

Tables

Table 1 Units with special names and symbols¹

ALL VALUES DECIMAL

Unit Category		Dimension	The Universal Unit Systems			
			with the Rydberg constant(u)		Harmonic System (h)	
Coherent	base units that are not natural units	length	m_u	272.102883 mm	m_h or hm^2	272.352206 mm
		time	s_u	390.267520 ms	s_h or nc	390.625115 ms
		energy	J_u	64.143274 mJ	J_h	64.084555 mJ
		temperature ³	K_u	58.441061 μK	K_h	58.387561 μK
	base units that are natural units	plane angle	rad	$(2/\pi) \arcsin(1)$		
		logarithm	neper	$\log(e)$		
		amount of substance	mol_n or N_A^{-1}	$mol / 6.022140857 \times 10^{23}$		
		impedance	Ω_n or Z_P	$29.9792458 \Omega (=1 sr/(\epsilon_0 c_0)^4, \text{ is called 'nohm'})$		
	derived units of electromagnetic quantities	charge	C_u	28.896578 mC		
		electric current	A_u	74.043000 mA	A_h	73.975218 mA
		field strength	E_u ⁵	272.113986 mA/m	E_h	271.616004 mA/m
		flux density	G_u ⁵	390.283444 mC/m ²	G_h	389.569207 mC/m ²
	derived units of dynamical	mass	g_u	131.950080 g	g_h or $\ell\ell$	131.829287 g
		power	W_u	164.357194 mW	W_h	164.056412 mW

¹ Please see also <http://www.asahi-net.or.jp/~dd6t-sg/univunit-e/units.pdf> and <https://www.tapataalk.com/groups/dozenonline/the-universal-unit-system-and-its-notaions-t371.html#p4080904> for details. A web-based unit converter is available at <http://hosi.org:8080/cgi-bin/conv.cgi>. This converter also teaches us the representation of units that belong to various unit systems.

² 'harmon(hm)', 'nic(nc)', 'looloh($\ell\ell$)', and 'nohm(Ω_n)' constitutes a quartet. These are the alias for common use.

³ The unit of thermodynamic temperature has been changed. The new unit is one-1,0000;th of the old unit in the paper <http://dozenal.com> along with the introduction of the Earth local extension.

⁴ If we adopt the elementary charge as one of the definition constants, Ω_u is used in substitution for Ω_n .

⁵ The unit symbol E(\AA sted) and G(Gau β) are associated with the units of CGS unit system. In this paper, we adopt the metric unit names named after the scientists' name as it is. However, an alternative proposal to replace them with the names of the goddesses with the same initials have (i.e., Joule \rightarrow Juno, Watt \rightarrow Walküre, Newton \rightarrow Nereide, Pascal \rightarrow Polymnia, Coulomb \rightarrow Clio, Ampere \rightarrow Aoide, \AA sted \rightarrow Erato, Gau β \rightarrow Gaea, Kelvin \rightarrow Kor \bar{e}) also been proposed.

	quantities	force	N_u	235.731697 mN	N_h	235.300297 mN
		Pressure	P_u	3.183843 Pa	P_h	3.172201 Pa
Non-coherent	defining constants	wave number	R_∞	10,973,731.568508/m (is called ‘Rydberg’)		
		velocity	c_0	299,792,458 m/s (defined, and is called ‘light’)		
		action	\hbar	$1.054571800 \times 10^{-34} \text{ J s}$ (is called ‘quantum’)		
		heat capacity	k_B	$1.38064852 \times 10^{-23} \text{ J/K}$ (is called ‘Boltzmann’)		
Non-coherent	supplementary constants	the total solid angle of a hypersphere	Ω_k	$\frac{2\pi^{\frac{k+1}{2}}}{\Gamma(\frac{k+1}{2})} \text{ rad}^k$ $k=0,1,2$ $\Omega_0=2$ $\Omega_1=2\pi \text{ rad}$ (cycle) $\Omega_2=4\pi \text{ sr}$ (turn)		
		logarithm of an integer	f_k	$\log(2^k)$ $k=1(\text{bit}), d(\text{figure}), 4(\text{nibble}), 8(\text{byte}), \dots$ $d=\log_2(12.)$		
		amount of substance	mol_u	132.007618 mol ($=12.24 / N_A$)		
		elementary charge	e	$1.6021766208 \times 10^{-19} \text{ C}$ $(=\sqrt{\frac{\alpha \hbar}{\Omega_n}})$		

Table 2 Physical, material and astronomical constants⁶

ALL VALUES DOZENAL

Constant Symbols and Name (UNDERLINE INDICATES CONSTANT MAINTAINS SAME VALUE BETWEEN SYSTEMS u AND h)		Constant Value expressed by the Universal Unit Systems		Expone nt N of $\times 10^N$	Unit Symbol (u and h suffixes omitted)
		with the Rydberg constant (u)	Harmonic System (h)		
R_∞	Rydberg constant	1	1;00170000	6;	Ω_1/m
c_0	<u>the speed of light in vacuum</u>	1		8;	m/s
\hbar	<u>quantum of action</u>	1		-26;	J s
k_B	<u>Boltzmann constant</u>	1		-20;	J/K
N_A	<u>Avogadro constant</u>	1		20;	mol^{-1}
R	<u>gas constant</u>	1		0;	J/(mol K)
u	unified atomic mass unit	1;0009061	1;0024073	-20;	g^{-7}
a_B	Bohr Radius	1;005E85686	1;00447X740	-9;	m
α	<u>fine structure constant</u>	1;07399405		-2;	-
e	<u>elementary charge</u>	1;0374439E		-14;	C

⁶ If CODATA (2014) values are required, see <http://physics.nist.gov/cuu/Constants/index.html> .

⁷ Because g_u is approximately 100^{10} ; u , I add alias name ‘looloh’ (lú:loo/əu) to g_h .

m_e	electron mass	0;E469222	0;E48324X	-23;	g
σ	<u>Stefan-Boltzmann constant</u>	1;E82E28		-1E;	W/(m ² K ⁴)
m_G	gravitic meter ($\sqrt{2E}; l_P$)	1;0018	1;0001	-27;	m
l_P	Planck length	2;0445	2;0413	-28;	m
F_P	Planck force ($\hbar c_0 / l_P^2$)	2;XE23	2;XEE5($\neq 2;E$) ⁸	35;	N
G	Newtonian constant of gravitation (c_0^4 / F_P)	4;1574	4;1463	-X;	(m ⁴ /s ⁴)/N
θ_W	<u>weak mixing angle</u>	E;304		-2;	Ω_1
V_m	molar volume of an ideal gas under standard conditions	1;02X468	1;025664	2;	m ³ /mol
	black-body radiation at the ice point	0;EX2462	0;EX8780	2;	W/m ²
	maximum density of water	1;088184	1;092X47 ($\neq 15;14;$)	2;	g/m ³
	density of ice at the ice point	0;E7E9	0;E85E	2;	g/m ³
	specific heat of water ⁹	0;6052	0;6045 ($\neq 1/2$)	0;	J/(g K)
	surface tension of water at 25°C	0;EE68	0;EEE4	-1;	N/m
atm	standard atmosphere	1;65008E	1;659967 ($\neq 1;66$)	4;	P
g_n	standard gravitational acceleration	5;5X54XE9	5;5E21264 ($\neq E;2$)	0;	m/s ²
r_E	gravitational radius of Earth	2;41E8982X13	2;4180306534	-2;	m
au	astronomical unit	8;X67575537	8;X55509X33	X;	m
	<u>astronomical unit</u>	9;E91731X53		-3;	$c_0 s_E$ day

Table 3 Power prefixes

name	symbol	Plain text	value	name	symbol	Plain text	value
dirac ¹⁰		D	10;				
hyper		H	10;⁴	sub		s	10;⁻⁴
cosmic	+	_+	10;⁸(=U)	atomic	-	_-	U⁻¹
di-cosmic	2+	_2+	U ²	di-atomic	2-	_2-	U ⁻²
ter-cosmic	3+	_3+	U ³	ter-atomic	3-	_3-	U ⁻³
tetra-cosmic	4+	_4+	U ⁴	tetra-atomic	4-	_4-	U ⁻⁴
penta-cosmic	5+	_5+	U ⁵	penta-atomic	5-	_5-	U ⁻⁵
hexa-cosmic	6+	_6+	U ⁶	hexa-atomic	6-	_6-	U ⁻⁶

⁸ If this is expressed as 2;E, the error from CODATA (2014) becomes -2;53(-2.44) times standard deviation.

⁹ This corresponds to the definition of the thermodynamic calorie.

¹⁰ ‘dirac’ is only used when expressing the unit of the Gravitic System with the Harmonic System. (i.e., gravitic meter = tetra-atomic dirac harmon, gravitic second = penta-atomic dirac nic, gravitic gram = atomic dirac looloh)

hepta-cosmic	7_+	$_{-7}$	U^7	hepta-atomic	7_-	$_{-7}$	U^{-7}
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Table 4 Examples of natural scale quantity representation ¹¹

quantity	symbol	value	refer to
2E; penta-cosmic Newton	2E; ₅₊ N	2E; $\times U^5$ [harmonic] Newton	the Planck force
6;di-cosmic nic	6; ₂₊ nc	6; $\times U^2$ [harmoni]nic[second]	the age of the universe
cosmic hyper bit [Boltzmann]	+Hf ₁ [k_B]	$U^{1@4}\log 2^1$ [Boltzmann]	1.01 Tera Byte(=2 ⁴³ .bit)
cosmic harmon	+hm	U^1 harmon[ic meter]	the speed of light in vacuum
unino atomic harmon	0;1.hm	$U^{-1@1}$ harmon[ic meter]	the Bohr radius
di-atomic Coulomb	₂ .C	U^{-2} [universal] Coulomb	the elementary charge
di-atomic effective Watt ¹²	₂ .W _e	U^{-2} [harmonic]effective Watt	a photon power (540.THz)
ter-atomic looloh	₃ .ℓℓ	U^{-3} looloh	the unified atomic mass unit
2; tetra-atomic harmon	2; ₄ .hm	2; $\times U^{-4}$ harmon[ic meter]	the Planck length

Table 5 The Earth local extension for the Harmonic Universal Unit System

category		name / description	symbol	plain text	value				
Non-coherent calendar time	units	clock	c (terno clock→tc)		2 ⁻⁷ day				
		day	d (terno day→td)		1 Ω ₁				
					‘day’ corresponds to 86,400. s at the beginning of year 1900.				
		year	y or a		365.days 31.clocks				
		span (or octal century)	span or “”		64. years				
Non-coherent unit and constants		difference between thermodynamic temperature and 118,2354; K _h (≡ -74.36°C) <div><div>approximate formula</div><div><div>°C = $\frac{1E}{17};$ °H-62;4</div><div>°H = $\frac{17}{1E};$ °C + 51;5</div></div></div>	°H	deg H	1,0000; K _h (≡1.210724 K ÷ 23./19. K)				
					100; 0000°H is 99.9839 °C				
					78;0000°H is 37.0262°C				
					61;0000°H is 14.0224°C				
					51;5026°H is 0.0000°C				
					99.9839 °C is the boiling point of water at the standard atmosphere.				
					supple-mentary constants	the gravitational acceleration of the Earth (is called ‘gee [of Earth] ’)	g _E	g_E or gee	5;611X615 harmon/nic ² g _E is defined as c ₀ ² r _E (m _E rad) ⁻²
						the rotation period of the Earth (is called ‘[Earth] solar’) at the beginning of year 1900.	s _E	s_E or solar	0;EEEEEE153565 nic/terno clock (This should be ‘coordinated’.)
						the meridian length of the Earth (is called ‘[Earth] meridian’)	m _E	m_E or meridian	4124,216E; harmon/Ω ₁

¹¹ The part enclosed with‘[]’ can be omitted in Table 4 and Table 5.

¹² Units for quantity weighted by dimensionless human sensitivity are indicated by ‘effective’.

W_e corresponds to 1;di-cosmic photon energy(540.THz) / nic and 115.667210 lumen.

