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| Project | **Standard for Actuator Interface for Cyber and Physical World**<https://sagroups.ieee.org/2888.2/ **>** |
| Title | **Data Formats for Step Motor Actuator** |
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| Re: |  |
| Abstract | This contribution proposes syntaxes, semantics, and examples for representing step motor actuator information in the physical world in a standardized data format. |
| Purpose | To start discussion on purpose of the standard |
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# Introduction

This contribution proposes actuator command types which can control step motor. It contains syntaxes, semantics, and examples for representing step motor actuator information in the physical world in a standardized data format.

2 Data formats for interfacing actuator command

* 1. **Step motor actuator**
		1. **General**

This sub-clause specifies the actuator command type which can control step motor.

* + 1. **Syntax**

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| "stepMotorCommandData": { "type": "object", "properties": { "speed": { "type": "integer", "minimum": 0, }, "stepSize": { "type": "integer", "minimum": 0, }, "orientation": { "type": "integer", "enum": [1, -1]  } }, "additionalProperties": false }, |

* + 1. **Semantics**

The semantics of the stepMotorCommandData:

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| *Name* | *Definition* |
| stepMotorCommandData | Provide a structure for describing a command for a step motor actuator. |
| speed | Describes the speed that the step motor actuator shall rotate in RPM (Rotations Per Minute) unit that the specific actuator can generate. |
| stepSize | Describes the step size that the step motor actuator shall rotate at a fixed step angle and fixed speed variation ratio.e.g. when the fixed step angle of the step motor is 5.625 degrees and the fixed speed variation ratio is 0.015625, the step size of 4096 means one revolution. |
| orientation | Describes the orientation that the step motor actuator shall indicate the direction of rotation. If the orientation is 1, it means that the stepper motor rotates counterclockwise, and -1 means that it rotates clockwise. |

* + 1. **Examples**

This example shows the description of the actuator command of step motor with the following semantics. This step motor actuator is commanded to perform the 32 steps to rotate clockwise with the speed of 10 rpm.

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| { "commandInfoBaseAttributes": {}, "stepMotorCommandData": { "speed":10, "stepSize": 32, "orientation": -1 }} |