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| Project | **Standard for Actuator Interface for Cyber and Physical World**  <https://sagroups.ieee.org/2888/ **>** |
| Title | **Sight Related Actuator Capabilities** |
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| Re: |  |
| Abstract | This contribution proposes syntax, semantics and example of the sight related actuator capability. |
| Purpose | To start discussion on purpose of the standard |
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# Introduction

This contribution proposes syntaxes, semantics and examples of the sight related actuator capability description vocabulary which comprises the following actuators:

* Light capability type
* Flash capability type

# Data formats for actuator capabilities

* 1. Light actuator capability
     1. General

This Subclause specifies syntax and semantics of lighting capabilities of lighting actuators.

* + 1. Syntax

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| "lightActuatorCapabilityData": {  "type": "object",  "properties": {  "color": {  "type": "array",  "items": {  "$ref": "#/definitions/colorType"  },  "minItems": 1,  "uniqueItems": true  },  "unit": {  "$ref": "#/definitions/unitType",  "default": "lux"  },  "maxIntensity": {  "type": "integer",  },  "numOfLightLevels": {  "type": "integer",  "minimum": 1  }  },  "additionalProperty": false  }, |

* + 1. Semantics

The semantics of the lightActuatorCapabilityData:

| *Name* | *Definition* |
| --- | --- |
| lightActuatorCapabilityData | Provide a structure for describing a command for a light actuator. |
| color | Describes the list of colors that the light actuator can provide either as a reference to a term that shall be using the colorType. |
| unit | Specifies the intensity unit of the command value as a reference to a term that shall be using the unitType. If the unit is not specified, the default unit is LUX. |
| maxIntensity | Describes the maximum intensity that the lighting actuator can provide in terms of LUX. |
| numOfLightLevels | Describes the number of intensity levels that the actuator can provide in between the maximum and minimum intensity of light. |

* + 1. Examples

This example shows the description of a light capability with the following semantics. This deivice requires preparation time of 1 ms to start, and 0 ms to reach target intensity. The maximum intensity of the light is 300 lux. There are 10 light levels between the maximum and minimum intensity. The colors that can be displayed by the light are “white”, “red” and “blue”.

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| {  "lightActuatorCapabilityData": {  "actuatorCapabilityBaseData": {  "zerothOrderDelayTime": 1,  "firstOrderDelayTime": 0  },  "color": [  "white",  "red",  "blue"  ],  "unit": "lux",  "maxIntensity": 300,  "numOfLightLevels": 10  }  } |

* 1. Flash actuator capability
     1. General

This Subclause specifies syntax and semantics of flashing capabilities of flash actuators.

* + 1. Syntax

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| "flashActuatorCapabilityData": {  "type": "object",  "properties": {  "lightActuatorCapabilityData": {  "$ref": "#/definitions/lightActuatorCapabilityData"  },  "maxFrequency": {  "type": "integer"  },  "numOfFrequencyLevels": {  "type": "integer",  "minimum": 1  }  },  "additionalProperty": false  }, |

* + 1. Semantics

Semantics of the flashActuatorCapabilityData:

| *Name* | *Definition* |
| --- | --- |
| flashActuatorCapabilityData | Describes a flash capability. |
| lightActuatorCapabilityData | Describes a light capability. |
| maxFrequency | Describes the maximum number of flickering in times per second.  EXAMPLE The value 10 means the actuator can flicker 10 times for each second. |
| numOfFrequencyLevels | Describes the number of frequency levels that the actuator can provide in between maximum and minimum frequency. |

* + 1. Example

This example shows the description of a flash capability with the following semantics. The maximum frequency of the flash light is 50 times per second. There are 10 levels between maximum and minimum frequency of the flash light. The location of the heating actuator is the left side according to the position model described in locationType.

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| {  "sensorCapabilityBaseData": {},  "flashActuatorCapabilityData": {  "actuatorCapabilityBaseData": {  "locater": "left"  },  "unit": "lux",  "maxIntensity": 300,  "numOfLightLevel": 10,  "maxFrequency": 50,  "numOfFrequencyLevels": 10  }  } |