|  |  |
| --- | --- |
| Project | **Specification of Sensor Interface for Cyber and Physical World**<<http://subgroup.ieee.org/2888/> **>>** |
| Title | **Semantics of unitTypes for environment-related sensors** |
| DCN | **2888-21-0072-02-0001** |
| Date Submitted | **Oct 13th, 2021**  |
| Source(s) | Tai-Gil Kwon tgkwon@keti.re.kr (Korea Electronics Technology Institute),Changseok Yoon csyoon@keti.re.kr (Korea Electronics Technology Institute),Tae-Beom Lim tblim@keti.re.kr (Korea Electronics Technology Institute),Kwanghyun Ro khrho@hansung.ac.kr (Hansung University) |
| Re: |  |
| Abstract | This contribution proposes semantics of unitTypes for environment-related sesnsor information in the physical world in a standardized data format.  |
| Purpose | To start discussion on 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> |

#  **Data formats for common types**

## **unitType**

### **Semantics**

The semantics of the unitType:

|  |  |
| --- | --- |
| Name | Definition |
| micrometer | A unit of length or distance equal to one-millionth of a meter. |
| mm | A unit of length or distance equal to one-thousandth of a meter. |
| cm | A unit of length or distance equal to one-hundredth of a meter. |
| meter | The basic unit of length in the International System of Units. |
| km | A unit of length or distance equal to one thousand meters. |
| inch | A unit of length or distance equal to 0.0254 meters. |
| yard | A unit of length or distance equal to 0.9144 meters. |
| mile | A unit of length or distance equal to 1609.344 meters. |
| mg | A unit of mass or weight equal to one-millionth of a kilogram. |
| gram | A unit of mass or weight equal to one-thousandth of a kilogram. |
| kg | The base unit of mass in the International System of Units. |
| ton | A unit of mass or weight equal to a thousand kilogram |
| meterpersec | The SI coherent derived unit of velocity in the International System of Units. |
| kmperhour | A unit of velocity equal to a thousand meters per hour. |
| hPa | A unit for pressure, which is equal to 100 pascals. |
| newton | The SI coherent derived unit of force in the International System of Units, which is equal to one kilogram-meter per second squared. |
| hz | The derived unit of frequency in the International System of Units, which is equal to one over a second. |
| khz | A unit of frequency equal to a thousand Hertz. |
| mhz | A unit of frequency equal to a million Hertz. |
| ghz | A unit of frequency equal to a billion Hertz. |
| volt | The SI coherent derived unit of electric potential difference or an electromotive force in the International System of Units, which is equal to one kilogram-square meter per second cubed-ampere. |
| watt | The SI coherent derived unit of power or radiant flux in the International System of Units, which is equal to one kilogram-square meter per second cubed. |
| ampere | The basic unit of electric current in the International System of Units. |
| lux | The SI coherent derived unit of illuminance in the International System of Units, which is equal to one candela per square meter. |
| celsius | The SI coherent derived unit of Celsius temperature in the International System of Units. |
| fahrenheit | A unit of temperature which is equal to a Celius temperature times nine fifths plus thirty-two. |
| radian | The SI coherent derived unit of plane angle in the International System of Units. |
| degree | A unit of plane angle which is equal to pi over hundred-eighty radian (pi is a mathematical constant whose value is the ratio of any circle’s circumference to its diameter in Euclidean space) |
| ppm | A unit of a way of quantifying small concentrations, equal to part(s) per million. |
| millimetersperhour | A unit of speed, velocity or rainfall in the metric system. |
| wattspermetersquare | The SI unit for radiative and other energy fluxes in geophysics. |
| percentage | A number or ratio expressed as a fraction of 100. |
| kpa | The SI derived unit of pressure, which is equal to 1000 pascals. |
| microsiemenspercentimeter | A unit in the category of electric conductivity. |
| ph | A unit of measure which describes the degree of acidity or alkalinity of a solution. |