



# Class

## Controllers

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# AssetAdministrationShellAPIApiController

## Operations

Name	Return Type	Parameters	Notes
decodeToken	Token	token	Function to decode JWT token
GetAllSubmodelElementsMetadataAAS	IActionResult	submodelIdentifier limit cursor level	Returns all submodel elements including their hierarchy
GetAllSubmodelElementsValueOnlyAAS	IActionResult	submodelIdentifier limit cursor level extent Authorization	Returns all submodel elements including their hierarchy in the ValueOnly representation
GetAllSubmodelReferences	IActionResult	limit cursor	Returns all submodel references
GetAssetAdministrationShell	IActionResult		Returns a specific Asset Administration Shell
GetAssetInformation	IActionResult		Returns the Asset Information
getSubjectAttribute	String	twin	Function to get the subject attributes
GetSubmodelAAS	IActionResult	submodelIdentifier level extent Authorization	Returns the Submodel
GetSubmodelElementByPathAAS	IActionResult	submodelIdentifier idShortPath level extent Authorization	Returns a specific submodel element from the Submodel at a specified path
GetSubmodelElementByPathMetadataAAS	IActionResult	submodelIdentifier idShortPath level	Returns the metadata attributes if a specific submodel element from the Submodel at a specified path
GetSubmodelElementByPathValueOnlyAAS	IActionResult	submodelIdentifier idShortPath level Authorization	Returns a specific submodel element from the Submodel at a specified path in the ValueOnly representation

Name	Return Type	Parameters	Notes
GetSubmodelMetadataAAS	IActionResult	submodelIdentifier level	Returns the Submodel's metadata elements
GetSubmodelMetadataReferenceAAS	IActionResult	submodelIdentifier level	Returns the Submodel as a Reference
GetSubmodelValueOnlyAAS	IActionResult	submodelIdentifier level extent	Returns the Submodel's ValueOnly representation
InvokeOperationSyncValueOnlyAAS	IActionResult	body submodelIdentifier idShortPath Authorization	Synchronously invokes an Operation at a specified path

## Token

JWT Access token class

Name	Type	Notes
aud	String	The recipient identifier that the JWT is intended for
aut	String	The type of recipient
azp	String	The application ID of the client using the token
exp	String	The expiration time after which JWT must not be accepted
iat	String	The time at which the JWT was issued
iss	String	The authorization server that issued the JWT
jti	String	Unique identifier of the token even among different issuers
location	String	The location corresponding to token validity
nbf	String	The time before which the JWT must not be accepted
scope	String	The scope of the subject attributes
sub	String	The principal about which the token asserts information, such as the user of an app
uri	String	The URI for which the token is valid

## CHESS

The main CHESS data structure

Name	Type	Notes
adapter	IoT.Services.CheSS.Adapter	The corresponding adapter data
chess	IoT.Services.CheSS	The corresponding CHESS data

## CHESSNetworkController

## Attributes

Name	Attribute Type	Notes	Attribute Modifiers
authToken	String	Authorization bearer token header (base 64 encoded)	Static - Static Transient - 0

## Operations

Name	Return Type	Parameters	Notes
CapabilityCHESSGet	IActionResult	id Authorization	Get the capabilities for a CHESS asset  @remark Get capability of a CHESS from the digital twin
CapabilityCHESSPost	IActionResult	body id Authorization	  @remark Update capability of a CHESS in the digital twin
currentGet	IActionResult	location recurrence service Authorization	Get the current flexibility provision for the specified target  @remark
currentPost	IActionResult	body Authorization	Get the current flexibility provision for the specified target  @remark
cycleCost	Double	SocMax SocMin	Estimate cycle cost using empirical degradation model
cycleCarbon	Double	SocMax SocMin	Estimate cycle carbon using empirical CFP model
decodeToken	Token	token	Function to decode JWT token
dtLookup	Double	dtData id	
Get	string	uri token	Get - remote HTTP request
getStatus	Boolean	status	get the current status of a chess
getSubjectAttribute	String	twin	Get the subject attributes for a twin from the ADT model
Handle_Received_Message	void	server subject_name chessId	
Post	string	uri json	Post - remote HTTP request
RegisterCHESSDelete	IActionResult	uri Authorization	Remove a registered CHESS / CHESS adapter  @remark Remove a registered CHESS from a CHESS node
RegisterCHESSPost	IActionResult	body Authorization chessnode	Register CHESS assets using a CHESS adapter with the digital twin environment

Name	Return Type	Parameters	Notes
			@remark Register CHESS with a CHESS node and update the digital twin
runPost	IActionResult	body Authorization	Invoke the optimiser synchronously with specified limits and objectives  @remark
StatusCHESSGet	IActionResult	service id Authorization	Get the flexibility status profile for a CHESS asset  @remark Get status of the registered CHESS frm the digital twin
StatusCHESSGetAll	IActionResult	service Authorization	Get the flexibility status profile for all CHESS assets  @remark Get status of all registered CHESS from digital twin
StatusCHESSSet	IActionResult	id body Authorization	Request the update of the flexibility status profile for a CHESS asset  @remark Update the status of a registered CHESS in digital twin

## DTData

DT Data

Name	Type	Notes
DataType	String	The data type (defined in IEC 61360)
Id	String	The unique identifier for the DT data parameter
LevelType	String	The data type (defined in IEC 61360)
Symbol	String	The data type (defined in IEC 61360)
Unit	String	The data type (defined in IEC 61360)
Value	Double	The numeric value
ValueFormat	String	The data type (defined in IEC 61360)

## Token

Name	Type	Notes
aud	String	The recipient identifier that the JWT is intended for
aut	String	The type of recipient
azp	String	The application ID of the client using the token
exp	String	The expiration time after which JWT must not be accepted
iat	String	The time at which the JWT was issued
iss	String	The authorization server that issued the JWT
jti	String	Unique identifier of the token even among different issuers
location	String	The location corresponding to token validity
nbf	String	The time before which the JWT must not be accepted
scope	String	The scope of the subject attributes
sub	String	The principal about which the token asserts information, such as the user of an app
uri	String	The URI for which the token is valid

## CHESSStatus

CHESS status object

Name	Type	Notes
currentStatus	String	The current status of the CHESSE asset DT
id	String	The unique id of the CHESSE asset DT
identifier	String	The unique identifier of the CHESSE adapter
location	String	The location of the CHESSE asset
status	IoT.Services.C hessStatus	The time dependent flexibility profile status of the CHESSE

## SubmodelAPIApiController

### Operations

Name	Return Type	Parameters	Notes
decodeToken	Token	token	Function to decode JWT token
DeleteFileByPath	IActionResult	idShortPath	Deletes file content of an existing submodel element at a specified path within submodel elements hierarchy
DeleteSubmodelElementByPath	IActionResult	idShortPath	Deletes a submodel element at a specified path within the submodel elements hierarchy
GetAllSubmodelElements	IActionResult	limit cursor level extent Authorization	Returns all submodel elements including their hierarchy
GetAllSubmodelElementsMetadata	IActionResult	limit cursor level	Returns the metadata attributes of all submodel elements including their hierarchy
GetAllSubmodelElementsPath	IActionResult	limit cursor level	Returns all submodel elements including their hierarchy in the Path notation
GetAllSubmodelElementsReference	IActionResult	limit cursor level	Returns the References of all submodel elements
GetAllSubmodelElementsValueOnly	IActionResult	limit cursor level extent Authorization	Returns all submodel elements including their hierarchy in the ValueOnly representation
GetFileByPath	IActionResult	idShortPath	Downloads file content from a specific submodel element from the Submodel at a specified path
GetOperationAsyncResult	IActionResult	idShortPath handleId	Returns the Operation result of an asynchronous invoked Operation
GetOperationAsyncResultValueOnly	IActionResult	idShortPath handleId	Returns the value of the Operation result of an asynchronous invoked Operation
GetOperationAsyncResultStatus	IActionResult	idShortPath handleId	Returns the Operation status of an asynchronous invoked Operation
getSubjectAttribute	String	twin	Get the subject attributes for a twin from the ADT model
GetSubmodel	IActionResult	level	Returns the Submodel



Name	Return Type	Parameters	Notes
	ult	extent Authorization	
GetSubmodelElementByPath	IActionResult	idShortPath level extent aggregate Authorization	Returns a specific submodel element from the Submodel at a specified path
GetSubmodelElementByPathMetadata	IActionResult	idShortPath cursor	Returns the metadata attributes of a specific submodel element from the Submodel at a specified path
GetSubmodelElementByPathPath	IActionResult	idShortPath level	Returns a specific submodel element from the Submodel at a specified path in the Path notation
GetSubmodelElementByPathReference	IActionResult	idShortPath level	Returns the Referene of a specific submodel element from the Submodel at a specified path
GetSubmodelElementByPathValueOnly	IActionResult	idShortPath level extent aggregate Authorization	Returns a specific submodel element from the Submodel at a specified path in the ValueOnly representation
GetSubmodelMetadata	IActionResult	level	Returns the metadata attributes of a specific Submodel
GetSubmodelPath	IActionResult	level	Returns the Submodel in the Path notation
GetSubmodelReference	IActionResult	level	Returns the Reference of the Submodel
GetSubmodelValueOnly	IActionResult	level extent	Returns the Submodel in the ValueOnly representation
InvokeOperation	IActionResult	body idShortPath	Synchronously invokes an Operation at a specified path
InvokeOperationAsync	IActionResult	body idShortPath	Asynchronously invokes an Operation at a specified path
InvokeOperationAsyncValueOnly	IActionResult	body idShortPath	Asynchronously invokes an Operation at a specified path
InvokeOperationSyncValueOnly	IActionResult	body idShortPath Authorization	Synchronously invokes an Operation at a specified path
PatchSubmodel	IActionResult	body level	Updates the Submodel
PatchSubmodelElementByPath	IActionResult	body idShortPath level	Updates an existing SubmodelElement
PatchSubmodelElementByPathMetadata	IActionResult	body idShortPath limit cursor level	Updates the metadata attributes an existing SubmodelElement
PatchSubmodelElement	IActionResult	body	Updates the value of an existing SubmodelElement

Name	Return Type	Parameters	Notes
GetSubmodelValueOnly	String	idShortPath limit cursor level	
PatchSubmodelMetadata	ActionResult	body level	Updates the metadata attributes of the Submodel
PatchSubmodelValueOnly	ActionResult	body level	Updates the values of the Submodel
PostSubmodelElement	ActionResult	body	Creates a new submodel element
PostSubmodelElementByPath	ActionResult	body idShortPath	Creates a new submodel element at a specified path within submodel elements hierarchy
PutSubmodel	ActionResult	body level	Updates the Submodel
PutSubmodelElementByPath	ActionResult	body idShortPath level	Updates an existing submodel element at a specified path within submodel elements hierarchy

## Token

JWT Access token class

Name	Type	Notes
aud	String	The recipient identifier that the JWT is intended for
aut	String	The type of recipient
azp	String	The application ID of the client using the token
exp	String	The expiration time after which JWT must not be accepted
iat	String	The time at which the JWT was issued
iss	String	The authorization server that issued the JWT
jti	String	Unique identifier of the token even among different issuers
location	String	The location corresponding to token validity
nbf	String	The time before which the JWT must not be accepted
scope	String	The scope of the subject attributes
sub	String	The principal about which the token asserts information, such as the user of an app
uri	String	The URI for which the token is valid

## SubmodelRegistryAPIApiController

### Operations

Name	Return Type	Parameters	Notes
decodeToken	Token	token	Function to decode JWT token
DeleteSubmodelDescriptorById	ActionResult	submodelIdentifier	Deletes a Submodel Descriptor, i.e. de-registers a submodel
GetAllSubmodelDescriptor	ActionResult	limit	Returns all Submodel Descriptors

Name	Return Type	Parameters	Notes
riptors	ult	cursor Authorization	
getSubjectAttribute	String	twin	Get the subject attributes for a twin from the ADT model
GetSubmodelDescriptorById	IActionResult	submodelIdentifier Authorization	Returns a specific Submodel Descriptor
PostSubmodelDescriptor	IActionResult	body	Creates a new Submodel Descriptor, i.e. registers a submodel
PutSubmodelDescriptorById	IActionResult	body submodelIdentifier	Updates an existing Submodel Descriptor

## Token

### JWT Token

Name	Type	Notes
aud	String	The recipient identifier that the JWT is intended for
aut	String	The type of recipient
azp	String	The application ID of the client using the token
exp	String	The expiration time after which JWT must not be accepted
iat	String	The time at which the JWT was issued
iss	String	The authorization server that issued the JWT
jti	String	Unique identifier of the token even among different issuers
location	String	The location corresponding to token validity
nbf	String	The time before which the JWT must not be accepted
scope	String	The scope of the subject attributes
sub	String	The principal about which the token asserts information, such as the user of an app
uri	String	The URI for which the token is valid

## SubmodelRepositoryAPIApiController

### Operations

Name	Return Type	Parameters	Notes
decodeToken	Token	token	Function to decode JWT token
DeleteFileByPathSubmodelRepo	IActionResult	submodelIdentifier idShortPath	Deletes file content of an existing submodel element at a specified path within submodel elements hierarchy
DeleteSubmodelById	IActionResult	submodelIdentifier Authorization	Deletes a Submodel
DeleteSubmodelElementByPathSubmodelRepo	IActionResult	submodelIdentifier idShortPath	Deletes a submodel element at a specified path within the submodel elements hierarchy

Name	Return Type	Parameters	Notes
GetAllSubmodelElementsMetadataSubmodelRepository	IActionResult	submodelIdentifier limit cursor level	Returns the metadata attributes of all submodel elements including their hierarchy
GetAllSubmodelElementsPathSubmodelRepo	IActionResult	submodelIdentifier limit cursor level	Returns all submodel elements including their hierarchy in the Path notation
GetAllSubmodelElementsReferenceSubmodelRepo	IActionResult	submodelIdentifier limit cursor level	Returns the References of all submodel elements
GetAllSubmodelElementsSubmodelRepository	IActionResult	submodelIdentifier limit cursor level extent Authorization	Returns all submodel elements including their hierarchy
GetAllSubmodelElementsValueOnlySubmodelRepo	IActionResult	submodelIdentifier limit cursor level extent Authorization	Returns all submodel elements including their hierarchy in the ValueOnly representation
GetAllSubmodels	IActionResult	semanticId idShort limit cursor level extent Authorization	Returns all Submodels
GetAllSubmodelsMetadata	IActionResult	semanticId idShort limit cursor level	Returns the metadata attributes of all Submodels
GetAllSubmodelsPath	IActionResult	semanticId idShort limit cursor level	Returns all Submodels in the Path notation
GetAllSubmodelsReference	IActionResult	semanticId idShort limit cursor level	Returns the References for all Submodels

Name	Return Type	Parameters	Notes
GetAllSubmodelsValueOnly	IActionResult	semanticId idShort limit cursor level extent	Returns all Submodels in their ValueOnly representation
GetFileByPathSubmodelRepo	IActionResult	submodelIdentifier idShortPath	Downloads file content from a specific submodel element from the Submodel at a specified path
GetOperationAsyncResultSubmodelRepo	IActionResult	submodelIdentifier idShortPath handleId	Returns the Operation result of an asynchronous invoked Operation
GetOperationAsyncResultValueOnlySubmodelRepo	IActionResult	submodelIdentifier idShortPath handleId	Returns the Operation result of an asynchronous invoked Operation
GetOperationAsyncResultStatusSubmodelRepo	IActionResult	submodelIdentifier idShortPath handleId	Returns the Operation status of an asynchronous invoked Operation
getSubjectAttribute	String	twin	Function to get the subject attributes
GetSubmodelById	IActionResult	submodelIdentifier level extent Authorization	Returns a specific Submodel
GetSubmodelByIdMetadata	IActionResult	submodelIdentifier level	Returns the metadata attributes of a specific Submodel
GetSubmodelByIdPath	IActionResult	submodelIdentifier level	Returns a specific Submodel in the Path notation
GetSubmodelByIdReference	IActionResult	submodelIdentifier	Returns the Reference of a specific Submodel
GetSubmodelByIdValueOnly	IActionResult	submodelIdentifier level extent Authorization	Returns a specific Submodel in the ValueOnly representation
GetSubmodelElementByPathMetadataSubmodelRepo	IActionResult	submodelIdentifier idShortPath level	Returns the metadata attributes of a specific submodel element from the Submodel at a specified path
GetSubmodelElementByPathPathSubmodelRepo	IActionResult	submodelIdentifier idShortPath	Returns a specific submodel element from the Submodel at a specified path in the Path notation

Name	Return Type	Parameters	Notes
		level	
GetSubmodelElementByPathReferenceSubmodelRepo	IActionResult	submodelIdentifier idShortPath level	Returns the Referene of a specific submodel element from the Submodel at a specified path
GetSubmodelElementByPathSubmodelRepo	IActionResult	submodelIdentifier idShortPath level extent Authorization	Returns a specific submodel element from the Submodel at a specified path
GetSubmodelElementByPathValueOnlySubmodelRepo	IActionResult	submodelIdentifier idShortPath level extent Authorization	Returns a specific submodel element from the Submodel at a specified path in the ValueOnly representation
InvokeOperationAsyncSubmodelRepo	IActionResult	body submodelIdentifier idShortPath	Asynchronously invokes an Operation at a specified path
InvokeOperationAsyncValueOnlySubmodelRepo	IActionResult	body aasIdentifier submodelIdentifier idShortPath	Asynchronously invokes an Operation at a specified path
InvokeOperationSubmodelRepo	IActionResult	body submodelIdentifier idShortPath _async	Synchronously invokes an Operation at a specified path
InvokeOperationValueOnlySubmodelRepo	IActionResult	body submodelIdentifier idShortPath Authorization _async	Synchronously invokes an Operation at a specified path  @param ="aasIdentifier" The Asset Administration Shell's unique id (UTF8-BASE64-URL-encoded)
PatchSubmodelById	IActionResult	body submodelIdentifier level	Updates an existing Submodel
PatchSubmodelByIdMetadata	IActionResult	body submodelIdentifier level	Updates the metadata attributes of an existing Submodel
PatchSubmodelByIdValueOnly	IActionResult	body submodelIdentifier level	Updates the values of an existing Submodel

Name	Return Type	Parameters	Notes
PatchSubmodelElementByPathMetadataSubmodelRepo	IActionResult	body submodelIdentifier idShortPath level	Updates the metadata attributes an existing SubmodelElement
PatchSubmodelElementByPathSubmodelRepo	IActionResult	body submodelIdentifier idShortPath level	Updates an existing SubmodelElement
PatchSubmodelElementByPathValueOnlySubmodelRepo	IActionResult	body submodelIdentifier idShortPath level	Updates the value of an existing SubmodelElement
PostSubmodel	IActionResult	body	Creates a new Submodel
PostSubmodelElementByPathSubmodelRepo	IActionResult	body submodelIdentifier idShortPath	Creates a new submodel element at a specified path within submodel elements hierarchy
PostSubmodelElementSubmodelRepository	IActionResult	body submodelIdentifier	Creates a new submodel element
PutSubmodelById	IActionResult	body submodelIdentifier	Updates an existing Submodel
PutSubmodelElementByPathSubmodelRepo	IActionResult	body submodelIdentifier idShortPath level	Updates an existing submodel element at a specified path within submodel elements hierarchy

## Token

JWT Access token class

## Operations

Name	Type	Notes
aud	String	The recipient identifier that the JWT is intended for
aut	String	The type of recipient
azp	String	The application ID of the client using the token
exp	String	The expiration time after which JWT must not be accepted
iat	String	The time at which the JWT was issued
iss	String	The authorization server that issued the JWT
jti	String	Unique identifier of the token even among different issuers
location	String	The location corresponding to token validity
nbf	String	The time before which the JWT must not be accepted

Name	Type	Notes
scope	String	The scope of the subject attributes
sub	String	The principal about which the token asserts information, such as the user of an app
uri	String	The URI for which the token is valid