|  |  |
| --- | --- |
| Project | **Standard for Actuator Interface for Cyber and Physical World**  <https://sagroups.ieee.org/2888.2/ **>** |
| Title | **Data Formats for Character Display Actuator** |
| DCN | **2888-22-0014-00-0002** |
| Date Submitted | **Jan 31, 2022** |
| Source(s) | Tai-Gil Kwon [tgkwon@keti.re.kr](mailto:tgkwon@keti.re.kr) (Korea Electronics Technology Institute),  Changseok Yoon [csyoon@keti.re.kr](mailto:csyoon@keti.re.kr) (Korea Electronics Technology Institute),  Tae-Beom Lim [tblim@keti.re.kr](mailto:tblim@keti.re.kr) (Korea Electronics Technology Institute),  Kwanghyun Ro [khrho@hansung.ac.kr](mailto:khrho@hansung.ac.kr) (Hansung University) |
| Re: |  |
| Abstract | This contribution proposes syntaxes, semantics, and examples for representing character display actuator information in the physical world in a standardized data format. |
| Purpose | To start a discussion on the purpose of the standard |
| Notice | This document has been prepared to assist the IEEE 2888 Working Group. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. |
| Release | The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE’s name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE’s sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that IEEE 2888 may make this contribution public. |
| Patent Policy | The contributor is familiar with IEEE patent policy, as stated in [Section 6 of the IEEE-SA Standards Board bylaws](http://standards.ieee.org/guides/opman/sect6.html#6.3) <[http://standards.ieee.org/guides/bylaws/sect6-7.html#6](http://127.0.0.1:4664/cache?event_id=757737&schema_id=1&s=5X0vID10lu_E6yrIkWkNd4Wz2H8&q=hancock)> and in *Understanding Patent Issues During IEEE Standards Development* <http://standards.ieee.org/board/pat/faq.pdf> |

# Introduction

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

1. Data formats for Individual Actuators
   * 1. **Character display actuator**

**4.3.12.1 General**

This sub-clause specifies the actuator command type which can control character display.

**4.3.12.2 Syntax**

|  |
| --- |
| "characterDisplayCommandData": {  "type": "object",  "properties": {  "xCoordinate": {  "type": "integer",  "minimum": 0  },  "yCoordinate ": {  "type": "integer",  "minimum": 0  },  "foregroundColor": {  "$ref": "#/definitions/colorType"  },  "backgroundColor": {  "$ref": "#/definitions/colorType"  },  "textSize": {  "type": "integer",  "minimum": 1  },  "text": {  "type": "string"  }  },  "required": [  "xCoordinate",  "yCoordinate",  "text"  ]  }  } |

**4.3.12.3 Semantics**

The semantics of the characterDisplayCommandData:

|  |  |
| --- | --- |
| *Name* | *Definition* |
| characterDisplayCommandData | Provide a structure for describing a command for a character display actuator. |
| xCoordinate | Describes the x-coordinate of text position on a two-dimensional screen. If the type of display mode is text\_mode, it is represented in units of columns. If it is graphics\_mode, it is represented in units of pixels. |
| yCoordinate | Describes the y-coordinate of text position on a two-dimensional screen. If the type of display mode is text\_mode, it is represented in units of rows. If it is graphics\_mode, it is represented in units of pixels. |
| foregroundColor | Describes a text foreground color. If omitted, the current foreground color is used. If the type of display mode is text\_mode, it is ignored. |
| backgroundColor | Describes a text background color. If omitted, the background color is treated as a transparent color. If the type of display mode is text\_mode, it is ignored. |
| textSize | Describes the text size to be printed on a screen. If omitted, the current text size is used. If the type of display mode is text\_mode, it is ignored. |
| text | Describes a text string including letters, numbers, symbols, and simple figures that can be printed on a screen. |

**4.3.12.4 Examples**

This example shows the description of the actuator command of character display with the following semantics. The character display actuator outputs the text "hello world!" with red foreground color, black background color, and font size 1 on the screen at (12, 5) coordinates.

|  |
| --- |
| {  "commandInfoBaseAttributes": {},  "characterDisplayCommandData":{  "xCoordinate":12,  "yCoordinate ":5,  "foregroundColor":"red",  "backgroundColor":"black",  "textSize":1,  "text":"hello world!"  }  } |