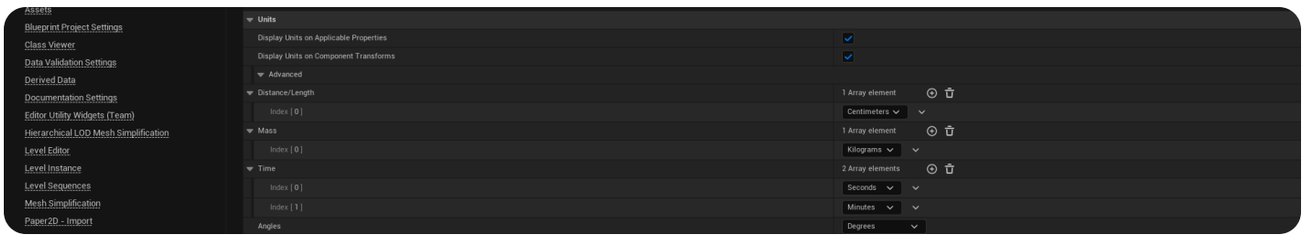
Units of Measurement

Measure quantities of interest.



Unreal Engine (UE) defaults to the following International System (SI) units for measurement:

Quantity	Unit
Distance/Length	Centimeters (cm)
Mass	Kilograms (kg)
Time	Minutes (min), Seconds (s)
Angles	Degrees (deg)
Speed/Velocity	Meters per Second (m / s)
Temperature	Celsius (C)
Force	Newtons (N)
Torque	Newton Meters (N • m)

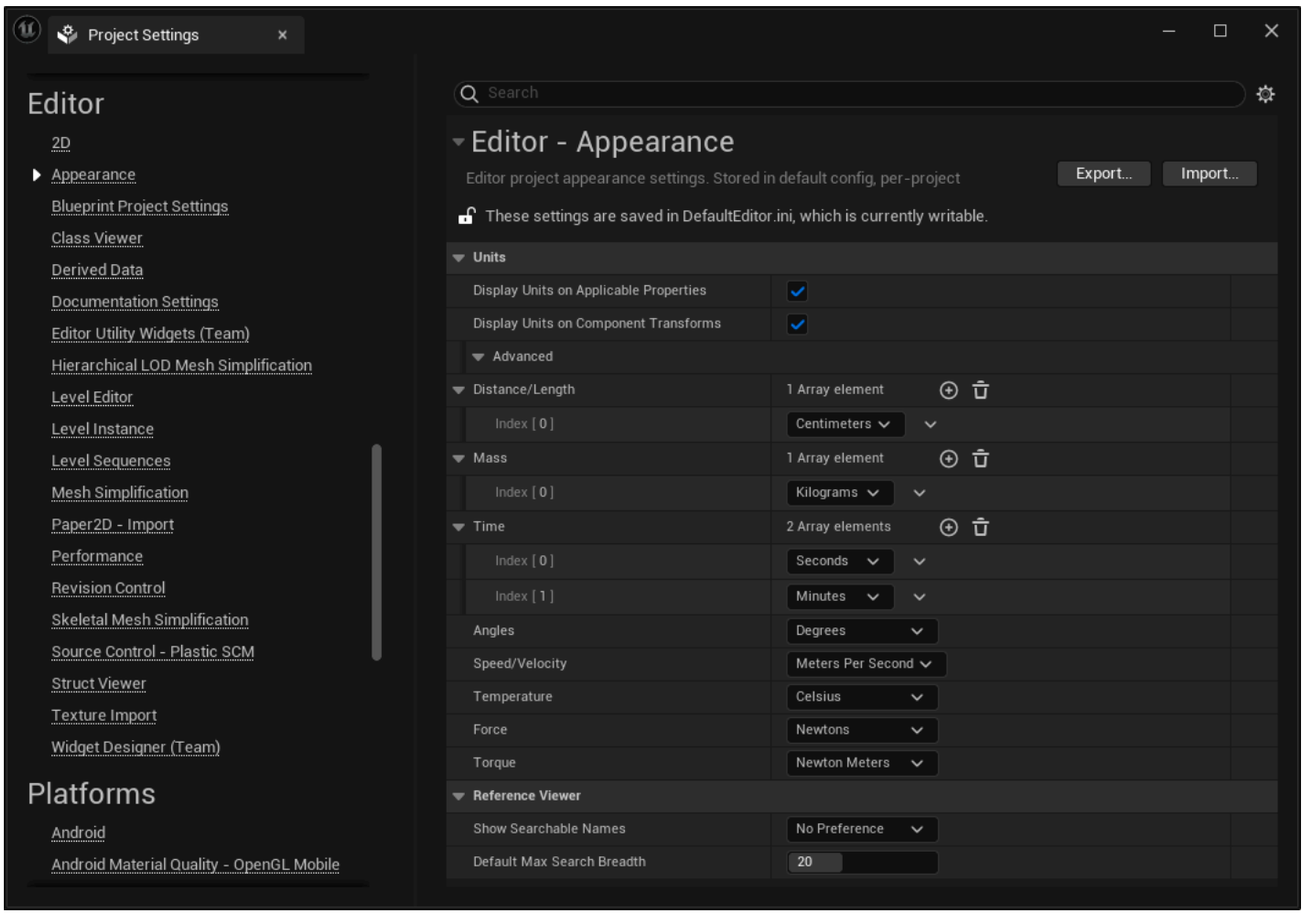
For more information about all units available in UE, see the Available Units section below.

Change Default Units

You can change the units for any of these quantities in your project in the Unreal Editor. To change these units, follow these steps:

1. From the menu bar, select **Edit > Project Settings...** This opens a new **Project Settings** window or tab.

2. Navigate to **Editor > Appearance**.
3. Expand the category under **Units > Advanced**.
4. You should now see all the quantities of measurement along with their units. To change a quantity, select a new unit from the dropdown menu located next to the quantity you wish to change.



View or change units in Unreal Editor.

> Distance/Length, Mass, and Time can use compound units.

Available Units

The following sections contain lists of all units of measurement available in UE, organized by measured quantity:

Distance and Length

Unit	Abbreviation
SI	
Micrometers	µm
Millimeters	mm

Unit	Abbreviation
Centimeters	cm
Meters	m
Kilometers	km
Imperial	
Inches	in
Feet	ft
Yards	yd
Miles	mi
Lightyear	ly

Velocity and Speed

Unit	Abbreviation
SI	
Centimeters Per Second	cm/s
Meters Per Second	m/s
Kilometers Per Second	km/s
Imperial	
Miles Per Hour	mph

Acceleration

Unit	Abbreviation
Centimeters Per Second Squared	cm/s^2
Meters Per Second Squared	m/s^2

Angles

Unit	Abbreviation
Degrees	° , deg
Radians	rad

Angular Velocity

Unit	Abbreviation
Degrees Per Second	deg/s
Radians Per Second	rad/s

Temperature

Unit	Abbreviation
Temperature - SI	
Celsius	C
Kelvin	K
Temperature - Imperial	
Farenheit	F

Mass

Unit	Abbreviation
Mass - SI	
Micrograms	µg
Milligrams	mg
Grams	g
Kilograms	kg

Unit	Abbreviation
Metric Tons	t, Mg
Mass - Imperial	
Ounces	oz
Pounds	lb
Stones	st

Density

Unit	Abbreviation
Density - SI	
Grams Per Cubic Centimeter	g/cm^3
Grams Per Cubic Meter	g/m^3
Kilograms Per Cubic Centimeter	kg/cm^3
Kilograms Per Cubic Meter	kg/m^3

Force

Unit	Abbreviation	In Base Units
Force - SI		
Newtons	N	$1\ N = 1\ kg \bullet m / s^2$
Kilograms Force	kgf	$1\ kgf = 9.80665\ kg \bullet m / s^2$
Kilogram Centimeters Per Second Squared	$kg \bullet cm / s^2$	
Force - Imperial		
Pounds Force	lbf	$1\ lbf = 32.174049\ lb \bullet ft / s^2$

Torque

Unit	Abbreviation	In Base Units
Torque - SI		
Newton Meters	N·m	1 N·m = 1 kg • m^2 / s^2
Kilogram Centimeters Squared Per Second Squared	kg • cm^2 / s^2	

Momentum

Unit	Abbreviation	In Base Units
Momentum - SI		
Newton Seconds	N·s	1 N • s = 1 kg • m / s

Frequency

Unit	Abbreviation	In Base Units
Frequency - SI		
Hertz	Hz	1 Hz = 1 s^{-1}
Kilohertz	kHz	
Megahertz	MHz	
Gigahertz	GHz	
Revolutions Per Minute	rpm	1 rpm = 1/60 s^{-1}

Pixel Density

Unit	Abbreviation
Pixels Per Inch	PPI

Digital Information

Unit	Abbreviation
Byte	B
Kilobyte	kB
Megabyte	MB
Gigabyte	GB
Terabyte	TB

Luminous Flux

Unit	Abbreviation
Lumens	lm

Luminous Intensity

Unit	Abbreviation
Candela	cd

Illuminance

Unit	Abbreviation	In Base Units
Lux	lx	1 lx = 1 lm/m^2

Luminance

Unit	Abbreviation
Candela Per Meter 2	cd/m^2

Time

Unit	Abbreviation
Nanoseconds	ns

Unit	Abbreviation
Microseconds	µs
Milliseconds	ms
Seconds	s
Minutes	min
Hours	hr
Days	d
Months	mo
Years	yr

Pressure

Unit	Abbreviation	In Base Units
Pascals	Pa	$1\ Pa = 1\ kg / m \bullet s^2$
Kilo Pascals	KPa	
Mega Pascals	MPa	
Giga Pascals	GPa	

Other Units

Unit	Abbreviation	Notes
Exposure Value	EV	Describes how much light is in a scene.
Percentage	%	Numerical value between 0 and 100.
Multiplier		Unitless quantity that represents multiples of some base quantity.
Unspecified		No specified units.

More Information

For more information about coordinate systems, see the following resources:

- The International System of Units