

# Tables

**Table 1 Units with special names and symbols<sup>1</sup>**

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 <sup>3</sup>	$K_u$	58.441061 $\mu$ K	$K_h$	58.387561 $\mu$ K	
	base units that are natural units	plane angle	rad	$(2/\pi) \arcsin(1)$			
		logarithm	neper	$\log(e)$			
		amount of substance	$mol_h$ or $N_A^{-1}$	$mol / 6.022140857 \times 10^{23}$ .			
		impedance	$\Omega_n, Z_p$ or $nh$	$29.9792458 \Omega (=1sr/(\epsilon_0 c_0) \text{ strict }^4, \text{ is called 'nohm'})$			
	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	$O_u^5$	272.113986 mA/m	$O_h$	271.616004 mA/m	
		flux density	$G_u^5$	390.283444 mC/m <sup>2</sup>	$G_h$	389.569207 mC/m <sup>2</sup>	
	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	$R_\infty$	10,973,731.568508 /m ( is called 'Rydberg')			
		velocity	$c_0$	299,792,458 m/s (defined, and is called 'light')			
		action	$\hbar$	$1.054571800 \times 10^{-34} J_s$ ( is called 'quantum')			
		heat capacity	$k_B$	$1.38064852 \times 10^{-23} J/K$ ( is called 'Boltzmann')			

<sup>1</sup> 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:8080/cgi-bin/conv.cgi>.

<sup>2</sup> 'harmon(hm)', 'nic(nc)', 'looloh(ll)', and 'nohm(nh)' constitutes a quartet. These are alias for common use.

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

<sup>4</sup> If we adopt the elementary charge as one of definition constants,  $\Omega_u$  is used in substitution for  $\Omega_n$ .

<sup>5</sup> 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	$\Omega_k$	$\frac{2\pi^{\frac{k+1}{2}}}{\Gamma(\frac{k+1}{2})} \text{ rad}^k$	$k=0,1,2$ $\Omega_0=2$ $\Omega_1=2\pi \text{ rad}$ (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	$\text{mol}_u$	132.007618 mol	$(=12.^{24}/N_A)$
		elementary charge	$e$	$1.6021766208 \times 10^{-19} \text{ C}$	$(= \sqrt{\frac{ah}{\Omega_n}})$

**Table 2 Physical, material and astronomical constants<sup>6</sup>**

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)		
$R_\infty$	<u>Rydberg constant</u>	1	1;00170000	6;	$\Omega_1/\text{m}$
$c_0$	<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;	$\text{mol}^{-1}$
$R$	<u>gas constant</u>	1		0;	J/(mol K)
$u$	unified atomic mass unit	1;0009061	1;0024073	-20;	$\text{g}^7$
$a_B$	Bohr Radius	1;005E85686	1;00447X740	-9;	m
$\alpha$	<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
$\sigma$	<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( $\neq 2;E$ ) <sup>8</sup>	35;	N

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

<sup>7</sup> Because  $g_u$  is approximately 100;<sup>10</sup>; u, I add alias name 'looloh'(lú:lou/əu) to  $g_h$ .

<sup>8</sup> 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 ( $m_G$ ),  $c_0$ ,  $\hbar$ ,  $k_B$  and  $Z_P$  .

$G$	Newtonian constant of gravitation ( $c_0^4/F_P$ )	4;1574	4;1463	-X;	$(m^4/s^4)/N$
$\theta_w$	<u>weak mixing angle</u>	E;304		-2;	$\Omega_1$
$V_m$	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 <sup>9</sup>	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 the Earth	2;41E8982X13	2;4180306534	-2;	m
au	astronomical unit	8;X67575537	8;X55509X33	X;	m
	<u>astronomical unit</u>	9;E91731X53		-3;	$c_0 s_E \text{ day}$

**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	$10;^{-3}$
<b>super</b>		<b>S</b>	<b><math>10;^4</math></b>	<b>sub</b>		<b>s</b>	<b><math>10;^{-4}</math></b>
<b>cosmic</b>	+	_+	$10;^{8(=M)}$	<b>atomic</b>	-	_-	$M^{-1}$
di-cosmic	2+	_2+	$M^2$	di-atomic	2-	_2-	$M^{-2}$
tri-cosmic	3+	_3+	$M^3$	tri-atomic	3-	_3-	$M^{-3}$
tetra-cosmic	4+	_4+	$M^4$	tetra-atomic	4-	_4-	$M^{-4}$
penta-cosmic	5+	_5+	$M^5$	penta-atomic	5-	_5-	$M^{-5}$
hexa-cosmic	6+	_6+	$M^6$	hexa-atomic	6-	_6-	$M^{-6}$
hepta-cosmic	7+	_7+	$M^7$	hepta-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  $\Omega_1$ . 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.<sup>10</sup> ‘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.

<sup>9</sup> This corresponds to the definition of thermodynamic calorie.

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

**Table 4 Examples of natural scale quantity representation** <sup>11</sup>

quantity	symbol	plain text	value	refer to
2E; penta-cosmic Newton	2E;N <sub>5+h</sub>	2E;N_5+h	2E;×M <sup>5</sup> [harmonic] Newton	the Planck force
6;di-cosmic second	6;s <sub>2+h</sub>	6;s_2+h	6;×M <sup>2</sup> [harmonic][second]	the age of the universe
cosmic super bit [Boltzmann]	Sf <sub>+1</sub> [k <sub>B</sub> ]	Sf_+1 [k_B]	M <sup>1@4</sup> log2 <sup>1</sup> [Boltzmann]	1.01 Tera Byte(=2 <sup>43</sup> .bit)
cosmic meter	m <sub>+h</sub>	m_+h	M <sup>1</sup> harmon[ic meter]	the speed of light in vacuum
atomic dour meter	dm <sub>h</sub>	dm_-h	M <sup>-1@1</sup> harmon[ic meter]	the Bohr radius
di-atomic Coulomb	C <sub>2-u</sub>	C_2-u	M <sup>-2</sup> [universal] Coulomb	the elementary charge
di-atomic effective Watt <sup>12</sup>	W <sub>2-e[h]</sub>	W_2-e[h]	M <sup>-2</sup> [harmonic]effective Watt	a photon energy (540.THz)
tri-atomic gram	g <sub>3-h</sub>	g_3-h	M <sup>-3</sup> [harmonic] gram	the unified atomic mass unit
2; tetra-atomic meter	2;m <sub>4-h</sub>	2;m_4-h	2;×M <sup>-4</sup> 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 <sup>-7</sup> ( <b>seventh power of two inversed</b> )											
	units	day		day		1 Ω <sub>1</sub> ‘day’ corresponds to 86,400. s at the beginning of year 1900.											
		year		y or a		265’27 days (365.+ 31./128. )days											
		span or octal century		span or “^ ”		64. years											
Non coherent unit and constants	difference between thermodynamic temperature and 118,2354; K <sub>h</sub> (≐ -74.36°C)		°S	deg S	1,0000; K <sub>h</sub> (≐1.210724 K ÷ 23./19. K)												
	approximate formula				<table border="1"> <tr> <td>100; 0000°S</td> <td>is</td> <td>99.9839 °C</td> </tr> <tr> <td>78;0000°S</td> <td>is</td> <td>37.0262°C</td> </tr> <tr> <td>61;0000°S</td> <td>is</td> <td>14.0224°C</td> </tr> <tr> <td>51;5026°S</td> <td>is</td> <td>0.0000°C</td> </tr> </table>	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
	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															
°C = $\frac{1E}{17}; °S - 62;4$ °S = $\frac{17}{1E}; °C + 51;5$				99.9839 °C is the boiling point of water at the standard atmosphere.													
supplementary constants	the gravitational acceleration of the Earth (is called ‘gee [of Earth] ’)		g <sub>E</sub>	g_E or gee	5;611X615 m <sub>h</sub> /s <sub>h</sub> <sup>2</sup> g <sub>E</sub> is defined as c <sub>0</sub> <sup>2</sup> r <sub>E</sub> (m <sub>E</sub> rad) <sup>-2</sup>												
	the rotation period of the Earth (is called ‘[Earth] solar’) at the beginning of year 1900.		s <sub>E</sub>	s_E or solar	0;EEEEEE153565 s <sub>h</sub> /septi milly day (This should be ‘coordinated’.)												
	the meridian length of the Earth (is called ‘[Earth] meridian’)		m <sub>E</sub>	m_E or meridian	4124,216E; m <sub>h</sub> /Ω <sub>1</sub>												

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

<sup>12</sup> Units for quantity weighted by dimensionless human sensitivity are indicated by ‘effective’.

W<sub>e</sub> corresponds to 1;di-cosmic photon (540.THz) / harmonic second and 115.667210 lumen.