stmunits package description

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v20230816

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These are the unit definitions for `stmlatex`. It is build upon the siunitx package.

Contents

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

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
        comment about what it's used for
33  \ProvidesPackage{stmunits}[2023/02/12 STMs custom LaTeX unit definitions]
34
35  % -------------------------
36  % Options
37  % -------------------------
38
39  % For options
```

```latex
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}{}{%
67    \RequirePackage{stmunitsbase}%
68  }%
69
70  % Load the styles
71  \ifstmunits@styles
72    \@ifpackageloaded{stmunitsstyles}{}{%
73      \RequirePackage[
74        style=\stmunits@style
75      ]{stmunitsstyles}%
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 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
        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.
```

9

```latex
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        \PackageError{stmunitsstyles}{%
106          Unknown option setting: #1=%
107          \csname stmunitsstyles@#1\endcsname
108        }\@ehc
109      }{%
110        % Call the implementation for the value
111        \csname stmunitsstyles@#1@%
112                \csname stmunitsstyles@#1\endcsname
113        \endcsname
114        \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
```