

stmunits package description

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These are the unit definitions for `stm-latex`. It is build upon the [siunitx](#) package.

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1. Usage

1.1. Load the whole `stmunits` package

1.1.1. Description

This is an interface package which loads the base package and the style choice.

By default the package loads

- `stmunitsbase.sty`
- `stmunitsitems.sty`
- `stmunitsstyles.sty`

See subsection 1.1.2 for options to change the default package behavior.

1.1.2. Options

Option *styles* This is a boolean option. Expected values are either `true` or `false`. It controls whether to load the predefined styles.

```
\usepackage[styles=true|false]{stmunits}
```

`styles=true` is the default. It is used in case `styles=false` is not set explicitly.

Option *style* This option value is the equivalent to section 1.4.2 and is passed through to the underlying package.

1.2. `stmunitsbase`

This package loads the underlying base package.

1.3. `stmunitsitems`

This loads new unit definitions, not initially defined in the base package. See section 2 for the definitions.

1.4. `stmunitsstyles`

1.4.1. Description

This package contains styles for the representation of units and numbers.

1.4.2. Options

Option *style* This is a string option. A list of possible values is shown in section 3.

```
\usepackage[style=stmdefault]{stmunitsstyles}
```

`style=stmdefault` is the default. It is used in case no other style is set explicitly.

2. Items

Table 1: Additional unit definitions

Length			
<code>\si {\foot }</code>	ft	<code>\si {\inch }</code>	in
Temperature			
<code>\si {\degreeFahrenheit }</code>	°F	<code>\si {\degreeRankine }</code>	°R
Force			
<code>\si {\dyn }</code>	dyn	<code>\si {\poundforce }</code>	lbf
Pressure			
<code>\si {\barye }</code>	Ba	<code>\si {\psi }</code>	psi
Density			
<code>\si {\slug }</code>	slug		
Energy			
<code>\si {\erg }</code>	erg		
Misc.			
<code>\si {\promille }</code>			

3. Styles

There are different predefined styles available to format your numbers and units.

3.1. default

This loads the default style from the underlying base package and does not apply individual styles.

3.2. stmdefault

This loads unit definition style for the stm package. Have a look at the code in appendix A.4 for details.

A. The code

A.1. stmunits.sty

```
1 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2 % Header %
3 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
4 %
5 % This file includes unit definitions.
6 % Based upon the siunitx package:
7 %   https://ctan.org/pkg/siunitx
8 %
9 % Usage
10 % - Preamble:
11 %   - \usepackage{stmunits}
12 %
13 % Revisions: 2019-10-27 Martin Raedel <martin.raedel@dlr.de>
14 %               Initial draft
15 %
16 % Contact:   Martin Raedel, martin.raedel@dlr.de
17 %           DLR Lightweight Systems
18 %
19 %               _ _/ | _ _
20 %               / _/ _/ _/
21 %           www.dlr.de/sy/en   | / DLR
22 %
23 % Copyright (C) 2019-... DLR Lightweight Systems
24 %
25 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
26 % Content %
27 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28
29 % Declare that this style file requires at least LaTeX version 2e.
30 \NeedsTeXFormat{LaTeX2e}
31
32 % Provide the name of your page, the date it was last updated, and a
33 %   comment about what it's used for
34
35 \ProvidesPackage{stmunits}[2023/02/12 STMs custom LaTeX unit definitions]
36
37 % -----
38 % Options
39 % -----
40
41 % For options
```

```

40 \@ifpackageloaded{kvoptions}{\RequirePackage{kvoptions}}%
41
42 % Option group
43 \SetupKeyvalOptions{%
44     family=stmunits,%
45     prefix=stmunits@,%
46     setkeys=\kvsetkeys,%
47 }
48
49 % Items
50 \DeclareBoolOption[true]{items}
51
52 % Load styles
53 \DeclareBoolOption[true]{styles}
54
55 % Apply style name
56 \DeclareStringOption[stmdefault]{style}
57
58 % Process options
59 \ProcessKeyvalOptions{stmunits}
60
61 % -----
62 % Modules
63 % -----
64
65 % Load the base package
66 \@ifpackageloaded{stmunitsbase}{\RequirePackage{stmunitsbase}}%
67 }%
68
69 % Load the styles
70 \ifstmunits@styles
71 \ifpackageloaded{stmunitsstyles}{\RequirePackage[
72     style=\stmunits@style
73 ]{stmunitsstyles}}%
74 }%
75 \fi
76
77 % Load the items
78 \ifstmunits@items
79 \ifpackageloaded{stmunitsitems}{\RequirePackage{stmunitsitems}}%
80 }%

```

```

84 \fi
85
86 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
87 % That's it %
88 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
89
90 % Finally, we'll use \endinput to indicate that LaTeX can stop reading
    this file. LaTeX will ignore anything after this line.
91 \endinput

```

A.2. stmunitsbase.sty

```

1 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2 % Header %
3 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
4 %
5 % This file includes unit definitions.
6 % Based upon the siunitx package:
7 %   https://ctan.org/pkg/siunitx
8 %
9 % Usage
10 % - Preamble:
11 %   - \usepackage{stmunitsbase}
12 %
13 % Revisions: 2019-10-27 Martin Raedel <martin.raedel@dlr.de>
14 %               Initial draft
15 %
16 % Contact:   Martin Raedel, martin.raedel@dlr.de
17 %           DLR Lightweight Systems
18 %
19 %           __/|__
20 %           /_/_/_/
21 %           www.dlr.de/sy/en   | / DLR
22 %
23 % Copyright (C) 2019-... DLR Lightweight Systems
24 %
25 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
26 % Content %
27 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28
29 % Declare that this style file requires at least LaTeX version 2e.
30 \NeedsTeXFormat{LaTeX2e}
31
32 % Provide the name of your page, the date it was last updated, and a

```



```

23 % Copyright (C) 2019-... DLR Lightweight Systems
24 %
25 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
26 % Content %
27 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28
29 % Declare that this style file requires at least LaTeX version 2e.
30 \NeedsTeXFormat{LaTeX2e}
31
32 % Provide the name of your page, the date it was last updated, and a
    comment about what it's used for
33 \ProvidesPackage{stmunitsitems}[2023/02/12 STMs custom LaTeX unit
    definitions]
34
35 % -----
36 % Package
37 % -----
38
39 \@ifpackageloaded{stmunitsbase}{\RequirePackage{stmunitsbase}}%
40
41 % -----
42 % New units
43 % -----
44
45 % Length
46 \DeclareSIUnit\foot{ft}
47 \DeclareSIUnit\inch{in}
48
49 % Temperature
50 \DeclareSIUnit\degreeFahrenheit{^{\circ}F}
51 \DeclareSIUnit\degreeRankine{^{\circ}R}
52
53 % Force
54 \DeclareSIUnit\dyn{dyn}
55 \DeclareSIUnit\poundforce{lbf}
56
57 % Pressure
58 \DeclareSIUnit\barye{Ba}
59 \DeclareSIUnit\psi{psi}
60
61 % Density
62 \DeclareSIUnit\slug{slug}
63
64 % Energy

```



```

65 \DeclareSIUnit\erg{erg}
66
67 % Promille
68 \DeclareSIUnit[number-unit-product = \,]{\promille}{\textperthousand}
69
70 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
71 % That's it
72 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
73
74 % Finally, we'll use \endinput to indicate that LaTeX can stop reading
    this file. LaTeX will ignore anything after this line.
75 \endinput

```

A.4. stmunitsstyles.sty

```

1 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2 % Header
3 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
4 %
5 % This file includes unit definitions.
6 % Based upon the siunitx package:
7 %   https://ctan.org/pkg/siunitx
8 %
9 % Usage
10 % - Preamble:
11 %   - \usepackage{stmunitsstyles}
12 %
13 % Revisions: 2019-10-27 Martin Raedel <martin.raedel@dlr.de>
14 %               Initial draft
15 %
16 % Contact:   Martin Raedel, martin.raedel@dlr.de
17 %               DLR Lightweight Systems
18 %
19 %               __/|__
20 %               /_/_/_/
21 %               www.dlr.de/sy/en   | / DLR
22 %
23 % Copyright (C) 2019-... DLR Lightweight Systems
24 %
25 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
26 % Content
27 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28
29 % Declare that this style file requires at least LaTeX version 2e.

```

```

30 \NeedsTeXFormat{LaTeX2e}
31
32 % Provide the name of your page, the date it was last updated, and a
    comment about what it's used for
33 \ProvidesPackage{stmunitsstyles}[2023/02/12 STMs custom LaTeX unit style
    definitions]
34
35 % -----
36 % Base package
37 % -----
38
39 \@ifpackageloaded{stmunits}{\RequirePackage{stmunits}}%
40
41 % -----
42 % Options
43 % -----
44
45 % For options
46 \@ifpackageloaded{kvoptions}{\RequirePackage{kvoptions}}%
47
48 \SetupKeyvalOptions{%
49   family=stmunitsstyles,%
50   prefix=stmunitsstyles@,%
51   setkeys=\kvsetkeys,%
52 }
53
54 % Style name
55 \DeclareStringOption[stmdefault]{style}
56
57 % Process options
58 \ProcessKeyvalOptions{stmunitsstyles}
59
60 % -----
61 % Package
62 % -----
63
64 % -----
65 % Setup
66 % -----
67
68 \sisetup{%
69   exponent-product = \cdot,%
70   inter-unit-product = \ensuremath{{}\cdot{}},%
71   %binary-units=true,%

```

```

72 }
73
74 % -----
75 % Style
76 % -----
77
78 \@namedef{stmunitsstyles@style@default}{%
79   % This here is empty to load the standard sisetup
80 }
81
82 \@namedef{stmunitsstyles@style@stmdefault}{%
83   \sisetup{%
84     allow-number-unit-breaks = false,%
85     %binary-units             = true,%
86     detect-all,%
87     exponent-product         = \cdot,%
88     %output-product           = \cdot,%
89     inter-unit-product       = \ensuremath{{}\cdot{}},%
90     separate-uncertainty     = true,%
91   }
92 }
93
94 % Evaluate option settings
95 % https://tex.stackexchange.com/a/249102
96 \newcommand*{\stmunitsstyles@evaluate}[1]{%
97   % Check, if option value in \<prefix>@<option> exists
98   \@ifundefined{stmunitsstyles@#1}{%
99     % Should not happen
100     \PackageError{stmunitsstyles}{Evaluating unknown option ‘#1’}\@ehc
101   }{%
102     % Check, if there is an implementation for the value of the option
103     % in macro \<prefix>@<option>@<value>
104     \@ifundefined{stmunitsstyles@#1\csname stmunitsstyles@#1\endcsname}{%
105       %
106       \PackageError{stmunitsstyles}{%
107         Unknown option setting: #1=%
108         \csname stmunitsstyles@#1\endcsname
109       }\@ehc
110     }{%
111       % Call the implementation for the value
112       \csname stmunitsstyles@#1@%
113         \csname stmunitsstyles@#1\endcsname
114       \endcsname
115       \relax

```

```

115     }%
116   }%
117 }
118
119 \stmunitsstyles@evaluate{style}
120
121 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
122 % That's it                                     %
123 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
124
125 % Finally, we'll use \endinput to indicate that LaTeX can stop reading
    this file. LaTeX will ignore anything after this line.
126 \endinput

```