

stmunits package description

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Martin Rädels

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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 Composite Structures and Adaptive Systems
18 %
19 %               __/|__
20 %               /_/_/_/_/
21 %               www.dlr.de/fa/en   | / DLR
22 %
23 % Copyright (C) 2019-... DLR Composite Structures and
24 %   Adaptive Systems
25 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
26 % Content %
27 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28
29 % Declare that this style file requires at least LaTeX
30 %   version 2e.
31
32 % Provide the name of your page, the date it was last updated
33 %   , and a comment about what it's used for
34
35 \ProvidesPackage{stmunits}[2019/10/27 STMs custom LaTeX unit
36 %   definitions]
37
38 % -----
39 % Options
```

```

37 % -----
38
39 % 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
70 % Load the styles
71 \ifstmunits@styles
72     \@ifpackageloaded{stmunitsstyles}{\RequirePackage[
73         style=\stmunits@style
74     ]{stmunitsstyles}}%
75
76 }%
77 \fi
78
79 % Load the items
80 \ifstmunits@items

```

```

81 \@ifpackageloaded{stmunitsitems}{%
82 \RequirePackage{stmunitsitems}%
83 }%
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 Composite Structures and Adaptive Systems
18 %
19 %           __/|__
20 %           /_/_/_/
21 %           www.dlr.de/fa/en   | / DLR
22 %
23 % Copyright (C) 2019-... DLR Composite Structures and
% Adaptive 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{stmunitsbase}[2019/10/27 STMs custom LaTeX
    unit definitions]
34
35 % -----
36 % Package
37 % -----
38
39 \@ifpackageloaded{siunitx}{}{%
40     \RequirePackage{siunitx}
41 }%
42
43 %%%%%%%%%%%%%%%
44 % That's it %
45 %%%%%%%%%%%%%%%
46
47 % Finally, we'll use \endinput to indicate that LaTeX can
    stop reading this file. LaTeX will ignore anything after
    this line.
48 \endinput

```

A.3. stmunitsitems.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 Composite Structures and Adaptive Systems
18 %
19 %              __/|__
20 %              /_/_/_/
21 %              www.dlr.de/fa/en      | / DLR
22 %
23 % Copyright (C) 2019-... DLR Composite Structures and
    Adaptive 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}[2019/10/27 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 Composite Structures and Adaptive Systems

```

```

18 %
19 %
20 %      _ _/ | _ _
21 %      / _/ _/ _/
22 %      www.dlr.de/fa/en      | / DLR
23 % Copyright (C) 2019-... DLR Composite Structures and
24 % Adaptive Systems
25 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
26 % Content %
27 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28 %
29 % Declare that this style file requires at least LaTeX
30 % version 2e.
31 \NeedsTeXFormat{LaTeX2e}
32 % Provide the name of your page, the date it was last updated
33 % , and a comment about what it's used for
34 \ProvidesPackage{stmunitsstyles}[2019/10/27 STMs custom LaTeX
35 % unit style definitions]
36 % -----
37 % Base package
38 % -----
39 \@ifpackageloaded{stmunits}{\RequirePackage{stmunits}}%
40 % -----
41 % Options
42 % -----
43 % -----
44 % For options
45 \@ifpackageloaded{kvoptions}{\RequirePackage{kvoptions}}%
46 \SetupKeyvalOptions{%
47   family=stmunitsstyles,%
48   prefix=stmunitsstyles@,%
49   setkeys=\kvsetkeys,%
50 }
51 % Style name
52 \DeclareStringOption[stmdefault]{style}
53 % Process options

```

```

58 \ProcessKeyvalOptions{stmunitsstyles}
59
60 % -----
61 % Package
62 % -----
63
64 % -----
65 % Setup
66 % -----
67
68 \sisetup{%
69   exponent-product = \cdot,%
70   output-product = \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     separate-uncertainty      = true,%
90   }
91 }
92
93 % Evaluate option settings
94 % https://tex.stackexchange.com/a/249102
95 \newcommand*{\stmunitsstyles@evaluate}[1]{%
96   % Check, if option value in \<prefix>@<option> exists
97   \@ifundefined{stmunitsstyles@#1}{%
98     % Should not happen
99     \PackageError{stmunitsstyles}{Evaluating unknown option
100       '#1'}\@ehc
101   }{%

```

```

101 % Check, if there is an implementation for the value of
    the option
102 % in macro \<prefix>@<option>@<value>
103 \@ifundefined{stmunitsstyles@#1@\csname stmunitsstyles@
    #1\endcsname}{%
104     \PackageError{stmunitsstyles}{%
105         Unknown option setting: #1=%
106         \csname stmunitsstyles@#1\endcsname
107     }\@ehc
108 }{%
109     % Call the implementation for the value
110     \csname stmunitsstyles@#1@%
111         \csname stmunitsstyles@#1\endcsname
112     \endcsname
113     \relax
114 }%
115 }%
116 }
117
118 \stmunitsstyles@evaluate{style}
119
120 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
121 % That's it %
122 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
123
124 % Finally, we'll use \endinput to indicate that LaTeX can
    stop reading this file. LaTeX will ignore anything after
    this line.
125 \endinput

```