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API Collection

# Units and Measurement

Label numeric quantities with physical dimensions to allow locale-aware formatting and conversion between related units.

## Topics

### Essentials

`struct Measurement`

A numeric quantity labeled with a unit of measure, with support for unit conversion and unit-aware calculations.

`class NSMeasurement`

A numeric quantity labeled with a unit of measure, with support for unit conversion and unit-aware calculations.

`class Unit`

An abstract class representing a unit of measure.

`class Dimension`

An abstract class representing a dimensional unit of measure.

### Conversion

`class UnitConverter`

An abstract class that provides a description of how to convert a unit to and from the base unit of its dimension.

`class UnitConverterLinear`

A description of how to convert between units using a linear equation.

## Physical Dimension

class UnitArea

A unit of measure for area.

class UnitLength

A unit of measure for length.

class UnitVolume

A unit of measure for volume.

class UnitAngle

A unit of measure for planar angle and rotation.

## Mass, Weight, and Force

class UnitMass

A unit of measure for mass.

class UnitPressure

A unit of measure for pressure.

## Time and Motion

class UnitAcceleration

A unit of measure for acceleration.

class UnitDuration

A unit of measure for a duration of time.

class UnitFrequency

A unit of measure for frequency.

class UnitSpeed

A unit of measure for speed.

## Energy, Heat, and Light

```
class UnitEnergy
```

A unit of measure for energy.

```
class UnitPower
```

A unit of measure for power.

```
class UnitTemperature
```

A unit of measure for temperature.

```
class UnitIlluminance
```

A unit of measure for illuminance.

## Electricity

```
class UnitElectricCharge
```

A unit of measure for electric charge.

```
class UnitElectricCurrent
```

A unit of measure for electric current.

```
class UnitElectricPotentialDifference
```

A unit of measure for electric potential difference.

```
class UnitElectricResistance
```

A unit of measure for electric resistance.

## Concentration and Dispersion

```
class UnitConcentrationMass
```

A unit of measure for concentration of mass.

```
class UnitDispersion
```

A unit of measure for specific quantities of dispersion.

## Fuel Efficiency

```
class UnitFuelEfficiency
```

A unit of measure for fuel efficiency.

## Data Storage

```
class UnitInformationStorage
```

A unit of measure for quantities of information.

## Formatting Measurements

```
struct MeasurementFormatUnitUsage
```

A type that provides the generalized usage for a formatted measurement.

## See Also

### Fundamentals

#### ☰ Numbers, Data, and Basic Values

Work with primitive values and other fundamental types used throughout Cocoa.

#### ☰ Strings and Text

Create and process strings of Unicode characters, use regular expressions to find patterns, and perform natural language analysis of text.

#### ☰ Collections

Use arrays, dictionaries, sets, and specialized collections to store and iterate groups of objects or values.

#### ☰ Dates and Times

Compare dates and times, and perform calendar and time zone calculations.

#### ☰ Data Formatting

Convert numbers, dates, measurements, and other values to and from locale-aware string representations.

#### ☰ Filters and Sorting

Use predicates, expressions, and sort descriptors to examine elements in collections and other services.