

# 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 % - Premble:
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 \NeedsTeXFormat{LaTeX2e}
32
33 % Provide the name of your page, the date it was last updated
34 %   , and a comment about what it's used for
35 \ProvidesPackage{stmunits}[2019/10/27 STMs custom LaTeX unit
36 %   definitions]
```

```

37 % -----
38
39 \@ifpackageloaded{siunitx}{}{\RequirePackage{siunitx}}%
40
41 % -----
42 % Options
43 % -----
44
45 % For options
46 \@ifpackageloaded{kvoptions}{}{\RequirePackage{kvoptions}}%
47
48 % Option group
49 \SetupKeyvalOptions{%
50   family=stmunits,%
51   prefix=stmunits@,%
52   setkeys=\kvsetkeys,%
53 }
54
55 % Items
56 \DeclareBoolOption[true]{items}
57
58 % Load styles
59 \DeclareBoolOption[true]{styles}
60
61 % Apply style name
62 \DeclareStringOption[stmdefault]{style}
63
64 % Process options
65 \ProcessKeyvalOptions{stmunits}
66
67 % -----
68 % Modules
69 % -----
70
71 % Load the styles
72 \ifstmunits@styles
73   \@ifpackageloaded{stmunitsstyles}{}{\%
74     \RequirePackage[
75       style=\stmunits@style
76     ]{stmunitsstyles}%
77   }%
78 \fi
79
80 % Load the items

```

```

81 \ifstmunits@items
82   \@ifpackageloaded{stmunitsitems}{%}{%
83     \RequirePackage{stmunitsitems}%
84   }%
85 \fi
86
87 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
88 % That's it %
89 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
90
91 % Finally, we'll use \endinput to indicate that LaTeX can
92 % stop reading this file. LaTeX will ignore anything after
93 % this line.
94 \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 %               / _/_/_/_
22 %               www.dlr.de/fa/en      / / DLR
23 %
24 % Copyright (C) 2019-... DLR Composite Structures and
25 % Adaptive Systems
26 %
27 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28 % 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
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 %
33 % Provide the name of your page, the date it was last updated
34 %      , and a comment about what it's used for
35 \ProvidesPackage{stmunits}[2019/10/27 STMs custom LaTeX unit
36 %      definitions]
37 %
38 % -----
39 % Package
40 % -----
41 %
42 % @ifpackageloaded{stmunitsbase}{}{\RequirePackage{
43 %      stmunitsbase}}%
44 %
45 % -----
46 % New units
47 % -----
48 %
49 % Length
50 \DeclareSIUnit\foot{ft}
51 \DeclareSIUnit\inch{in}
52 %
53 % Temperature
54 \DeclareSIUnit\degreeFahrenheit{^{\circ}F}
55 \DeclareSIUnit\degreeRankine{^{\circ}R}
56 %
57 % 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
75 % stop reading this file. LaTeX will ignore anything after
76 % this line.
77 \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 % 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 \NeedsTeXFormat{LaTeX2e}
32
33 % Provide the name of your page, the date it was last updated
34 % , and a comment about what it's used for
35 \ProvidesPackage{stmunitsstyles}[2019/10/27 STMs custom LaTeX
36 unit style definitions]
37
38 % -----
39 % Base package
40 % -----
41
42 \@ifpackageloaded{stmunits}{%}{\RequirePackage{stmunits}}%
43
44 % -----
45 % Options
46 % -----
47
48 % For options
49 \@ifpackageloaded{kvoptions}{%}{\RequirePackage{kvoptions}}%
50
51 \SetupKeyvalOptions{%
52 family=stmunitsstyles,%
53 prefix=stmunitsstyles@,%
54 setkeys=\kvsetkeys,%
55 }
56
57 % Style name
58 \DeclareStringOption[stmdefault]{style}

```

```

57 % 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

```

```

100 }{%
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

```