

Tables

Table 1 Units with special names and symbols¹

ALL VALUES DECIMAL

Unit Category		Dimension	The Universal Unit Systems					
			with the Rydberg constant(u)			with the GCD Unit(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/π) arc sin(1)				
		logarithm	neper	log(e)				
		amount of substance	mol _n or N _A ⁻¹	mol / 6.022140857 × 10. ²³ .				
		impedance	Ω _n , Z _P or nh	29.9792458 Ω (=1sr/(ε ₀ c ₀) strict ⁴ , 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	O _u ⁵	272.113986	mA/m	O _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 quantities	mass	g _u	131.950080	g	g _h or ll	131.829287	g
		power	W _u	164.357194	mW	W _h	164.056412	mW
		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	ħ	1.054571800 × 10. ⁻³⁴ .Js (is called 'quantum')				
		heat capacity	k _B	1.38064852 × 10. ⁻²³ .J/K (is called 'Boltzmann')				

¹ Please see also <http://www.asahi-net.or.jp/~dd6t-sg/univunit-e/units.pdf> and <http://z13.invisionfree.com/DozensOnline/index.php?showtopic=371&st=6> for details.

A web based unit converter is available at <http://hosi.org/cgi-bin/conv.cgi>.

² 'harmon', 'nic', 'looloh', and 'nohm' constitutes a quartet. These are 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 definition constants, Ω_u is used in substitution for Ω_n.

⁵ The unit symbol O(Ørsted) and G(Gauß) are associated with the units of CGS unit system.

Non coherent	supplementary constants	total solid angle of a hypersphere	Ω_k	$\frac{2\pi^{\frac{k+1}{2}}}{\Gamma(\frac{k+1}{2})} \text{ rad}^k$	$k=0,1,2$ $\Omega_0=2$ $\Omega_1=2\pi \text{ rad}$ (circle, cycle) $\Omega_2=4\pi \text{ sr}$ (sphere, turn)
		logarithm of an integer	f_k	$\log(2^k)$	$k=1(\text{bit}), d(\text{figure}), 4(\text{nibble}), 8(\text{byte}),$ $d=\log_2(12.)$
		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, e AND h)		Constant Value expressed by the Universal Unit Systems		Exponent N of $\times 10;^N$	Unit Symbol (u and h suffixes omitted)
		with the Rydberg constant (u)	with the GCD Unit (h)		
R_∞	Rydberg constant	1	1;00170000	6;	Ω_1/m
c_0	<u>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
m_e	electron mass	0;E469222	0;E48324X	-23;	g
σ	<u>Stefan-Boltzmann constant</u>	1;E82E28		-1E;	$\text{W}/(\text{m}^2\text{K}^4)$
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

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' ($l\acute{u}:lou/\acute{o}u$) to g_h .

⁸ If this is expressed as 2;E, the error from CODATA (2014) becomes -2;53(-2.44) times standard deviation. The Gravitic Universal Unit System can be derived from 35G (m_G), c_0 , \hbar and k_B .

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 ($\div 15;14;$)	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 ($\div 1/2$)	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 ($\div 1;66$)	4;	P
g_n	standard gravitational acceleration	5;5X54XE9	5;5E21264 ($\div E;2$)	0;	m/s ²
r_E	gravitational radius of the 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		D	10; ¹	dour		d	10; ⁻¹
hecty		H	10; ²	centy		c	10; ⁻²
kily		K	10; ³	milly		m	10; ⁻³
super		S	10;⁴	sub		s	10;⁻⁴
cosmic	+	_+	10; ⁸ (=M)	atomic	-	_-	M⁻¹
by-cosmic	2+	_2+	M ²	by-atomic	2-	_2-	M ⁻²
try-cosmic	3+	_3+	M ³	try-atomic	3-	_3-	M ⁻³
quadry-cosmic	4+	_4+	M ⁴	quadry-atomic	4-	_4-	M ⁻⁴
penty-cosmic	5+	_5+	M ⁵	penty-atomic	5-	_5-	M ⁻⁵
hexy-cosmic	6+	_6+	M ⁶	hexy-atomic	6-	_6-	M ⁻⁶
septy-cosmic	7+	_7+	M ⁷	septy-atomic	7-	_7-	M ⁻⁷
...

A prefix with no corresponding unit is treated as a noun form, which means the abbreviation of the corresponding plain angle unit prefixed to Ω_1 . The above-proposed is an explanation of the prefixes put on the unit. As for number counting, I propose duodecimal myriad system replacing ten/hundred with dozen/gross.¹⁰ ‘y’ is pronounced [aɪ] and is treated as a duodecimal context mark. The notation ‘M(=10;⁸) to the power of octal number’ is used for exponential expression of big pure numbers.

⁹ This corresponds to the definition of thermodynamic calorie.

¹⁰ See <http://www.asahi-net.or.jp/~dd6t-sg/univunit-e/myriad.pdf>.

Table 4 Examples of natural scale quantity representation ¹¹

quantity	symbol	plain text	value	refer to
2E; penty-cosmic Newton	2E;N _{5+h}	2E;N_5+h	2E;×M ⁵ [harmonic] Newton	the Planck force
6;by-cosmic second	6;s _{2+h}	6;s_2+h	6;×M ² [harmonic][second]	the age of the universe
cosmic super bit [Boltzmann]	Sf ₊₁ [k _B]	Sf_+1 [k_B]	M ^{1@4} log2 ¹ [Boltzmann]	1.01 Tera Byte(=2 ⁴³ .bit)
cosmic meter	m _{+h}	m_+h	M ¹ harmon[ic meter]	the speed of light in vacuum
atomic dour meter	dm _h	dm_-h	M ^{-1@1} harmon[ic meter]	the Bohr radius
by-atomic Coulomb	C _{2-u}	C_2-u	M ⁻² [universal] Coulomb	the elementary charge
by-atomic sensible Watt ¹²	W _{2-sen[h]}	W_2-sen[h]	M ⁻² [harmonic]sensible Watt	a photon energy (540.THz)
try-atomic gram	g _{3-h}	g_3-h	M ⁻³ [harmonic] gram	the unified atomic mass unit
2; quadry-atomic meter	2;m _{4-h}	2;m_4-h	2;×M ⁻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	prefix	septi	sep or “,”		2 ⁻⁷ (seventh power of two inversed)
	units	day	day		1 Ω ₁
					‘day’ corresponds to 86,400. s at the beginning of year 1900.
		year	y or a		265’27 days (365.+ 31./128.)days
Non coherent unit and constants		span or octal century	span or “^”		64. years
		difference between thermodynamic temperature and 118,2354; K _h (≐ -74.36°C) <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <div style="text-align: center;">approximate formula</div> <div style="display: flex; justify-content: space-around;"> <div>°C = $\frac{1E;}{17;}$ °S - 62;4</div> <div>°S = $\frac{17;}{1E;}$ °C + 51;5</div> </div> </div>	°S	deg S	1,0000; K _h (≐1.210724 K ÷ 23./19. K)
					100; 0000°S is 99.9839 °C
					78;0000°S is 37.0262°C
					61;0000°S is 14.0224°C
					51;5026°S 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 m _h /s _h 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 s _h /septi milly day (This should be ‘coordinated’.)
		the meridian length of the Earth (is called ‘[Earth] meridian’)	m _E	m_E or meridian	4124,216E; m _h /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 ‘sensible’.

W_{sen} corresponds to 1;by-cosmic photon (540.THz) / harmonic second and 115.667210 lumen.