiltActionRequest	CreateWorkflowServiceAddPositionControlledTiltActionResponse	Creates a position-controlled tilt action as part of an automated engine workflow. This method generates an action based on specified tilt angles and step sizes, and appends it to a given workflow. When specified workflow is not present, it will be automatically created.
	AddRestoreFibProbeAction	CreateWorkflowServiceAddRestoreFibProbeActionRequest	CreateWorkflowServiceAddRestoreFibProbeActionResponse	Creates an action to restore the FIB probe to a previously stored state in an automated engine workflow. This method generates an action for restoring the FIB probe configuration from a named storage and appends it to an existing workflow.
	AddSetFibProbeAction	CreateWorkflowServiceAddSetFibProbeActionRequest	CreateWorkflowServiceAddSetFibProbeActionResponse	Creates an action to set a specific FIB probe in an automated engine workflow. This method generates an action to configure the FIB system to use a specified probe and appends it to an existing workflow.
	AddSetFibWithValuesAction	CreateWorkflowServiceAddSetFibWithValuesActionRequest	CreateWorkflowServiceAddSetFibWithValuesActionResponse	Creates an action to set the FIB with specified voltage and current values in an automated engine workflow. This method generates an action for setting the FIB parameters and appends it to an existing workflow.
	AddSetVacuumParameterAction	CreateWorkflowServiceAddSetVacuumParameterActionRequest	CreateWorkflowServiceAddSetVacuumParameterActionResponse	Creates an action to set a specific vacuum parameter in an automated engine workflow. This method generates an action to adjust a vacuum parameter to a specified value and appends it to an existing workflow.
	AddSpotParameterAction	CreateWorkflowServiceAddSpotParameterActionRequest	CreateWorkflowServiceAddSpotParameterActionResponse	Creates an action to set parameters for a specific spot in an automated engine workflow. This method generates an action to configure a beam spot with a given ID and beam position, using specified X and Y coordinates, and appends it to an existing workflow.
	AddStoreFibProbeAction	CreateWorkflowServiceAddStoreFibProbeActionRequest	CreateWorkflowServiceAddStoreFibProbeActionResponse	Creates an action to store the current state of the FIB probe in an automated engine workflow. This method generates an action for storing the FIB probe configuration and appends it to an existing workflow.
	AddTouchAlarmGeneratorAction	CreateWorkflowServiceAddTouchAlarmGeneratorActionRequest	CreateWorkflowServiceAddTouchAlarmGeneratorActionResponse	Creates an action to enable or disable the touch alarm in an automated engine workflow. This method generates an action for toggling the touch alarm state and appends it to an existing workflow.

K i n d	Method Name	Request Type	Response Type	Description
	AddVacuumCommandAction	CreateWorkflowServiceAddVacuumCommandActionRequest	CreateWorkflowServiceAddVacuumCommandActionResponse	Creates an action to send a vacuum command in an automated engine workflow. This method generates an action for sending a specified vacuum command and appends it to an existing workflow.

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EdsAcquisitionMode

Enum indicating the acquisition mode.

Name	Number	Description
EDS_ACQUISITION_MODE_UNSPECIFIED	0	Default enum value.
EDS_ACQUISITION_MODE_AUTO	1	Auto selection of acquisition mode which is Counts. Acquisition continues until enough counts are collected in the spectrum.
EDS_ACQUISITION_MODE_LIVE_TIME	2	Acquire EDS data for a period of live time. This is the time for which the system is processing counts into the spectrum.
EDS_ACQUISITION_MODE_COUNTS	3	Acquisition continues until enough counts are collected in the spectrum.

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EdsSpectrumAcquisitionSettings

EDS spectrum acquisition setting.

Field	Type	Label	Description
acquisition_counts	int32		The acquisition counts.
acquisition_time	double		The acquisition time in seconds.
acquisition_mode	EdsAcquisitionMode		A value indicating whether the acquisition mode (live time or counts).

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EmRegionOfInterest

The EM region of interest settings.

Field	Type	Label	Description
position_x	double		The X-coordinate of the region's position.
position_y	double		The Y-coordinate of the region's position.
width	double		The width of the region.
height	double		The height of the region.

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RunWorkflowServiceBreakRequest

The RunWorkflowServiceBreakRequest class.

Field	Type	Label	Description
break_elements	string		List of elements, that shall be skipped.

RunWorkflowServiceBreakResponse

The RunWorkflowServiceBreakResponse class.

RunWorkflowServiceDefineAndRunCompleteWorkflowRequest

The RunWorkflowServiceDefineAndRunCompleteWorkflowRequest class.

Field	Type	Label	Description
workflow_definition	string		Complete and consistent definition of the workflow which should be executed.

RunWorkflowServiceDefineAndRunCompleteWorkflowResponse

Response object of the RunWorkflow method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to run workflow succeeded or not.

RunWorkflowServiceGetWorkflowByIdRequest

The RunWorkflowServiceGetWorkflowByIdRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow which should be returned.

RunWorkflowServiceGetWorkflowByIdResponse

Response object of the GetWorkflow method.

Field	Type	Label	Description
workflow	string		A value with workflow xml.

RunWorkflowServiceGetWorkflowStateRequest

The RunWorkflowServiceGetWorkflowStateRequest class.

RunWorkflowServiceGetWorkflowStateResponse

Response object of the RunWorkflowApi.

Field	Type	Label	Description
workflow_state	WorkflowState		A Workflow state value.

RunWorkflowServiceNextRequest

The RunWorkflowServiceNextRequest class.

RunWorkflowServiceNextResponse

The RunWorkflowServiceNextResponse class.

RunWorkflowServicePauseRequest

The RunWorkflowServicePauseRequest class.

RunWorkflowServicePauseResponse

The RunWorkflowServicePauseResponse class.

RunWorkflowServiceRegisterOnActionExecutionIdChangedRequest

The RunWorkflowServiceRegisterOnActionExecutionIdChangedRequest class.

RunWorkflowServiceRegisterOnActionExecutionIdChangedResponse

ActionExecutionId response.

Field	Type	Label	Description
action_id	string		The action id which is curently executed.

RunWorkflowServiceRegisterOnWorkflowStateChangedRequest

The RunWorkflowServiceRegisterOnWorkflowStateChangedRequest class.

RunWorkflowServiceRegisterOnWorkflowStateChangedResponse

Response object of the RunWorkflowApi.

Field	Type	Label	Description
workflow_state	WorkflowState		A Workflow state value.

RunWorkflowServiceResumeRequest

The RunWorkflowServiceResumeRequest class.

RunWorkflowServiceResumeResponse

The RunWorkflowServiceResumeResponse class.

RunWorkflowServiceRunWorkflowRequest

The RunWorkflowServiceRunWorkflowRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow which should be executed.

RunWorkflowServiceRunWorkflowResponse

Response object of the RunWorkflow method.

Field	Type	Label	Description
task_success	bool		A value indicating whether the task to run workflow succeeded or not.

RunWorkflowServiceSetNormalModeRequest

The RunWorkflowServiceSetNormalModeRequest class.

RunWorkflowServiceSetNormalModeResponse

The RunWorkflowServiceSetNormalModeResponse class.

RunWorkflowServiceSetStepModeRequest

The RunWorkflowServiceSetStepModeRequest class.

RunWorkflowServiceSetStepModeResponse

The RunWorkflowServiceSetStepModeResponse class.

RunWorkflowServiceStartRequest

The RunWorkflowServiceStartRequest class.

RunWorkflowServiceStartResponse

The RunWorkflowServiceStartResponse class.

RunWorkflowServiceStepRequest

The RunWorkflowServiceStepRequest class.

RunWorkflowServiceStepResponse

The RunWorkflowServiceStepResponse class.

RunWorkflowServiceStopEmergencyRequest

The RunWorkflowServiceStopEmergencyRequest class.

RunWorkflowServiceStopEmergencyResponse

The RunWorkflowServiceStopEmergencyResponse class.

RunWorkflowServiceStopRequest

The RunWorkflowServiceStopRequest class.

RunWorkflowServiceStopResponse

The RunWorkflowServiceStopResponse class.

RunWorkflowService

The IRunWorkflowService interface.

K i n d	Method Name	Request Type	Response Type	Description
	Break	RunWorkflowServiceBreakRequest	RunWorkflowServiceBreakResponse	Execution of Break command.
	DefineAndRunCompleteWorkflow	RunWorkflowServiceDefineAndRunCompleteWorkflowRequest	RunWorkflowServiceDefineAndRunCompleteWorkflowResponse	Trigger a run of the complete workflow.
	GetWorkflowById	RunWorkflowServiceGetWorkflowByIdRequest	RunWorkflowServiceGetWorkflowByIdResponse	Retrieves the workflow by the given id. If workflow is not yet defined an Empty.String will be returned.
	GetWorkflowState	RunWorkflowServiceGetWorkflowStateRequest	RunWorkflowServiceGetWorkflowStateResponse	Gets Workflow State.
	Next	RunWorkflowServiceNextRequest	RunWorkflowServiceNextResponse	Execution of Next command.
	Pause	RunWorkflowServicePauseRequest	RunWorkflowServicePauseResponse	Trigger pauses the currently running workflow.
	RegisterOnActionExecutionIdChanged	RunWorkflowServiceRegisterOnActionExecutionIdChangedRequest	RunWorkflowServiceRegisterOnActionExecutionIdChangedResponse stream	Notification about change of the currently executed action id.
	RegisterOnWorkflowStateChanged	RunWorkflowServiceRegisterOnWorkflowStateChangedRequest	RunWorkflowServiceRegisterOnWorkflowStateChangedResponse stream	Notification about change of the Workflow state.
	Resume	RunWorkflowServiceResumeRequest	RunWorkflowServiceResumeResponse	Trigger resumes the currently paused workflow.
	RunWorkflow	RunWorkflowServiceRunWorkflowRequest	RunWorkflowServiceRunWorkflowResponse	Trigger a run of the specified workflow.
	SetNormalMode	RunWorkflowServiceSetNormalModeRequest	RunWorkflowServiceSetNormalModeResponse	Execution of set normal / step mode command.

K i n d	Method Name	Request Type	Response Type	Description
	SetStepMode	RunWorkflowServiceSetStepModeRequest	RunWorkflowServiceSetStepModeResponse	Execution of set normal / step mode command.
	Start	RunWorkflowServiceStartRequest	RunWorkflowServiceStartResponse	Trigger starts the stopped workflow.
	Step	RunWorkflowServiceStepRequest	RunWorkflowServiceStepResponse	Execution of Step command in step mode.
	Stop	RunWorkflowServiceStopRequest	RunWorkflowServiceStopResponse	Trigger stops the currently running workflow. The workflow not necessary was started from API.
	StopEmergency	RunWorkflowServiceStopEmergencyRequest	RunWorkflowServiceStopEmergencyResponse	Trigger stops emergency.

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VacuumParameter

List of parameters that can be called on the Vacuum.

Name	Number	Description
VACUUM_PARAMETER_UNSPECIFIED	0	Default enum value.
VACUUM_PARAMETER_VARIABLE_PRESSURE_TARGET	1	Variable pressure.

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WorkflowAdminServiceDeleteWorkflowByIdRequest

The WorkflowAdminServiceDeleteWorkflowByIdRequest class.

Field	Type	Label	Description
workflow_id	string		Identifier of the workflow which should be deleted.

WorkflowAdminServiceDeleteWorkflowByIdResponse

The WorkflowAdminServiceDeleteWorkflowByIdResponse class.

WorkflowAdminServiceGetAvailableWorkflowIdsRequest

The WorkflowAdminServiceGetAvailableWorkflowIdsRequest class.

WorkflowAdminServiceGetAvailableWorkflowIdsResponse

Response object of the GetAvailableWorkflowsIds method.

Field	Type	Label	Description
workflow_ids	string	repeated	A value with workflow xml.

WorkflowAdminService

The IWorkflowAdminService interface.

K i n d	Method Name	Request Type	Response Type	Description
	DeleteWorkflowById	WorkflowAdminServiceDeleteWorkflowByIdRequest	WorkflowAdminServiceDeleteWorkflowByIdResponse	Delete specified workflow by workflowId.
	GetAvailableWorkflows	WorkflowAdminServiceGetAvailableWorkflowsRequest	WorkflowAdminServiceGetAvailableWorkflowsResponse	Gets all available workflows.

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WorkflowState

WorkflowState.

Name	Number	Description
WORKFLOW_STATE_UNSPECIFIED	0	Default value.
WORKFLOW_STATE_RUN_ACTIVE	1	Execution running.
WORKFLOW_STATE_RUN_PAUSED	2	Execution paused.
WORKFLOW_STATE_RUN_COMPLETED	3	Execution completed.
WORKFLOW_STATE_RUN_FAILED	4	Execution failed.
WORKFLOW_STATE_RUN_UNKNOWN	5	Unknown status, e.g. no run so far.

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AutofocusContrastMeasure

The contrast measures of the software autofocus contrast mode.

Name	Number	Description
AUTOFOCUS_CONTRAST_MEASURE_UNSPECIFIED	0	Default enum value.
AUTOFOCUS_CONTRAST_MEASURE_DEFAULT	1	The default contrast measure.
AUTOFOCUS_CONTRAST_MEASURE_LOW_SIGNAL	2	The contrast measure to use in low-signal and calibration situations.

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AutofocusMode

The autofocus modes.

Name	Number	Description
AUTOFOCUS_MODE_UNSPECIFIED	0	Default enum value.

Name	Number	Description
AUTOFOCUS_MODE_CONTRAST	1	Sharpness is measured on the basis of contrast values.
AUTOFOCUS_MODE_INTENSITY	2	Sharpness is measured on the basis of intensity values.
AUTOFOCUS_MODE_AUTO	3	Automatic determination of measure method (Contrast or Intensity) in dependency of used hardware.
AUTOFOCUS_MODE_REFLEX	4	Sharpness is measured with the reflection mode autofocus.

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AutofocusSampling

Scales the depth of focus by predefined values given here.

Name	Number	Description
AUTOFOCUS_SAMPLING_UNSPECIFIED	0	Default enum value.
AUTOFOCUS_SAMPLING_FINE	1	Do oversampling.
AUTOFOCUS_SAMPLING_DEFAULT	2	Do sampling according to depth of focus.
AUTOFOCUS_SAMPLING_MEDIUM	3	Do under sampling.
AUTOFOCUS_SAMPLING_COARSE	4	Coarser than medium.

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ChannelInfo

Information about a channel.

Field	Type	Label	Description
name	string		The channel name.
is_activated	bool		A value indicating whether the channel is activated.

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DefiniteFocusServiceFindSurfaceRequest

The DefiniteFocusServiceFindSurfaceRequest class.

DefiniteFocusServiceFindSurfaceResponse

Response for FindSurface.

Field	Type	Label	Description
zposition	double		The Z position.

DefiniteFocusServiceLockFocusRequest

The DefiniteFocusServiceLockFocusRequest class.

Field	Type	Label	Description
timeout	int32		Timeout in seconds.

DefiniteFocusServiceLockFocusResponse

Response for LockFocus.

DefiniteFocusServiceRecallFocusRequest

The DefiniteFocusServiceRecallFocusRequest class.

DefiniteFocusServiceRecallFocusResponse

Response for RecallFocus.

Field	Type	Label	Description
zposition	double		The Z position.

DefiniteFocusServiceStoreFocusRequest

The DefiniteFocusServiceStoreFocusRequest class.

DefiniteFocusServiceStoreFocusResponse

Response for StoreFocus.

DefiniteFocusServiceUnlockFocusRequest

The DefiniteFocusServiceUnlockFocusRequest class.

DefiniteFocusServiceUnlockFocusResponse

Response for UnlockFocus.

DefiniteFocusService

The IDefiniteFocusService interface.

K i n d	Method Name	Request Type	Response Type	Description
	FindSurface	DefiniteFocusServiceFindSurfaceRequest	DefiniteFocusServiceFindSurfaceResponse	Finds the surface of the probe.
	LockFocus	DefiniteFocusServiceLockFocusRequest	DefiniteFocusServiceLockFocusResponse	Locks the focus.
	RecallFocus	DefiniteFocusServiceRecallFocusRequest	DefiniteFocusServiceRecallFocusResponse	Recall the focus for the component.
	StoreFocus	DefiniteFocusServiceStoreFocusRequest	DefiniteFocusServiceStoreFocusResponse	Stores the focus for the component.
	UnlockFocus	DefiniteFocusServiceUnlockFocusRequest	DefiniteFocusServiceUnlockFocusResponse	Unlocks the focus.

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ExperimentSwAutofocusServiceExportRequest

The ExperimentSwAutofocusServiceExportRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment id.

ExperimentSwAutofocusServiceExportResponse

Response object representing the values of xml string.

Field	Type	Label	Description
xml_string	string		A value of the xml string.

ExperimentSwAutofocusServiceFindAutoFocusRequest

The ExperimentSwAutofocusServiceFindAutoFocusRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment id.
timeout	google.protobuf.DoubleValue		The timeout in seconds.

ExperimentSwAutofocusServiceFindAutoFocusResponse

Response object representing the focus position.

Field	Type	Label	Description
focus_position	double		The focus position (unit: m).

ExperimentSwAutofocusServiceGetAutofocusParametersRequest

The ExperimentSwAutofocusServiceGetAutofocusParametersRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment id.

ExperimentSwAutofocusServiceGetAutofocusParametersResponse

Response object representing the values of software autofocus parameters for the experiment.

Field	Type	Label	Description
experiment_id	string		A value of the experiment id.
auto_focus_mode	AutofocusMode		A value of autofocus mode.
contrast_measure	AutofocusContrastMeasure		A value of sharpness measure for contrast mode.
search_strategy	string		A value of search strategy. Either "Smart", "Full", "FullNoChecks" or the name of an extension strategy.
autofocus_sampling	AutofocusSampling		A value of the predefined step size.
offset	double		A value of the reflection mode offset (unit: m).
use_acquisition_roi	bool		A value indicating whether the acquisition ROI is used for the software autofocus.
reference_channel_name	string		A name of the focus reference channel.
relative_range_is_automatic	bool		A value indicating whether the relative search range size is determined automatically.
relative_search_range	double		A value of the relative search range of the Z drive (unit: m).
lower_limit	double		A value of the lower search range limit of the Z drive (unit: m).
upper_limit	double		A value of the upper search range limit of the Z drive (unit: m).

ExperimentSwAutofocusServiceImportRequest

The ExperimentSwAutofocusServiceImportRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment id.
xml_string	string		Xml string to be imported.

ExperimentSwAutofocusServiceImportResponse

The ExperimentSwAutofocusServiceImportResponse class.

ExperimentSwAutofocusServiceSetAutofocusParametersRequest

The ExperimentSwAutofocusServiceSetAutofocusParametersRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment id.
autofocus_mode	AutofocusMode		The autofocus mode.
contrast_measure	AutofocusContrastMeasure		The sharpness measure for contrast mode.
search_strategy	string		The strategy, either "Smart", "Full", "FullNoChecks" or the name of an extension strategy, or null to leave unmodified. This parameter is case-insensitive.
autofocus_sampling	AutofocusSampling		The predefined step size, or null to leave unmodified.
offset	google.protobuf.DoubleValue		The reflection mode offset (unit: m), or null to leave unmodified.
use_acquisition_roi	google.protobuf.BoolValue		True if the acquisition ROI is used for the software autofocus; otherwise, false, or null to leave unmodified.
reference_channel_name	string		The case-insensitive name of the focus reference channel, or null to leave unmodified.
relative_range_is_automatic	google.protobuf.BoolValue		True if the relative search range size is determined automatically; otherwise, false, or null to leave unmodified.
relative_search_range	google.protobuf.DoubleValue		The relative search range in units of the Z drive (unit: m), or null to leave unmodified.
lower_limit	google.protobuf.DoubleValue		The lower search range limit in units of the Z drive (unit: m), or null to leave unmodified.
upper_limit	google.protobuf.DoubleValue		The upper limit in units of the Z drive (unit: m), or null to leave unmodified.

ExperimentSwAutofocusServiceSetAutofocusParametersResponse

The ExperimentSwAutofocusServiceSetAutofocusParametersResponse class.

ExperimentSwAutofocusService

The IExperimentSwAutofocusService interface.

K i n d	Method Name	Request Type	Response Type	Description
	Export	ExperimentSwAutofocusServiceExportRequest	ExperimentSwAutofocusServiceExportResponse	Exports the software autofocus parameters to an xml string.
	FindAutoFocus	ExperimentSwAutofocusServiceFindAutoFocusRequest	ExperimentSwAutofocusServiceFindAutoFocusResponse	Gets the the focus position.
	GetAutofocusParameters	ExperimentSwAutofocusServiceGetAutofocusParametersRequest	ExperimentSwAutofocusServiceGetAutofocusParametersResponse	Gets the software autofocus parameters for the specified experiment.
	Import	ExperimentSwAutofocusServiceImportRequest	ExperimentSwAutofocusServiceImportResponse	Imports the software autofocus parameters from an xml string.
	SetAutofocusParameters	ExperimentSwAutofocusServiceSetAutofocusParametersRequest	ExperimentSwAutofocusServiceSetAutofocusParametersResponse	Sets the software autofocus parameters for the specified experiment.

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Position3d

A position in three dimensions (XYZ).

Field	Type	Label	Description
x	double		The X position (unit: m).
y	double		The Y position (unit: m).
z	double		The Z position (unit: m).

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TilesServiceAddEllipseTileRegionRequest

The TilesServiceAddEllipseTileRegionRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment Id.
center_x	google.protobuf.DoubleValue		The center x position of the tile region to be added (unit: m).
center_y	google.protobuf.DoubleValue		The center y position of the tile region to be added (unit: m).
width	google.protobuf.DoubleValue		The width of the tile region to be added (unit: m).
height	google.protobuf.DoubleValue		The height of the tile region to be added (unit: m).
z	google.protobuf.DoubleValue		The z position of the tile region to be added (unit: m).

TilesServiceAddEllipseTileRegionResponse

The TilesServiceAddEllipseTileRegionResponse class.

TilesServiceAddPolygonTileRegionRequest

The TilesServiceAddPolygonTileRegionRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment Id.
polygon_points	zen_api.common.v1.DoublePoint	repeated	The list of points which define the polygon. This list has to contain at least one point (unit: m).
z	google.protobuf.DoubleValue		The z position of the tile region to be added (unit: m).

TilesServiceAddPolygonTileRegionResponse

The TilesServiceAddPolygonTileRegionResponse class.

TilesServiceAddPositionsRequest

The TilesServiceAddPositionsRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment Id.
positions	Position3d	repeated	The positions to be added.

TilesServiceAddPositionsResponse

The TilesServiceAddPositionsResponse class.

TilesServiceAddRectangleTileRegionRequest

The TilesServiceAddRectangleTileRegionRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.

Field	Type	Label	Description
center_x	google.protobuf.DoubleValue		The center x position of the tile region to be added (unit: m).
center_y	google.protobuf.DoubleValue		The center y position of the tile region to be added (unit: m).
width	google.protobuf.DoubleValue		The width of the tile region to be added (unit: m).
height	google.protobuf.DoubleValue		The height of the tile region to be added (unit: m).
z	google.protobuf.DoubleValue		The z position of the tile region to be added (unit: m).

TilesServiceAddRectangleTileRegionResponse

The TilesServiceAddRectangleTileRegionResponse class.

TilesServiceClearRequest

The TilesServiceClearRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.

TilesServiceClearResponse

The TilesServiceClearResponse class.

TilesServiceIsTilesExperimentRequest

The TilesServiceIsTilesExperimentRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.

TilesServiceIsTilesExperimentResponse

Response object representing the value of IsTiles for the experiment.

Field	Type	Label	Description
is_tiles_experiment	bool		A value indicating whether the experiment is a tiles experiment.

TilesService

The ITilesService interface.

K i n d	Method Name	Request Type	Response Type	Description
	AddEllipseTileRegion	TilesServiceAddEllipseTileRegionRequest	TilesServiceAddEllipseTileRegionResponse	Adds an ellipse tile region with the specified position and size values to the acquisition block with the specified index in the specified experiment.
	AddPolygonTileRegion	TilesServiceAddPolygonTileRegionRequest	TilesServiceAddPolygonTileRegionResponse	Adds a polygon tile region with the specified points list to the acquisition block with the specified index in the specified experiment.
	AddPositions	TilesServiceAddPositionsRequest	TilesServiceAddPositionsResponse	Adds positions with the specified coordinates to the specified experiment.
	AddRectangleTileRegion	TilesServiceAddRectangleTileRegionRequest	TilesServiceAddRectangleTileRegionResponse	Adds a rectangle tile region with the specified position and size values to the specified experiment.
	Clear	TilesServiceClearRequest	TilesServiceClearResponse	Clears all tile regions and positions in the current acquisition block.
	IsTilesExperiment	TilesServiceIsTilesExperimentRequest	TilesServiceIsTilesExperimentResponse	Determines whether the current experiment block in the specified experiment is a Tiles experiment. This means that the corresponding Tiles dimension is activated.

TrackInfo

Information about a track.

Field	Type	Label	Description
is_activated	bool		A value indicating whether the track is activated.
channels	ChannelInfo	repeated	The info for all channels in the track.

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TrackServiceActivateChannelRequest

The TrackServiceActivateChannelRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
track_index	int32		An index of a track.
channel_index	int32		An index of a channel in the track to be activated.

TrackServiceActivateChannelResponse

The TrackServiceActivateChannelResponse class.

TrackServiceActivateTrackRequest

The TrackServiceActivateTrackRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
track_index	int32		An index of a track to be activated.

TrackServiceActivateTrackResponse

The TrackServiceActivateTrackResponse class.

TrackServiceDeactivateChannelRequest

The TrackServiceDeactivateChannelRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
track_index	int32		An index of a track.
channel_index	int32		An index of a channel in the track to be deactivated.

TrackServiceDeactivateChannelResponse

The TrackServiceDeactivateChannelResponse class.

TrackServiceDeactivateTrackRequest

The TrackServiceDeactivateTrackRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.
track_index	int32		An index of a track to be deactivated.

TrackServiceDeactivateTrackResponse

The TrackServiceDeactivateTrackResponse class.

TrackServiceGetTrackInfoRequest

The TrackServiceGetTrackInfoRequest class.

Field	Type	Label	Description
experiment_id	string		Experiment id.

TrackServiceGetTrackInfoResponse

Response object representing the value of track information.

Field	Type	Label	Description
track_info	TrackInfo	repeated	The track information.

TrackService

The ITrackService interface.

Kind	Method Name	Request Type	Response Type	Description
	ActivateChannel	TrackServiceActivateChannelRequest	TrackServiceActivateChannelResponse	Activates a channel with a specific index in a specific track.
	ActivateTrack	TrackServiceActivateTrackRequest	TrackServiceActivateTrackResponse	Activates a track with a specific index.
	DeactivateChannel	TrackServiceDeactivateChannelRequest	TrackServiceDeactivateChannelResponse	Deactivates a channel with a specific index in a specific track.
	DeactivateTrack	TrackServiceDeactivateTrackRequest	TrackServiceDeactivateTrackResponse	Deactivates a track with a specific index.
	GetTrackInfo	TrackServiceGetTrackInfoRequest	TrackServiceGetTrackInfoResponse	Gets the track information.

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ZStackServiceGetZStackInfoRequest

The ZStackServiceGetZStackInfoRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment Id.

ZStackServiceGetZStackInfoResponse

Response object representing the value of GetZStackInfo for the experiment.

Field	Type	Label	Description
interval	double		The value of the interval between 2 slices (unit: m).
first_slice	double		The position of the first slice in Z-stack (unit: m).
last_slice	double		The position of the last slice in Z-stack (unit: m).
range	double		The distance between the first and last slice (unit: m).
num_slices	int32		The number of slices.
is_center_mode	bool		A value indicating whether the Z-stack is in center mode.
offset	double		The value of the offset which is applied to the whole Z-stack.

ZStackServiceIsZStackExperimentRequest

The ZStackServiceIsZStackExperimentRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment Id.

ZStackServiceIsZStackExperimentResponse

Response object representing the value of IsZStackExperiment for the experiment.

Field	Type	Label	Description
is_zstack_experiment	bool		A value indicating whether the experiment is a Z-Stack experiment.

ZStackServiceModifyZStackCenterRangeRequest

The ZStackServiceModifyZStackCenterRangeRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment Id.
center	google.protobuf.DoubleValue		The center position between the first and last slice (unit: m).
interval	google.protobuf.DoubleValue		The interval between 2 slices (unit: m).
range	google.protobuf.DoubleValue		Distance between the first and last slice (unit: m).

ZStackServiceModifyZStackCenterRangeResponse

The ZStackServiceModifyZStackCenterRangeResponse class.

ZStackServiceModifyZStackFirstLastRequest

The ZStackServiceModifyZStackFirstLastRequest class.

Field	Type	Label	Description
experiment_id	string		The experiment Id.
first	google.protobuf.DoubleValue		Position of the first slice in Z-stack (unit: m).
last	google.protobuf.DoubleValue		Position of the last slice in Z-stack (unit: m).
interval	google.protobuf.DoubleValue		The interval between 2 slices (unit: m).

ZStackServiceModifyZStackFirstLastResponse

The ZStackServiceModifyZStackFirstLastResponse class.

ZStackService

The IZStackService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetZStackInfo	ZStackServiceGetZStackInfoRequest	ZStackServiceGetZStackInfoResponse	Gets the information about a Z-stack.
	IsZStackExperiment	ZStackServiceIsZStackExperimentRequest	ZStackServiceIsZStackExperimentResponse	Determines whether the current experiment block in the specified experiment is a Z-stack experiment. This means that the corresponding Z-stack setup dimension is activated.
	ModifyZStackCenterRange	ZStackServiceModifyZStackCenterRangeRequest	ZStackServiceModifyZStackCenterRangeResponse	Modifies the dimensions of the Z-stack inside the experiment.
	ModifyZStackFirstLast			Modifies the dimensions of the Z-stack inside the experiment.

K i n d	Method Name	Request Type	Response Type	Description
		ZStackServiceModify ZStackFirstLastRequest	ZStackServiceModify ZStackFirstLastResponse	

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FocusServiceGetAccelerationRequest

The FocusServiceGetAccelerationRequest class.

FocusServiceGetAccelerationResponse

Acceleration of the focus in %.

Field	Type	Label	Description
value	double		The acceleration in %.

FocusServiceGetPositionRequest

The FocusServiceGetPositionRequest class.

FocusServiceGetPositionResponse

Position of the focus in μm .

Field	Type	Label	Description
value	double		The position in μm .

FocusServiceGetSpeedRequest

The FocusServiceGetSpeedRequest class.

FocusServiceGetSpeedResponse

Speed of the focus in %.

Field	Type	Label	Description
value	double		The speed in %.

FocusServiceMoveToRequest

The FocusServiceMoveToRequest class.

Field	Type	Label	Description
value	double		New position in μm .

FocusServiceMoveToResponse

Describes the result of a Focus.MoveTo request.

Field	Type	Label	Description
position_changed	bool		A value indicating whether the position was changed.

FocusServiceSetAccelerationRequest

The FocusServiceSetAccelerationRequest class.

Field	Type	Label	Description
			Acceleration in percent, i.e. values from range [0;100].

Field	Type	Label	Description
acceleration	double		

FocusServiceSetAccelerationResponse

The FocusServiceSetAccelerationResponse class.

FocusServiceSetSpeedRequest

The FocusServiceSetSpeedRequest class.

Field	Type	Label	Description
speed	double		Speed in percent, i.e. values from range [0;100].

FocusServiceSetSpeedResponse

The FocusServiceSetSpeedResponse class.

FocusServiceStopRequest

The FocusServiceStopRequest class.

FocusServiceStopResponse

The FocusServiceStopResponse class.

FocusService

The IFocusService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetAcceleration	FocusServiceGetAccelerationRequest	FocusServiceGetAccelerationResponse	Gets the focus acceleration.
	GetPosition	FocusServiceGetPositionRequest	FocusServiceGetPositionResponse	Gets the focus position.
	GetSpeed	FocusServiceGetSpeedRequest	FocusServiceGetSpeedResponse	Gets the focus speed.
	MoveTo	FocusServiceMoveToRequest	FocusServiceMoveToResponse	Moves the focus to the given position in μm .
	SetAcceleration	FocusServiceSetAccelerationRequest	FocusServiceSetAccelerationResponse	Sets the acceleration of the focus in percent.
	SetSpeed	FocusServiceSetSpeedRequest	FocusServiceSetSpeedResponse	Sets the speed of the focus in percent.
	Stop	FocusServiceStopRequest	FocusServiceStopResponse	Stops the focus if it is moving.

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SampleCarrierServiceGetCurrentContainerRequest

The SampleCarrierServiceGetCurrentContainerRequest class.

SampleCarrierServiceGetCurrentContainerResponse

Contains the information in which container of the sample carrier the stage is positioned at.

Field	Type	Label	Description
row_index	int32		The row index of the container in the sample carrier (starts with index 0).
column_index	int32		The column index of the container in the sample carrier (starts with index 0).

SampleCarrierServiceGetInfoRequest

The SampleCarrierServiceGetInfoRequest class.

SampleCarrierServiceGetInfoResponse

Contains the sample carrier information.

Field	Type	Label	Description
rows	int32		The number of rows in the sample carrier.
columns	int32		The number of columns in the sample carrier.
name	string		The name of the sample carrier.
material	string		The bottom material which is used for this sample carrier.
thickness	double		The bottom thickness of this sample carrier (in meters).
skirt	double		The skirt (i.e. bottom offset) of this sample carrier (in meters).
refractive_index	double		The refractive index of the bottom material of this sample carrier.

SampleCarrierServiceMoveToContainerRequest

The SampleCarrierServiceMoveToContainerRequest class.

Field	Type	Label	Description
row_index	int32		The row index of the container (starts with index 0).
column_index	int32		The column index of the container (starts with index 0).

SampleCarrierServiceMoveToContainerResponse

The SampleCarrierServiceMoveToContainerResponse class.

SampleCarrierService

The ISampleCarrierService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetCurrentContainer	SampleCarrierServiceGetCurrentContainerRequest	SampleCarrierServiceGetCurrentContainerResponse	Gets the information in which container of the sample carrier the stage is positioned at. Note that the stage might not be positioned exactly in the center of the container.
	GetInfo	SampleCarrierServiceGetInfoRequest	SampleCarrierServiceGetInfoResponse	Gets the information of the currently inserted sample carrier.
	MoveToContainer	SampleCarrierServiceMoveToContainerRequest	SampleCarrierServiceMoveToContainerResponse	Move the stage to a sample holder container.

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StageServiceGetAccelerationRequest

The StageServiceGetAccelerationRequest class.

StageServiceGetAccelerationResponse

Acceleration of the stage.

Field	Type	Label	Description
x	double		The X component of the position in in μm .
y	double		The Y component of the position in in μm .

StageServiceGetPositionRequest

The StageServiceGetPositionRequest class.

StageServiceGetPositionResponse

Position of the stage in μm .

Field	Type	Label	Description
x	double		The X component of the position in μm .
y	double		The Y component of the position in μm .

StageServiceGetSpeedRequest

The StageServiceGetSpeedRequest class.

StageServiceGetSpeedResponse

Speed of the stage.

Field	Type	Label	Description
x	double		The X component of the speed in %.
y	double		The Y component of the speed in %.

StageServiceMoveToRequest

The StageServiceMoveToRequest class.

Field	Type	Label	Description
x	google.protobuf.DoubleValue		Target position x in μm . Leave out if x position should not be changed.
y	google.protobuf.DoubleValue		Target position y in μm . Leave out if y position should not be changed.

StageServiceMoveToResponse

Describes the result of a Stage.MoveTo request.

Field	Type	Label	Description
position_changed	bool		A value indicating whether the position was changed.

StageServiceSetAccelerationRequest

The StageServiceSetAccelerationRequest class.

Field	Type	Label	Description
acceleration_x	google.protobuf.DoubleValue		Acceleration in x direction in percent, i.e. values from range [0;100].
acceleration_y	google.protobuf.DoubleValue		Acceleration in y direction in percent, i.e. values from range [0;100].

StageServiceSetAccelerationResponse

The StageServiceSetAccelerationResponse class.

StageServiceSetSpeedRequest

The StageServiceSetSpeedRequest class.

Field	Type	Label	Description
speed_x	google.protobuf.DoubleValue		Speed in x direction in percent, i.e. values from range [0;100].
speed_y	google.protobuf.DoubleValue		Speed in y direction in percent, i.e. values from range [0;100].

StageServiceSetSpeedResponse

The StageServiceSetSpeedResponse class.

StageServiceStopRequest

The StageServiceStopRequest class.

StageServiceStopResponse

The StageServiceStopResponse class.

StageService

The IStageService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetAcceleration	StageServiceGetAccelerationRequest	StageServiceGetAccelerationResponse	Gets the acceleration of the stage.
	GetPosition	StageServiceGetPositionRequest	StageServiceGetPositionResponse	Gets the current stage position.
	GetSpeed	StageServiceGetSpeedRequest	StageServiceGetSpeedResponse	Gets the speed of the stage.
	MoveTo	StageServiceMoveToRequest	StageServiceMoveToResponse	Moves the stage to the given position. Is a value for a dimension is no supplied, the position in that dimension it is kept as is.
	SetAcceleration	StageServiceSetAccelerationRequest	StageServiceSetAccelerationResponse	Sets the acceleration of the stage in percent.
	SetSpeed	StageServiceSetSpeedRequest	StageServiceSetSpeedResponse	Sets the speed of the stage in percent.
	Stop	StageServiceStopRequest	StageServiceStopResponse	Stops the stage if it is moving.

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FocusServiceGetAccelerationRequest

The FocusServiceGetAccelerationRequest class.

FocusServiceGetAccelerationResponse

Acceleration of the focus in %.

Field	Type	Label	Description
value	double		The acceleration in %.

FocusServiceGetPositionRequest

The FocusServiceGetPositionRequest class.

FocusServiceGetPositionResponse

Position of the focus in meters.

Field	Type	Label	Description
value	double		The position in meters.

FocusServiceGetSpeedRequest

The FocusServiceGetSpeedRequest class.

FocusServiceGetSpeedResponse

Speed of the focus in %.

Field	Type	Label	Description
value	double		The speed in %.

FocusServiceMoveToRequest

The FocusServiceMoveToRequest class.

Field	Type	Label	Description
value	double		New position in meters.

FocusServiceMoveToResponse

Describes the result of a Focus.MoveTo request.

Field	Type	Label	Description
position_changed	bool		A value indicating whether the position was changed.

FocusServiceSetAccelerationRequest

The FocusServiceSetAccelerationRequest class.

Field	Type	Label	Description
acceleration	double		Acceleration in percent, i.e. values from range [0;100].

FocusServiceSetAccelerationResponse

The FocusServiceSetAccelerationResponse class.

FocusServiceSetSpeedRequest

The FocusServiceSetSpeedRequest class.

Field	Type	Label	Description
speed	double		Speed in percent, i.e. values from range [0;100].

FocusServiceSetSpeedResponse

The FocusServiceSetSpeedResponse class.

FocusServiceStopRequest

The FocusServiceStopRequest class.

FocusServiceStopResponse

The FocusServiceStopResponse class.

FocusService

The IFocusService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetAcceleration	FocusServiceGetAccelerationRequest	FocusServiceGetAccelerationResponse	Gets the focus acceleration.
	GetPosition	FocusServiceGetPositionRequest	FocusServiceGetPositionResponse	Gets the focus position.
	GetSpeed	FocusServiceGetSpeedRequest	FocusServiceGetSpeedResponse	Gets the focus speed.
	MoveTo			Moves the focus to the given position in meters.

K i n d	Method Name	Request Type	Response Type	Description
		FocusServiceMoveToRequest	FocusServiceMoveToResponse	
	SetAcceleration	FocusServiceSetAccelerationRequest	FocusServiceSetAccelerationResponse	Sets the acceleration of the focus in percent.
	SetSpeed	FocusServiceSetSpeedRequest	FocusServiceSetSpeedResponse	Sets the speed of the focus in percent.
	Stop	FocusServiceStopRequest	FocusServiceStopResponse	Stops the focus if it is moving.

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ObjectiveChangerImmersionTypes

Immersion types to match ObjectiveImmersionTypes

Name	Number	Description
OBJECTIVE_CHANGE R_IMMERSION_TYPE S_UNSPECIFIED	0	Unspecified
OBJECTIVE_CHANGE R_IMMERSION_TYPE S_AIR	1	Air
OBJECTIVE_CHANGE R_IMMERSION_TYPE S_WATER	2	Water
OBJECTIVE_CHANGE R_IMMERSION_TYPE S_OIL	4	Oil
OBJECTIVE_CHANGE R_IMMERSION_TYPE S_GLYCERINE	8	Glycerin
OBJECTIVE_CHANGE R_IMMERSION_TYPE S_SILICONE	16	Silicone

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ObjectiveChangerServiceGetObjectivesRequest

The ObjectiveChangerServiceGetObjectivesRequest class.

ObjectiveChangerServiceGetObjectivesResponse

A list of available objectives.

Field	Type	Label	Description
objectives	ObjectiveData	repeated	The objectives.

ObjectiveChangerServiceGetPositionRequest

The ObjectiveChangerServiceGetPositionRequest class.

ObjectiveChangerServiceGetPositionResponse

Position index of the objective.

Field	Type	Label	Description
value	int32		The position index.

ObjectiveChangerServiceMoveToRequest

The ObjectiveChangerServiceMoveToRequest class.

Field	Type	Label	Description
position_index	int32		New position index.

ObjectiveChangerServiceMoveToResponse

Describes the result of a ObjectiveChanger.MoveTo request.

ObjectiveChangerService

The IOObjectiveChangerService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetObjectives	ObjectiveChangerServiceGetObjectivesRequest	ObjectiveChangerServiceGetObjectivesResponse	Gets the objectives
	GetPosition	ObjectiveChangerServiceGetPositionRequest	ObjectiveChangerServiceGetPositionResponse	Gets the objective position.
	MoveTo	ObjectiveChangerServiceMoveToRequest	ObjectiveChangerServiceMoveToResponse	Moves the objective to the given position index.

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ObjectiveData

Describes an objective.

Field	Type	Label	Description
name	string		The name.
na	double		The Numerical Apperture.
immersion_type	ObjectiveChangerImmerstionTypes		The immersion type.
magnification	double		The magnification.
position	int32		The position index.

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OptovarData

Describes an optovar.

Field	Type	Label	Description
name	string		The name.
magnification	double		The magnification.
position	int32		The position index.

OptovarServiceGetOptovarsRequest

The OptovarServiceGetOptovarsRequest class.

OptovarServiceGetOptovarsResponse

A list of available optovars.

Field	Type	Label	Description
optovars	OptovarData	repeated	The optovars.

OptovarServiceGetPositionRequest

The OptovarServiceGetPositionRequest class.

OptovarServiceGetPositionResponse

Position index of the optovar.

Field	Type	Label	Description
value	int32		The position index.

OptovarServiceMoveToRequest

The OptovarServiceMoveToRequest class.

Field	Type	Label	Description
position_index	int32		New position index.

OptovarServiceMoveToResponse

Describes the result of a Optovar.MoveTo request.

OptovarService

The IOptovarService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetOptovars	OptovarServiceGetOptovarsRequest	OptovarServiceGetOptovarsResponse	Gets the optovars.
	GetPosition	OptovarServiceGetPositionRequest	OptovarServiceGetPositionResponse	Gets the optovar position.
	MoveTo	OptovarServiceMoveToRequest	OptovarServiceMoveToResponse	Moves the optovar to the given position index.

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StageServiceGetAccelerationRequest

The StageServiceGetAccelerationRequest class.

StageServiceGetAccelerationResponse

Acceleration of the stage.

Field	Type	Label	Description
x	double		The X component of the acceleration in %.

Field	Type	Label	Description
y	double		The Y component of the acceleration in %.

StageServiceGetPositionRequest

The StageServiceGetPositionRequest class.

StageServiceGetPositionResponse

Position of the stage.

Field	Type	Label	Description
x	double		The X component of the position in meters.
y	double		The Y component of the position in meters.

StageServiceGetSpeedRequest

The StageServiceGetSpeedRequest class.

StageServiceGetSpeedResponse

Speed of the stage.

Field	Type	Label	Description
x	double		The X component of the speed in %.
y	double		The Y component of the speed in %.

StageServiceMoveToRequest

The StageServiceMoveToRequest class.

Field	Type	Label	Description
x	google.protobuf.DoubleValue		Target position x in meters. Leave out if x position should not be changed.
y	google.protobuf.DoubleValue		Target position y in meters. Leave out if y position should not be changed.

StageServiceMoveToResponse

Describes the result of a Stage.MoveTo request.

Field	Type	Label	Description
position_changed	bool		A value indicating whether the position was changed.

StageServiceSetAccelerationRequest

The StageServiceSetAccelerationRequest class.

Field	Type	Label	Description
acceleration_x	google.protobuf.DoubleValue		Acceleration in x direction in percent, i.e. values from range [0;100].
acceleration_y	google.protobuf.DoubleValue		Acceleration in y direction in percent, i.e. values from range [0;100].

StageServiceSetAccelerationResponse

The StageServiceSetAccelerationResponse class.

StageServiceSetSpeedRequest

The StageServiceSetSpeedRequest class.

Field	Type	Label	Description
speed_x	google.protobuf.DoubleValue		Speed in x direction in percent, i.e. values from range [0;100].

Field	Type	Label	Description
speed_y	google.protobuf.DoubleValue		Speed in y direction in percent, i.e. values from range [0;100].

StageServiceSetSpeedResponse

The StageServiceSetSpeedResponse class.

StageServiceStopRequest

The StageServiceStopRequest class.

StageServiceStopResponse

The StageServiceStopResponse class.

StageService

The IStageService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetAcceleration	StageServiceGetAccelerationRequest	StageServiceGetAccelerationResponse	Gets the acceleration of the stage.
	GetPosition	StageServiceGetPositionRequest	StageServiceGetPositionResponse	Gets the current stage position.
	GetSpeed	StageServiceGetSpeedRequest	StageServiceGetSpeedResponse	Gets the speed of the stage.
	MoveTo	StageServiceMoveToRequest	StageServiceMoveToResponse	Moves the stage to the given position. Is a value for a dimension is no supplied, the position in that dimension it is kept as is.
	SetAcceleration	StageServiceSetAccelerationRequest	StageServiceSetAccelerationResponse	Sets the acceleration of the stage in percent.
	SetSpeed	StageServiceSetSpeedRequest	StageServiceSetSpeedResponse	Sets the speed of the stage in percent.
	Stop	StageServiceStopRequest	StageServiceStopResponse	Stops the stage if it is moving.

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LiveScanServiceEjectTrayRequest

The LiveScanServiceEjectTrayRequest class.

LiveScanServiceEjectTrayResponse

Empty response upon ejecting the tray.

Field	Type	Label	Description
notifications	string	repeated	The list of notifications.

LiveScanServiceGetConfigurationRequest

The LiveScanServiceGetConfigurationRequest class.

LiveScanServiceGetConfigurationResponse

Request for getting the configuration.

Field	Type	Label	Description
config			Configuration.

Field	Type	Label	Description
	LiveScanServiceConfiguration		

LiveScanServiceLoadTrayAndPrescanRequest

The LiveScanServiceLoadTrayAndPrescanRequest class.

LiveScanServiceLoadTrayAndPrescanResponse

Empty response upon loading the tray.

Field	Type	Label	Description
notifications	string	repeated	The list of notifications.

LiveScanServiceSetConfigurationRequest

Request for setting the configuration.

Field	Type	Label	Description
config	LiveScanServiceConfiguration		Configuration.

LiveScanServiceSetConfigurationResponse

Empty response upon setting the configuration.

Field	Type	Label	Description
notifications	string	repeated	The list of notifications.

LiveScanService

The ILiveScanService interface.

K i n d	Method Name	Request Type	Response Type	Description
	EjectTray	LiveScanServiceEjectTrayRequest	LiveScanServiceEjectTrayResponse	Eject tray.
	GetConfiguration	LiveScanServiceGetConfigurationRequest	LiveScanServiceGetConfigurationResponse	Get configuration.
	LoadTrayAndPrescan	LiveScanServiceLoadTrayAndPrescanRequest	LiveScanServiceLoadTrayAndPrescanResponse	Load tray and start prescan.
	SetConfiguration	LiveScanServiceSetConfigurationRequest	LiveScanServiceSetConfigurationResponse	Set configuration.

zen_api/lm/live_scan/v1/live_scan_service_configuration.proto

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LiveScanServiceConfiguration

Response object representing the configuration.

Field	Type	Label	Description
sample_holder_template	string		Gets the type template.
live_scan_detection	bool		Gets a value indicating whether sample carrier detection is active.
measure_bottom_thickness	bool		Gets a value indicating whether bottom thickness has to be measured.
determine_bottom_material	bool		Gets a value indicating whether bottom material determination is active.
	bool		Gets a value indicating whether sample carrier detection is active.

Field	Type	Label	Description
create_carrier_overview			
read_barcodes	bool		Gets a value indicating whether barcodes must be read.
use_left_barcode	bool		Gets a value indicating whether the left barcode must be read.
use_right_barcode	bool		Gets a value indicating whether the right barcode must be read.
automatic_live_scan_calibration	bool		Gets a value indicating whether automatic sample carrier calibration is active.
refractive_index	double		The refractive index of the bottom material of this sample carrier.
material	string		The bottom material of this sample carrier.

zen_api/lm/slide_scan/v1/channel_settings.proto

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ChannelSettings

Settings for a channel.

Field	Type	Label	Description
channel_identifier	string		The identifier for the master channel.
channel_name	string		The name for the channel.
channel_description	string		The description for the channel.
dye_name	string		The fluorescence dye.
intensity	double		The lamp intensity that should be used for a channel. The intensity is set in percent. (Values ranging from 0 to 100).
exposure_time	double		The exposure time that should be used for a channel. The exposure time is set in milliseconds. (Values ranging from 0.1 to 2000ms).

zen_api/lm/slide_scan/v1/information_base.proto

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InformationBase

Base class for all information types.

Field	Type	Label	Description
simple_information	SimpleInformation		
slide_scan_system_information	SlideScanSystemInformation		
magazine_information	MagazineInformation		

MagazineInformation

Data container for information about the magazine state.

Field	Type	Label	Description
is_door_closed	bool		A value indicating whether the Axioscan tray door is closed.
trays	TrayInformation	repeated	The magazine state by providing the list of available trays.

SimpleInformation

Data container for a simple message information.

Field	Type	Label	Description
message	string		The simple string message.

SlideScanSystemInformation

Data container for information about the hardware state.

Field	Type	Label	Description
is_idle	bool		A value indicating whether an Axioscan system is idle.
is_scan_running	bool		A value indicating whether a scan is running.
is_preview_scan_running	bool		A value indicating whether a preview scan is running.
is_tray_initializing	bool		A value indicating whether a tray is being initialized.

zen_api/lm/slide_scan/v1/profile_information.proto

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ProfileInformation

ProfileInformation contains information about the scan profile associated with a specific slide.

Field	Type	Label	Description
profile_name	string		The profile name associated with the slides acquisition.

zen_api/lm/slide_scan/v1/response_code.proto

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ResponseCode

Numerical result code.

Name	Number	Description
RESPONSE_CODE_UNSPECIFIED	0	Default value if the status is not specified.
RESPONSE_CODE_INVALID_ARGUMENT	1	The required parameter is missing.
RESPONSE_CODE_NOT_FOUND	2	The requested resource could not be found.
RESPONSE_CODE_NOT_ALLOWED	3	The operation is not allowed.

zen_api/lm/slide_scan/v1/response_type.proto

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ResponseType

Kind of failure with implication to error recovery.

Name	Number	Description
RESPONSE_TYPE_UNSPECIFIED	0	Default value if the ResponseType is not specified.
RESPONSE_TYPE_SUCCESS	1	The API call is accepted and will be processed. In this case the response code can be unspecified.
RESPONSE_TYPE_WARNING	2	The API call is accepted and will be processed. In this case, the response contains an indication of possible problem settings.
RESPONSE_TYPE_FAILED	3	Something went wrong. This is the usual error type.
RESPONSE_TYPE_EXCEPTION	4	The call threw an exeption.

SlideInformation

SlideInformation holds information about an Axioscan slide.

Field	Type	Label	Description
slide_on_frame_position	int32		The slide position on the frame - range [1, 4]. The maximum value depending on frame type.
state	SlideState		The ZenApi.LM.SlideScan.V1.SlideState of the slide.
profile_information	ProfileInformation		The corresponding ZenApi.LM.SlideScan.V1.SlideInformation.ProfileInformation of the slide.
is_selected_for_processing	bool		A value indicating whether this slide is selected for processing.
barcode	string		The barcode of the slide.
label_image_path	string		The path to the label image.
preview_image_path	string		The path to the preview image.
scan_image_path	string		The path to the scan image.
state_last_error	string		The SlideItem.LastError of the slide.

zen_api/lm/slide_scan/v1/slide_position_information.proto

SlidePositionInformation

SlidePositionInformation holds information about an AxioScan slide position.

Field	Type	Label	Description
slide_on_frame_position	int32		The slide position on the frame - range [1, 4]. The maximum value depending on frame type.
tray_position	int32		The position of the tray inside the Axioscan magazine in the range of [1, 26].
image_name	string		The image name for the slide.

zen_api/lm/slide_scan/v1/slide_scan_service.proto

GeneralResponse

A general response for all asynchronous requests that do not return any results or data.

Field	Type	Label	Description
type	ResponseType		The type of response message.
code	ResponseCode		The code of response message.
description	string		A description. Explanation text, for developers only.
user_message	string		A message suitable to be shown in user interfaces, will be translated by Api.

SlideScanServiceGetChannelSettingsRequest

Describes the input parameters for retrieving the configured channels.

Field	Type	Label	Description
scan_profile_path	string		The path of the specified scan profile.

SlideScanServiceGetChannelSettingsResponse

Lists the configured channel settings in the specified scan profile.

Field	Type	Label	Description
channel_setting_list	ChannelSettings	repeated	The configured channel settings.

SlideScanServiceGetMagazineStateRequest

Describes the input parameters for a call to retrieve the magazine state.

SlideScanServiceGetMagazineStateResponse

Lists the populated slides of each tray.

Field	Type	Label	Description
trays	TrayInformation	repeated	The loaded slides per tray.

SlideScanServiceObserveRequest

Describes the input parameters for a call to observe the events and progress that happen either during acquisition or while the microscope is idling.

SlideScanServiceObserveResponse

Describes the output parameters for a call to observe the events, progress and additional information like warnings and errors of a running scan profile acquisition. The response might be a stream of different information types (e.g. Progress, Error, Hardware State, ...).

Field	Type	Label	Description
information	InformationBase		The flexible, variable information.

SlideScanServiceResetSlideStatesRequest

Describes the input parameters for resetting the state of specified slides to new.

Field	Type	Label	Description
slide_position_list	SlidePositionInformation	repeated	The position of the slide list to be reset.

SlideScanServiceResetSlideStatesResponse

Describes the output parameters for resetting the state of specified slides.

Field	Type	Label	Description
response	GeneralResponse		A general response about the success/error state of the request.

SlideScanServiceStartScanPreviewRequest

Describes the input parameters for the preview start.

Field	Type	Label	Description
scan_profile_name	string		The name of the scan profile that should be started.
slide_position_list	SlidePositionInformation	repeated	The list of tray/slides to be processed.

SlideScanServiceStartScanPreviewResponse

Response of starting a preview in the slide scan service.

Field	Type	Label	Description
response	GeneralResponse		A general response to inform about the requests success/error state.

SlideScanServiceStartScanProfileRequest

Describes the input parameters for the scan profile start.

Field	Type	Label	Description
			The name of the scan profile that should be started.

Field	Type	Label	Description
scan_profile_name	string		
slide_position_list	SlidePositionInformation	repeated	The list of tray/slides to be processed.
channel_settings	ChannelSettings	repeated	The list of changed channel settings.

SlideScanServiceStartScanProfileResponse

Describes the output parameters for a call to start the scan profile.

Field	Type	Label	Description
response	GeneralResponse		A general response to inform about the requests success/error state.

SlideScanServiceStopScanPreviewRequest

Represents a request to stop the preview in the SlideScan service.

SlideScanServiceStopScanPreviewResponse

Represents the response for stopping the preview in the slide scan service.

Field	Type	Label	Description
response	GeneralResponse		A general response to inform about the requests success/error state.

SlideScanServiceStopScanProfileRequest

Describes the input parameters for stopping the scan profile.

SlideScanServiceStopScanProfileResponse

Describes the output parameters for a call to stop the scan profile.

Field	Type	Label	Description
response	GeneralResponse		A general response to inform about the requests success/error state.

SlideScanServiceUnmarkSlidesRequest

Describes the input parameters for unmark slides.

Field	Type	Label	Description
slide_position_list	SlidePositionInformation	repeated	The position of the slide list to be unmarked.

SlideScanServiceUnmarkSlidesResponse

Describes the output parameters for a call to unmark slides.

Field	Type	Label	Description
response	GeneralResponse		A general response to inform about the requests success/error state.

SlideScanService

The ISlideScanService interface.

K i n d	Method Name	Request Type	Response Type	Description
	GetChannelSettings	SlideScanServiceGetChannelSettingsRequest	SlideScanServiceGetChannelSettingsResponse	Gets a list of configured channel settings of a scan profile.
	GetMagazineState	SlideScanServiceGetMagazineStateRequest	SlideScanServiceGetMagazineStateResponse	Gets the magazine state.
	Observe	SlideScanServiceObserveRequest	SlideScanServiceObserveResponse stream	Monitors anything that happens within ZEN or the microscope. The main purpose is to observe the scan profile acquisition progress.

K i n d	Method Name	Request Type	Response Type	Description
	ResetSlideStates	SlideScanServiceResetSlideStatesRequest	SlideScanServiceResetSlideStatesResponse	Resets the specified slides to new.
	StartScanPreview	SlideScanServiceStartScanPreviewRequest	SlideScanServiceStartScanPreviewResponse	Starts the preview with the specified input.
	StartScanProfile	SlideScanServiceStartScanProfileRequest	SlideScanServiceStartScanProfileResponse	Starts the scan profile with the specified input.
	StopScanPreview	SlideScanServiceStopScanPreviewRequest	SlideScanServiceStopScanPreviewResponse	Stops the preview execution.
	StopScanProfile	SlideScanServiceStopScanProfileRequest	SlideScanServiceStopScanProfileResponse	Stops the scan profile execution.
	UnmarkSlides	SlideScanServiceUnmarkSlidesRequest	SlideScanServiceUnmarkSlidesResponse	Unmark the specified slides. In case of empty slide list, unmark all slides. If in the list of slides to be unselected, a slide is currently being previewed or scanned, the command is denied with an error message explaining the reason.

zen_api/lm/slide_scan/v1/slide_state.proto

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SlideState

This enumeration names all possible slide processing states.

Name	Number	Description
SLIDE_STATE_UNSPECIFIED	0	Default value if status is not specified.
SLIDE_STATE_STOPPED	1	Processing was stopped.
SLIDE_STATE_NEW	2	New (not processed).
SLIDE_STATE_PREVIEWING_IN_PROGRESS	3	Preview currently in work.
SLIDE_STATE_INPUT_REQUIRED	4	Preview processing finished, but input required.
SLIDE_STATE_PREVIEWED	5	Preview processing finished.
SLIDE_STATE_SCANNING_IN_PROGRESS	6	Scan currently in work.
SLIDE_STATE_FINISHED	7	Processing finished.
SLIDE_STATE_ERROR	8	Processing error occurred.
SLIDE_STATE_SKIPPED	9	Slide was skipped by user.

zen_api/lm/slide_scan/v1/tray_information.proto

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TrayInformation

TrayInformation contains information about an Axioscan tray.

Field	Type	Label	Description
position	int32		The position of the tray inside the Axioscan magazine in the range of [1, 26].
type	TrayType		The ZenApi.LM.SlideScan.V1.TrayType of the tray. The type determines the number of possible slides on the tray.
working_state	TrayWorkingState		The ZenApi.LM.SlideScan.V1.TrayWorkingState of the tray. The working state of the entire tray.

Field	Type	Label	Description
slot_state	TraySlotState		The ZenApi.LM.SlideScan.V1.TraySlotState of the tray. The status of the tray slot (open/ closed statuses).
slides	SlideInformation	repeated	ZenApi.LM.SlideScan.V1.SlideInformation of the slides.

zen_api/lm/slide_scan/v1/tray_slot_state.proto

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TraySlotState

Enum defining the states of slide scanner slot LEDs.

Name	Number	Description
TRAY_SLOT_STATE_UNSPECIFIED	0	Default value if status is not specified.
TRAY_SLOT_STATE_SLOT_OPEN_SYSTEM_PAUSED	1	Slot swiveled out for assembling.
TRAY_SLOT_STATE_SLOT_OPEN_TRAY_LOADED	2	Slot swiveled out for assembling but Tray is on stage.
TRAY_SLOT_STATE_SLOT_CLOSED_TRAY_NOT_PROCESSED	3	Slot swiveled in with tray containing unprocessed slides.
TRAY_SLOT_STATE_SLOT_CLOSED_TRAY_PROCESSED	4	Slot swiveled in with tray containing processed slides.
TRAY_SLOT_STATE_SLOT_CLOSED_PROCESS_ERROR	5	Slot swiveled in with tray but an processing error was occurred.
TRAY_SLOT_STATE_SLOT_CLOSED_TRAY_PRESCANNED	6	Slot swiveled in with tray containing pre-scanned slides.
TRAY_SLOT_STATE_SLOT_CLOSED_TRAY_LOADED	7	Slot swiveled in and tray is on stage.
TRAY_SLOT_STATE_SLOT_CLOSED_NO_TRAY	8	Slot swiveled in without tray.
TRAY_SLOT_STATE_SLOT_CLOSED_TRAY_IN_SYSTEM_AND_SLOT	9	Slot swiveled in with tray and a tray on the stage (Error case).
TRAY_SLOT_STATE_SLOT_CLOSED_UNKNOWN_TRAY	10	Slot swiveled in with an unknown tray type.
TRAY_SLOT_STATE_SLOT_CLOSED_NO_SLIDES	11	Slot swiveled in with an empty tray.
TRAY_SLOT_STATE_SLOT_CLOSED_TRAY_PARTLY_PROCESSED_WITH_ERRORS	12	Slot swiveled in with tray containing processed slides.
TRAY_SLOT_STATE_UNKNOWN	255	Unknown type (tray is inserted but could not be determined).

zen_api/lm/slide_scan/v1/tray_type.proto

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TrayType

Enum defining the types of slide scanner trays.

Name	Number	Description
TRAY_TYPE_UNSPECIFIED	0	Default value if status is not specified.
TRAY_TYPE_NONE	1	No tray.
TRAY_TYPE_SCAN1X3	2	Scan tray for 4 slides of size 1'x3'.
TRAY_TYPE_SCAN2X3	3	Scan tray for 2 slides of size 2'x3'.
TRAY_TYPE_SCAN1X3_2X3	4	Scan tray for 2 slides, one of size 1'x3', one of size 2'x3'.
TRAY_TYPE_CALIBRATION_STAGE	5	Stage calibration slide holder tray.
TRAY_TYPE_SCAN1X3_BASIC	6	Scan tray for 4 slides of size 1'x3', basic design.
TRAY_TYPE_SCAN4X3	7	Scan tray for 1 slide of size 4'x3' or a combination of slides of unknown size.
TRAY_TYPE_PARKING	152	Arbitrary tray type to indicate the parking position. Is only available at parking position of the magazine changer.
TRAY_TYPE_UNKNOWN	153	Unknown type (tray is inserted but could not be determined).

zen_api/lm/slide_scan/v1/tray_working_state.proto

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TrayWorkingState

Enum defining the types of slide scanner trays working state.

Name	Number	Description
TRAY_WORKING_STATE_UNSPECIFIED	0	Default value if status is not specified.
TRAY_WORKING_STATE_NOT_SCANNED	1	The tray is not scanned.
TRAY_WORKING_STATE_PRESCANNED	2	The tray was pre scanned.
TRAY_WORKING_STATE_SCANNED	3	The tray was successfully scanned.
TRAY_WORKING_STATE_ERROR	4	There occurred an error while scanning or pre scanning the tray.
TRAY_WORKING_STATE_NOT_AVAILABLE	5	There is no tray available at this position.

Scalar Value Types

.proto Type	Notes	C++	Java	Python	Go	C#	PHP	Ruby
double		double	double	float	float64	double	float	Float
float		float	float	float	float32	float	float	Float
int32	Uses variable-length encoding. Inefficient for encoding negative numbers – if your field is likely to have negative values, use	int32	int	int	int32	int	integer	Bignum or Fixnum (as required)

.proto Type	Notes	C++	Java	Python	Go	C#	PHP	Ruby
	sint32 instead.							
int64	Uses variable-length encoding. Inefficient for encoding negative numbers – if your field is likely to have negative values, use sint64 instead.	int64	long	int/long	int64	long	integer/string	Bignum
uint32	Uses variable-length encoding.	uint32	int	int/long	uint32	uint	integer	Bignum or Fixnum (as required)
uint64	Uses variable-length encoding.	uint64	long	int/long	uint64	ulong	integer/string	Bignum or Fixnum (as required)
sint32	Uses variable-length encoding. Signed int value. These more efficiently encode negative numbers than regular int32s.	int32	int	int	int32	int	integer	Bignum or Fixnum (as required)
sint64	Uses variable-length encoding. Signed int value. These more efficiently encode negative numbers than regular int64s.	int64	long	int/long	int64	long	integer/string	Bignum
fixed32	Always four bytes. More efficient than uint32 if values are often greater than 2 ²⁸ .	uint32	int	int	uint32	uint	integer	Bignum or Fixnum (as required)
fixed64	Always eight bytes. More efficient than uint64 if values are often greater than 2 ⁵⁶ .	uint64	long	int/long	uint64	ulong	integer/string	Bignum
sfixed32	Always four bytes.	int32	int	int	int32	int	integer	Bignum or Fixnum (as required)
sfixed64	Always eight bytes.	int64	long	int/long	int64	long	integer/string	Bignum
bool		bool	boolean	boolean	bool	bool	boolean	TrueClass/FalseClass
string	A string must always	string	String	str/unicode	string	string	string	

.proto Type	Notes	C++	Java	Python	Go	C#	PHP	Ruby
	contain UTF-8 encoded or 7-bit ASCII text.							String (UTF-8)
bytes	May contain any arbitrary sequence of bytes.	string	ByteString	str	[]byte	ByteString	string	String (ASCII-8BIT)