Additional Units for SenML
draft-bormann-senml-more-units-00

Abstract
The Sensor Measurement Lists (SenML) media type supports the indication of units for a quantity represented. This short document registers a number of additional unit names in the IANA registry for Units in SenML.

Status of This Memo
This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at https://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on August 31, 2019.

Copyright Notice
Copyright (c) 2019 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust’s Legal Provisions Relating to IETF Documents (https://trustee.ietf.org/license-info) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.
1. Introduction

The Sensor Measurement Lists (SenML, [RFC8428]) media type supports the indication of a unit, using the SenML field "u", for the quantity given as a data value in a SenML record. For this purpose, SenML defines an IANA registry of defined Unit names and their meanings.

This short document registers a number of additional units in the IANA registry for Units in SenML that appear to be necessary for further adopting SenML in other Standards Development Organizations (SDOs).

2. New Units

IANA is requested to assign new units in the "SenML Units" subregistry of the SenML registry [IANA.senml] (as defined in [RFC8428]):

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Type</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Byte (information content)</td>
<td>float</td>
<td>RFCthis</td>
</tr>
<tr>
<td>VA</td>
<td>volt-ampere (Apparent Power)</td>
<td>float</td>
<td>RFCthis</td>
</tr>
<tr>
<td>var</td>
<td>volt-ampere reactive (Reactive Power)</td>
<td>float</td>
<td>RFCthis</td>
</tr>
<tr>
<td>J/m</td>
<td>joule per meter (Energy per distance)</td>
<td>float</td>
<td>RFCthis</td>
</tr>
</tbody>
</table>

Table 1: New units registered for SenML
3. Rationale

SenML [RFC8428] takes the position that unscaled SI units should always be used. However, SenML makes one exception: The degree Celsius (as Cel) is allowed as an alternative to the K (Kelvin).

This document takes the position that the same should apply to a small number of alternative units in wide use:

- **The Byte.** [IEC-80000-13] defines both the bit (item 13-9.b) and the byte (item 13-9.c, also called octet) as alternative names for the coherent unit one for the purpose of giving storage capacity and related quantities. While the name octet is associated with the symbol o, this is in wide use only in French-speaking countries. Globally more wide-spread is the symbol B for byte, even though B is already taken in SI for bel. [RFC8428] therefore registers dB as the SenML unit for logarithmic relative power, leaving B free for the usage proposed here. While this is potentially confusing, the situation is widely understood in engineering circles and is unlikely to cause actual problems.

- **The Volt-Ampere.** [IEC-80000-6] item 6-57.a defines the VA (volt ampere) as a unit for apparent power; items 6-59.a, 6-60.a and 6-61.a also use the unit for complex, reactive, and non-active power.

- **The Volt-Ampere-reactive.** [IEC-80000-6] item 6-60.b defines the var (volt ampere reactive) as an alternative (and fully equivalent) unit to VA specifically for reactive power (with the primary unit VA). It is not presently known to this author how the upcoming revision of IEC 80000-6 will update this, but it has became clear since that there is strong interest in using this unit specifically for the imaginary content of complex power, reactive power [IEEE-1459].

The Joule per meter is not a traditional electromagnetic unit. It and its scaled derivatives (in particular Wh/km) are used to describe the energy expended for achieving motion over a given distance, e.g. as an equivalent for electrical cars of the inverse of "mileage".

4. Security Considerations

The security considerations of [RFC8428] apply. The introduction of new measurement units poses no additional security considerations except from a possible potential for additional confusion about the proper unit to use.
5. IANA Considerations

See Section 2.

Acknowledgements

Ari Keranen pointed out the need for additional units in SenML.

7. Normative References

[IANA.senml]
IANA, "Sensor Measurement Lists (SenML)",
<http://www.iana.org/assignments/senml>.

[IEC-80000-13]
"Quantities and units - Part 13: Information science and

[IEC-80000-6]
"Quantities and units - Part 6: Electromagnetism",

[IEEE-1459]
"IEEE Standard Definitions for the Measurement of Electric
Power Quantities Under Sinusoidal, Nonsinusoidal,
Balanced, or Unbalanced Conditions", IEEE Std 1459-2010,
March 2010.

[RFC8428] Jennings, C., Shelby, Z., Arkko, J., Keranen, A., and C.
Bormann, "Sensor Measurement Lists (SenML)", RFC 8428,
DOI 10.17487/RFC8428, August 2018,

Author’s Address

Carsten Bormann
Universitaet Bremen T2I
Postfach 330440
Bremen D-28359
Germany

Phone: +49-421-218-63921
Email: cabo@tzi.org