Document title Document type

**SignalStatus IDD**

Date Version

**2021-03-23 4.3.0**

Author Status

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Contact Page

**apatri@ltu.se 1** [**(10)**](#_bookmark26)



SignalStatus

Interface Design Description

**Abstract**

This document defines the template for the Interface Design Description of Arrowhead compliant Interfaces.

It provides a detailed description of how the SignalStatus service is implemented to fetch the signal status from the OPC UA server.

ARTEMIS Innovation Pilot Project: Arrowhead

THEME [SP1-JTI-ARTEMIS-2012-AIPP4 SP1-JTI-ARTEMIS-2012-AIPP6]

[Production and Energy System Automation Intelligent-Built environment and urban infrastructure for sustainable and friendly cities]

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# Overview

This document describes the HTTP/TLS/JSON SignalStatus servcie interface, which enables reading the values of the OPC UA server nodes, which means the status of all sensors and actuators connected to the OPC UA server. To enable other systems to use, to consume it, this service needs to be offered in the OPC UA System.

This document exists as a complement to the *SignalStatus – Service Description* document. For further details about how this service is meant to be used, please consult that document. The rest of this document is organized as follows. In Section [2,](#bookmark1) we describe the abstract message functions provided by the service. In Section [3,](#bookmark6) we end the document by presenting the data types used by the mentioned functions.

# Service Operations

The interfaces of the SignalStatus service, its operations, data models and implementation is provided below. In particular, the below subsection first names the HTTP method and path used to call the interface. The interface is expected to respond with HTTP status code 200 OK for all successful calls. The error codes are, 400 Bad Request if request is malformed, 401 Unauthorized if improper client side certificate is provided, 500 Internal Server Error if OPC UA System is unavailable.

## GET {baseURL}/ID

**Interface: getValue**

**Output: Component JSON Object**

Called to acquire the value read from the node specified by the input ID.

Example of valid invocation:

GET /I1 HTTP/1.1

Accept: NA

Response: application/json

Example of valid response:

HTTP/1.1 200 OK

Content-Length:

Content-Type: application/json

[

{

"Id": "I1",

"value": "false",

"Description": "I1\_Push-button\_Loading Station",

“time”: “1616504379278”

}

]

## GET {baseURL}/sensors

**Interface: getSensors**

**Output: Component JSON Object**

Called to acquire the value read from all sensor nodes.

Example of valid invocation:

GET /sensors HTTP/1.1

Accept: NA

Response: application/json

Example of valid response:

HTTP/1.1 200 OK

Content-Length:

Content-Type: application/json

[

{

"Id": "I1",

"value": "false",

"Description": "I1\_Push-button\_Loading Station",

“time”: “1616506730108”

},

{

"Id": "I2",

"value": "true",

"Description": "I2\_Push-button\_Loading Station",

“time”: “1616506734572”

},

{ ----------------

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}

]

## GET {baseURL}/actuators

**Interface: getActuators**

**Output: Component JSON Object**

Called to acquire the value read from all actuator nodes.

Example of valid invocation:

GET /actuators HTTP/1.1

Accept: NA

Response: application/json

Example of valid response:

HTTP/1.1 200 OK

Content-Length:

Content-Type: application/json

[

{

"Id": "Q1",

"value": "false",

"Description": "Q1\_Motor Slider\_Loading Station",

“time”: “1616506695428”

},

{

"Id": "Q2",

"value": "false",

"Description": "Q2\_Motor Slider\_Loading Station",

“time”: “1616506700574”

},

{ ----------------

----------------

----------------

}

]

## GET {baseURL}/sensors/{sesnorID}

**Interface: getSensorValue**

**Output: Component JSON Object**

Called to acquire the value read from a particular sensor node.

Example of valid invocation:

GET /sensors/I1 HTTP/1.1

Accept: NA

Response: application/json

Example of valid response:

HTTP/1.1 200 OK

Content-Length:

Content-Type: application/json

[

{

"Id": "I1",

"value": "false",

"Description": "I1\_Push-button\_Loading Station",

“time”: “1616504379278”

}

]

## GET {baseURL}/actuators/{actuatorID}

**Interface: getActuatorValue**

**Output: Component JSON Object**

Called to acquire the value read from a particular actuator node.

Example of valid invocation:

GET /actuators/Q1 HTTP/1.1

Accept: NA

Response: application/json

Example of valid response:

HTTP/1.1 200 OK

Content-Length:

Content-Type: application/json

[

{

"Id": "Q1",

"value": "false",

"Description": "Q1\_Motor Slider\_Loading Station",

“time”: “1616506622049”

}

]

## PUT {baseURL}/actuators/{actuatorID}/{value}

**Interface: UpdateActuator**

**Output: Component JSON Object**

Called to write value to an actuator node.

Example of valid invocation:

PUT /actuators/Q5/true HTTP/1.1

Accept: NA

Response: application/json

Example of valid response:

HTTP/1.1 200 OK

Content-Length:

Content-Type: application/json

[

{

"Id": "Q5",

"value": "true",

"Description": "Q5\_Motor Conveyor Belt\_Loading Station",

“time”: “1616506635890”

}

]

# Data Model

Here, the data objects that can be part of SignalStatus service calls are listed in alphabetic order. Note that each subsection, which describes one type of object, begins with the struct or union keywords. The former is used to denote a collection of named fields, each with its own data type, while the latter is used to express that a value is allowed to be any one out of a number of listed variant types. For this service there is one object which is called:

**Component**

JSON object with the following fields.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field** | **Type** | **Description** | **Mandatory** | **Default** |
| Id | String | The Id of the individual node | True |  |
| Description | String | The OPC UA node description name | False |  |
| Value | Boolean | The value read from the particular node | False |  |
| timestamp | String | Current Timestamp associated with the node value. | False |  |

# Revision History

## Amendments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Date | Version | Subject of Amendments | Author |
| 1 | 2021-03-23 | 1.0.0 |  | Aparajita Tripathy |

## Quality Assurance

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Date | Version | Approved by |
| 1 |  |  |  |