

# 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

```

```

    comment about what it's used for
33 \ProvidesPackage{stmunitsbase}[2023/02/12 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 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{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
75 % this file. LaTeX will ignore anything after this line.
76 \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

```