SECTION 1
STYLE GUIDE

This section of the Writer's Guide is intended to establish a basic writing style that is clear, concise, and consistent in presentation of information. Technical information requires more stringent standardization than is common in general usage. Therefore, generating a deliverable to accommodate an expeditious technical review requires avoiding confusing or ambiguous statements and unnecessarily verbose descriptions.

1.1 WRITING STYLE APPROACH

Avoid use of colloquialisms in writing. Terms like "putting your best foot forward" or "cutting to the quick" can be misunderstood by international customers and lead to confusion. Conversational English is inappropriate for formal business and technical writing. Keep language clear and precise.

The following guidelines will help improve your writing and allow us to present a standardized "look and feel" in deliverables to customers.

Great Content, Economically Delivered

The most effective technical writing is taut, information-rich material that easily conveys the most important points. Here are some ways you can achieve this.

1. Try to restrict acronym use to the five to ten most important acronyms in a subject area and write out the secondary or peripheral terms.

2. Always write in a simple and direct style by avoiding:

   - Wordiness (examples of wordiness appear in Table 1.1-1)
   - Strings of adjectives
   - Puffery (Our company is uniquely qualified ...)
   - Phrases and words that obscure the central meaning, for example:

     Wrong: The system is designed such that active components are capable of being tested during plant operation.

     Right: The active components can be tested during plant operation.

Table 1.1-1. Examples of Wordiness

Verbose-ese	Equivalent
by means of	by
connect together	connect, join
consider all factors carefully	consider
due to the fact that	because
for the purpose of	for, to
furthermore it would seem	and
give proper consideration to	consider
has a tendency to	tends
in addition to	also
initiate action	start
in order to	to
in spite of the fact that	though / although
in the case in which	when
in the event that	if
in this instance, however	but
is capable of / has the ability to	can
situated	placed, sits, lies
termination	end
used to fulfill	needed
utilize	use
warrant the use of	must or should have, require

3. Make sure that your graphics clearly support information in the text. Have you chosen the most illustrative graphics in each section? Is there a difficult passage of text that you could elucidate with a figure?

Verb Tenses

As a general rule, use the present tense. For example, "our design includes" (not "will include" or "included"); "our Project Team is ready" (not "will be ready"). However, use future tense when describing project activities still to be performed. Also, use future tense in outline revisions when describing what completed sections will contain.

Use past tense when discussing completed project activities, observations from walkdowns, and the results of studies and tests already performed. "The controls analysis showed that…"

Active versus Passive Voice

Use active voice to raise impact. Examples include:

Passive: Procedures were initiated to reduce plant accidents.
Active: The company initiated procedures to reduce plant accidents.

Passive voice is acceptable, and is used often in customer documents, in a particular situation – when the object in the sentence must have emphasis over the subject.

Example: The Quality Plan must be followed by all subcontractors.

Additional Guidance

1. Avoid pathetic fallacy, that is, giving inanimate objects actions or responsibilities. Examples include:

   - The Management Plan ensures . . . (a plan cannot ensure)
   - The program is enjoying success . . . (a program cannot enjoy)
   - The site must consider . . . (a site cannot consider)

2. The word "comprise" means to include or to be made up of. A large entity cannot "be comprised of" smaller things. It comprises them.

3. Be assertive in your writing. Examples include:

    - Use “will” not “may,” “plan to,” or “would.” Use “plan” only as a noun or in the strict sense of planning and scheduling.

    - Use “shall” only in discussing project or regulatory requirements.

    - Use “ensure,” not “insure.” “Assure” is not as forceful as “ensure.” However, use “assure” in quality assurance discussions.

4. Avoid a tutorial writing style. “First one must . . . then one does . . . and after these steps, one logically progresses to. . .”

5. Be consistent with terminology. Use terms as agreed with the customer in commercial agreements and elsewhere. Defer to customer terminology, not ours.

1.2 ABBREVIATIONS, ACRONYMS, TRADEMARKS, AND SYMBOLS

Abbreviations, acronyms, trademarks, and symbols should be consistent throughout the deliverables and consistent with generally accepted usage. Acronyms should be used sparingly in the text, particularly in international projects. Acronyms are used in parentheses following the spelled-out form in the first reference.

A team may produce a list of the most common acronyms for their project.

Appendix A contains the most commonly used trademark references. Initial uses of trademarked names appear with “®” or “™” as appropriate.

Appendix B provides a list of company-approved abbreviations and symbols.

Use only those abbreviations, acronyms, or symbols that are common in our industry and that are defined.

When using “a” or “an” before an abbreviation or acronym, make sure that the article agrees with the initial sound of the term as it is normally pronounced. The article “a” precedes a consonant sound, and “an” precedes a vowel sound.

In text, use the word form of common abbreviations such as percent, degree, number, equal to, plus, minus, less than, greater than, and the like. Symbols should be used in the following cases:

- For temperatures given with a numerical value, use the degree symbol (32°C, etc.).
- For equations, either written in-line with the text or displayed (standing alone), use symbols.
- In graphics (figures and tables), use symbols if space is a problem.

The use of symbols in text should be avoided in most cases. Write out phrases to ensure clarity. For example, use “greater than” instead of “>.” The following generally accepted symbols may be used:

- Delta Δ
- Degrees Celsius °C
- Degrees Fahrenheit °F
- Plus or minus ±

The following symbols should be avoided, but may be used when necessary, such as in tables and figures, to save space:

- Equal to =
- Approximately ~
- Greater than >
- Less than <
- Greater than or equal to ≥
- Less than or equal to ≤
- Inches "
- Feet '
- Number #
- Plus +
- Minus -
- And &

1.3 PUNCTUATION

Standard rules of English (as defined by Strunk and White[1]) for grammar and punctuation should be used.

Avoid long sentences; use semicolons (;) only in short sentences. Also, avoid using contractions because they often cause confusion.

Use the final comma in a series (e.g., apples, oranges, and pears).

Place periods after the following:

- Sentences
- Between heading digits (e.g., 1.1.1) and after lower-level step letters and numbers (e.g., a., 1.)

Place colons after statements that are followed by lists, such as lists of individual components.

- Bullets (•) should be used in a list instead of numbers or letters when numbering serves no purpose, or no reference to specific item(s) in the list will be made.

1.4 CAPITALIZATION

The trend in most corporate and technical writing is to eliminate unnecessary capitalization. Use capitalization only as described below.

Capitalize the first letter of the following:

- Each main word in subsection headings
- First word in a sentence
- First word in each phrase used in a list
- Proper nouns, such as vendor or organization names
- Full titles of formal programs and documents
- Specific company product names

[1] Strunk, William, and E. B. White, "The Elements of Style."

Capitalize all letters in each of the following:

- Main section headings
- Acronyms, initialisms

Do not capitalize:

- Generic product and component names (for example, controller, panel, switch)
- Generic system names
- Acronym definitions (unless they belong in the above initial-cap group)

Capitalize the first letter of Government, Division, Plant, Project, etc., when referring to a specific one. Use lower case when it is only a general reference.

1.5 NUMERALS AND UNITS

Both Arabic and Roman numerals may be used in company documents. General guidelines for proper use are the following:

- Express safety class and quality group in Arabic numerals (1, 2, 3).
- Express seismic category in Roman numerals (I, II, III).
- Express electrical Class 1E in Arabic (not IE).[2]
- Express steps in a process in Arabic.

Use Arabic numerals unless specific nomenclature dictates otherwise (and with lower-case Roman numerals for table of contents, list of figures, etc.).

Avoid spelling out large numbers unless nomenclature dictates it. Spell out integers less than 10 that do not apply to a specific measurement (e.g., two procedures, 2 inches). Use commas in four-digit or larger numbers (except in hexadecimal numbers).

Be consistent in using units of measure. **European customers require metric units of measure.** Preferred presentation of measurements in European projects is: metric or SI (followed by English in parentheses).

Normally, in text, use written-out units. Exception: electrical units – V, A, Hz. Abbreviate other units in tables and where space is limited.

When a spelled-out unit of measurement is used with a quantity, use the singular or plural form of the unit of measurement based on the following criteria:

- If the quantity is the unit 1 or a fraction of 1, use the singular form of the spelled-out unit of measurement.

  Examples:
  — 0.6 meter
  — 1/32 inch
  — 1 second

- If the quantity is zero or more than the unit 1, use the plural form of the spelled-out unit of measurement.

  Examples:
  — 0 inches
  — 1.6 meters
  — 3-1/2 millimeters
  — 8 seconds

- Remember, however, that the singular form of an abbreviated unit of measurement is used also for the plural and modified forms.

  Examples:
  — 0 VDC
  — 3.5 m
  — 8 s interval

1.6 REFERENCES

There are many accepted models for writing references, each appropriate for a given class of documents (from scholarly works to popular periodicals). We present a conventional approach that has worked well for most projects.

Applying these simple rules will help us standardize reference lists.

1. The usual sequence for entering a company document in a reference list is document number, followed by the title in quotes, revision number (if applicable), then issuing unit, and date. There are subtle variations depending on the type of document.

When listing project-specific documents, follow this example.

Document number, ABC Project, "XYZ System General Requirements," Business Unit, date.

Note

It is not necessary to give the revision level of project documents unless there is a specific reason to cite an earlier revision. The most recent revision at the time of issuance applies.

2. For standards and regulatory guidance, the form is number, title in quotes, revision (if applicable), issuing body, and date (if applicable).

3. External, published works are handled as follows:

   - Author's last name, comma, first initial, comma. Additional names in normal order (first initial, last name), period.
   - Title of book, article, or paper, period.
   - Title of journal or larger work in *italics*, comma.
   - Volume and number information, if applicable, period.
   - City, colon, publishing body, (if applicable), period.
   - Date, period.

   Examples of published works:

   Adams, M. J., Y. J. Tenney, and R. W. Pew. Situation Awareness and the Cognitive Management of Complex Systems. *Human Factors*, 37, 85-104. 1995.

   Brannick, M. T., E. Salas, and C. Prince. Team Performance Assessment and Measurement. Mahway, NJ: Lawrence Erlbaum Associates. 1997.

   Cannon-Bowers, J. A. and E. Salas. Making Decisions Under Stress: Implications for Individual and Team Training. Washington, D. C.: American Psychological Association. 1998.

4. Manual titles are usually underlined.

5. The ordering of documents in the reference list should correspond to the sequence of references used in the document, so that Reference 1 is the first one used, 2 the second, and so on.

6. Reference callouts may be of two types.

   "This methodology is explained thoroughly in Reference 7…"

   OR

   "As was concluded in the Recorder Review (Ref. 2),…"

1.7 GRAPHICS

Figures, tables, photos, and charts are all considered graphics. Figures, photos, and charts will be assigned figure numbers. Tables will be assigned table numbers. When using graphics, observe the following:

- Cite all graphics in text, with corresponding numbers.

- Number in sequence by second-level section — Figure 1.1-1 is the first figure cited in Section 1.1; Table 1.1-1 is the first table cited in Section 1.1, etc. If a graphic is cited in the text of a top-level section, the numbering is 1-1, 1-2, etc.

- Capitalize the initial letter of the words "figure" and "table" when they appear with a number; otherwise, use lower case (the figure shows the difference between . . .).

1.8 EDITING CONVENTIONS

Many words and phrases can be written more than one way. Every project should use the broad list of writing conventions (preferred terms, spellings, punctuation) in this section, and define additional conventions as needed, to promote consistency among documents.

In the list, when a phrase is to be hyphenated in adjectival use as a unit modifier (um), that note accompanies the phrase. Other abbreviations in the list include (n) for noun and (v) for verb.

While this may be useful for reference, engineering authors should not spend precious time worrying about these details.

AC
air flow
Alloy 750
around-the-clock (um)
ASME Code
B.S., M.S.
backfit
backflow
backlit
backpressure
backup
best-estimate (um)
boil-off (n, um)
break-even (um)
Btu
buildup
built-in (um)
buses
bypass
carbon steel (n, um)
centerline
changeout
close-up
closeout
coauthored
common-mode (um)
constructibility
cooldown (n/um)
cooperate
cost-effective (um)
creep-down (um)
crossover
cutset
database
datalink
DC
deadman
deadweight
decision-making (um)
decision-set (um)
de-energize
diesel-generator (um)
double check (v, n, um)
driveline
E-C (engineer-constructor)
electromechanical
e-mail
employee
ensure (not insure)
entry level
Environmental, Safety, and Health
ES and H
et al.
etc.
fail-closed (um)
failover
feedback
fiber-optic (um)
flow path
flow rate
followup
foot
foreword
freestanding
front-line (um)
full-penetration (um)
full-scope (um)
full-time (um)
FY 2002
ground-level (um)
groundwater
handhole

hard-copy (um)
hard-face (um)
hard rock (um)
hard-wired
heatup (um)
high-build (um)
high-energy (um)
high-level (um)
hold-down (um)
holdup
hot-dip (um)
human-factor (um)
in-depth (um)
in-flow (um)
in-house (um)
in-leakage (um)
in-service (um)
inside diameter
in-situ (um)
in-tank (um)
interrelated
January 2002
kV
large-scale (um)
latch-locking (um)
layout
leak-off (n, um)
leaktight
leaktightness
lifetime
lift-off (n, um)
locked-closed (um)
log-normal (um)
long-lead (um)
longstanding
low-level (um)
low-pressure (um)
makeup
make-or-buy (um)
man-hours
manway
mid-size (um)
mockup
multicompany
multimillion
Navy
nil-ductility
no-load (um)
non-Class 1E
non-conformance
non-exempt
non-process
offeror
offgas
off-line (um)
off-load
offset
offsite
onboard
on-call (um)
on-line (um)
on-schedule (um)
one-half (all cases)
ongoing
onset
onsite
outside diameter
overwrite
partial-penetration (um)
pathway
percent
pinhole

post-heat
post-test
preheat
preoperational
pre-procurement
pre-service (um)
proactive
pushbutton
read-out (n, um)
real-time (um)
record-keeping (um)
remote-handled (um)
roundtable
self-sufficient (um)
set point
shear wave (um)
shutdown
sign-off (n, um)
socioeconomic
soil-structure (um)
stand-alone
standup
startup
state-of-the-art (um)
Statement of Work
subassembly
subunit
thousand
through-wall (um)
time-history (um)
time-out
Title II
topcoat
trade-off (n, um)
two-dimensional (um)
Type 304
Type A
U.S. (um)
unisolatable
United States (n)
up-front (um)
VAC
VDC
versus
videodisk
videotape
walkdown
warmup
water-reducing (um)
watertight
wave-front (um)
work-around (n, um)
work scope
workday
workstation
world-class (um)
."
±0.5
1990s

Notes:

1. Certain compound or joined words may become two words when used as a verb. Example: We will start up the process next month.
2. Certain words are hyphenated when they are adjectives (unit modifiers), but not when they stand alone. Example: The computer is off line.

APPENDIX A
COMMONLY USED TRADEMARKS

The first use of a trademark name should include "®" or "™" as appropriate. The following are the most often-used trademarks in our business as they should appear under "Acronyms and Trademarks" in the front matter.

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DEC™ is a trademark of Digital Equipment Corporation.

Diamond Plus® is a registered trademark of Mitsubishi Electronics America, Incorporated.

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Energy Star® is a U.S. registered trademark.

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APPENDIX B
ABBREVIATIONS AND SYMBOLS

Abbreviations facilitate reading and minimize dull repetition of cumbersome names. Abbreviations should be used only when necessary and when their meanings are unquestionably clear. When in doubt, spell it out. In the text, capitalization will agree with the parent word. Rules of capitalization apply. The same abbreviation should be used for all tenses, possessive, singular, and plural. A sentence should never begin with an abbreviation except where the parent word(s) would result in an awkward construction.

The following pages contain basic rules to use when abbreviating, and a list of engineering unit abbreviations in their proper form.

1. Abbreviations should be spelled out in all possible circumstances. However, when abbreviations are necessary, use the following guidelines:

   a. The trend is to omit periods from all abbreviations except where they have traditionally appeared (for example, U.S., Ph.D., Mr., Mrs.).

   b. There should be no space after the internal periods within a traditional abbreviation (for example, a.m., U.S., i.e., etc.).

   c. An abbreviation needs no period unless it can be confused with a word (e.g., in., a.m., no.,). One exception to this rule is a period usually is not necessary in tabular material.

2. The following common Latin abbreviations should appear as:

   i.e., (that is)
   e.g., (for example)
   et al., (and others)
   etc., (and so forth)

   A comma should precede and follow the above abbreviations when used in the middle of a sentence.

3. “versus” should be spelled out, not “vs.”

4. When using unit abbreviations such as Btu, kW, Hz. . . a space should be placed between the number and the abbreviation.

   e.g.; 100 Btu, 3 kW, 50 Hz.

5. Refrain from using the symbols " and ' for inches and feet unless referring to a plant elevation or when it is necessary to save space (i.e., within tables, forms, etc.). However, use inches and feet in their proper forms as follows:

   0.5 inch of space around the margin (singular)
   2 inches in diameter (plural)
   a 3-inch circle (used as an adjective and therefore hyphenated)

6. Below are a few commonly used abbreviations in their proper form:

   Type 316 SS (notice the cap T and the space between 316 and SS)
   2-1/4 Cr-1 Mo
   E-953011 (hyphen after the E)

7. Do not abbreviate the company name in text except as part of abbreviations of subsidiary or joint venture names.

8. For equipment names used repeatedly in text, spell it out the first time, with the abbreviation in parentheses following the name. Subsequent references can then be made by the abbreviation alone. Also note that if a control name printed on the equipment is abbreviated, it should be repeated exactly, including capitalization, when cited in the text.

Plurals of Abbreviations

1. Abbreviations in units of measure are identical in their singular and plural forms (e.g., 10 lb <u>not</u> 10 lbs).

2. Acronyms, letters, and numbers are made plural by adding “s” alone:

   the three Rs
   in twos and threes
   LPRs
   the early 1970s
   SDDs

3. Abbreviations with periods, lower-case letters used as nouns, and capital letters that would form another word if “s” alone were added form the plural with an apostrophe and an “s”:

   Ph.D.’s
   x’s and y’s
   S’s, A’s, I’s

Letter Symbols for Units of Measurement

The following pages are taken from Corporate Standards. These abbreviations should be the only ones used unless stated otherwise in a project-specific document.

Symbols for Units in General Use

Unit	Symbol	Notes
ampere	A	SI unit of electric current.
ampere (turn)	A	SI unit of magnetomotive force.
ampere-hour	Ah	Also A•h
ampere per meter	A/m	SI unit of magnetic field strength.
angstrom	Δ	1 Δ = 10^{-10} m (deprecated, see ANSI Z210.1-1976)
atmosphere, standard	atm	1 atm = 101 325 Pa (deprecated, see ANSI Z210.1-1976)
atmosphere, technical	at	1 at = 1 kgf/cm^2 (deprecated, see ANSI Z210.1-1976)
atomic mass unit (unified)	u	The (unified) atomic mass unit is defined as one twelfth of the mass of an atom of the ^{12}C nuclide. Use of the old atomic mass (amu), defined by reference to oxygen, is deprecated.
atto	a	SI prefix for 10^{-18}.
attoampere	aA	
bar	bar	1 bar = 100 kPa. Use of the bar is strongly discouraged (see ANSI Z210.1-1976), except for limited use in meteorology.
barn	b	1 b = 10^{-28} m^2
barrel	bbl	1 bbl = 42 gal_{US} = 158.99 L
barrel per day	bbl/d	This is the standard barrel used for petroleum, etc. A different standard barrel is used for fruits, vegetables, and dry commodities.
baud	Bd	In telecommunications, a unit of signaling speed equal to one element per second. The signaling speed in bauds is equal to the reciprocal of the signal element length in seconds.

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
bel	B	
becquerel	Bq	SI unit of activity of a radionuclide.
billion electronvolts	GeV	The name *gigaelectronvolt* is preferred for this unit.
bit	b	In information theory, the bit is a unit of information content equal to the information content of a message the a priori probability of which is one half. In computer science, the bit is a unit of storage capacity. The capacity, in bits, of a storage device is the logarithm to the base two of the number of possible states of the device.
bit per second	b / s	
British thermal unit	Btu	
calorie (International Table calorie)	cal_{IT}	1 cal_{IT} = 4.1868 J (deprecated, see ANSI Z210.1-1976)
calorie (thermochemical calorie)	cal	1 cal = 4.1840 J (deprecated, see ANSI Z210.1-1976)
candela	cd	SI unit of luminous intensity.
candela per square inch	cd / in^2	Use of the SI unit, cd / m^2, is preferred.
candela per square meter	cd / m^2	SI unit of luminance. The name *nit* is sometimes used for this unit.
candle	cd	The unit of luminous intensity has been given the name *candela*; use of the name *candle* for this unit is deprecated.
centi	c	SI prefix for 10^{-2}.
centimeter	cm	

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
centipoise	cP	1 cP = 1 mPa • s. The name is deprecated (see ANSI Z210.1-1976).
centistokes	cSt	1 cst = 1 mm^2/s. The name centistokes is deprecated (see ANSI Z210.1-1976).
circular mil	cmil	1 cmil = $(\Pi/4) \bullet 10^{-6}$ in^2
coulomb	C	SI unit of electric charge.
cubic centimeter	cm^3	
cubic foot	ft^3	
cubic foot per minute	ft^3/min	
cubic foot per second	ft^3/s	
cubic inch	in^3	
cubic meter	m^3	
cubic meter per second	m^3/s	
cubic yard	yd^3	
curie	Ci	A unit of activity of radionuclide. Use of the SI unit, the becquerel, is preferred, 1 Ci = 3.7 x 10^{10} Bq.
cycle	c	
cycle per second	Hz, c/s	See hertz. The name *hertz* is internationally accepted for this unit; the symbol Hz is preferred to c/s.

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
darcy	D	1 D = 1 cP (cm / s) (cm / atm) = 0.986 923 μm^2 A unit of permeability of a porous medium. By traditional definition, a permeability of one darcy will permit a flow of 1 cm^3 / s of fluid of 1 cP viscosity through an area of 1 cm^2 under a pressure gradient of 1 atm / cm. For nonprecision work 1 D may be taken equal to 1 μm^2 and 1 mD equal to 0.001 μm^2. Deprecated (see ANSI Z210.1-1976).
day	d	
deci	d	SI prefix for 10^{-1}.
decibel	dB	
degree (plane angle)	. . . °	
degree (temperature): degree Celsius	°C	SI unit of Celsius temperature. The degree Celsius is a special name for the kelvin, for use in expressing Celsius temperatures or temperature intervals.
degree Fahrenheit	°F	Note that the symbols for °C, °F, and °R comprise two elements, written with no space between the ° and the letter that follows. The two elements that make the complete symbol are not to be separated.
degree Kelvin		See kelvin.
degree Rankine	°R	
deka	da	SI prefix for 10.
dyne	dyn	Deprecated (see ANSI Z210.1-1976).
electronvolt	eV	
erg	erg	Deprecated (see ANSI Z210.1-1976).

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
exa	E	SI prefix for 10^{16}.
farad	F	SI unit of capacitance.
fem to	f	SI prefix for 10^{-15}.
femtometer	fm	
foot	ft	
conventional foot of water	ftH_2O	1 ftH_2O = 2989.1 Pa (ISO)
foot per minute	ft / min	
foot per second	ft / s	
foot per second squared	ft / s^2	
foot pound-force	ft-lbf	
footcandle	fc	1 fc = 1 lm / ft^2. The name *lumen per square foot* is also used for this unit. Use of the SI unit of illuminance, the lux (lumen per square meter), is preferred.
footlambert	fL	1 fL . 1 / Π) cd / ft^2. A unit of luminance. One lumen per square foot leaves a surface whose luminance is one footlambert in all directions within a hemisphere. Use of the SI unit, the candela per square meter, is preferred.
gal	Gal	1 Gal = 1 cm / s^2 (deprecated, see ANSI Z210.1 1976).
gallon	gal	1 gal_{UK} = 4.5461 L 1 gal_{US} = 231 in^3 = 3.7854 L
gauss	G	The gauss is the electromagnetic CGS unit of magnetic flux density. Deprecated (see ANSI Z210.1-1976).
giga	G	SI prefix for 10^9.

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
gigaelectronvolt	GeV	
gigahertz	GHz	
gilbert	Gb	The gilbert is the electromagnetic CGS unit of magnetomotive force. Deprecated (see ANSI Z210.1-1976).
grain	gr	
gram	g	
gram per cubic centimeter	g/cm^3	
gray	Gy	SI unit of absorbed dose in the field of radiation dosimetry.
hecto	h	SI prefix for 10^2.
henry	H	SI unit of inductance.
hertz	Hz	SI unit of frequency.
horsepower	hp	The horsepower is an anachronism in science and technology. Use of the SI unit of power, the watt, is preferred.
hour	h	
inch	in.	
conventional inch of mercury	inHg	1 inHg = 3386.4 Pa (ISO)
conventional inch of water	inH_2O	1 inH_2O = 249.09 Pa (ISO)
inch per second	in/s	
joule	J	SI unit of energy, work, quantity of heat.
joule per kelvin	J/K	SI unit of heat capacity and entropy.
kelvin	K	In 1967, the CGPM gave the name *kelvin* to the SI unit of temperature which had formerly been

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
		called *degree kelvin* and assigned it the symbol K (without the symbol °).
kilo	k	SI prefix for 10^3.
kilogauss	kG	Deprecated (see ANSI Z210.1-1976).
kilogram	kg	SI unit of mass.
kilogram-force	kgf	Deprecated (see ANSI Z210.1-1976). In some countries, the name kilopond (kp) has been used for this unit.
kilohertz	kHz	
kilohm	kΩ	
kilometer	km	
kilometer per hour	km/h	
kilopound-force	klbf	Kilopound-force should not be misinterpreted as kilopond (see kilogram-force).
kilovar	kvar	
kilovolt	kV	
kilovoltampere	kVA	
kilowatt	kW	
kilowatthour	kWh	Also kW•h
knot	kn	1 kn = 1 nmi/h
lambert	L	1 L = (1/Π) cd/cm^2. A CGS unit of luminance. One lumen per square centimeter leaves a surface whose luminance is one lambert in all directions within a hemisphere. Deprecated (see ANSI Z210.1-1976).

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
liter	L	$1\ L = 10^{-3}\ m^3$. The letter symbol l has been adopted for *liter* by the CGPM, and it is recommended in a number of international standards. In 1978, the CIPM accepted L as an alternative symbol. Because of frequent confusion with the numeral 1, the letter symbol l is no longer recommended for USA use (see Federal Register notice of December 10, 1976). The script letter P, which had been proposed, is not recommended as a symbol for liter.
liter per second	L / s	
lumen	lm	SI unit of luminous flux.
lumen per square foot	lm / ft^2	A unit of illuminance and also a unit of luminous existence. Use of the SI unit, lumen per square meter, is preferred.
lumen per square meter	lm / m^2	SI unit of luminous existence.
lumen per watt	lm / W	SI unit of luminous efficacy.
lumen second	lm•s	SI unit of quantity of light.
lux	lx	$1\ lx = 1\ lm / m^2$ SI unit of illuminance.
maxwell	Mx	The maxwell is the electromagnetic CGS unit of magnetic flux. Deprecated (see ANSI Z210.1-1976).
mega	M	SI prefix for 10^6.
megaelectronvolt	MeV	
megahertz	MHz	
megohm	MΩ	
meter	m	SI unit of length.

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
metric ton	t	1 t = 1,000 kg. The name *tonne* is used in some countries for this unit, but use of this name in the USA is deprecated (see ANSI Z210.1-1976).
mho	mho	Formerly used as the name of the siemens (S).
micro	µ	SI prefix for 10^{-6}.
microampere	µA	
microfarad	µF	
microgram	µg	
microhenry	µH	
microinch	µin	
microliter	µL	See note for liter.
micrometer	µm	
micron	µm	Deprecated. Use micrometer.
microsecond	µs	
microwatt	µW	
mil	mil	1 mil = 0.001 in.
mile (statute)	mi	1 mi = 5280 ft
mile per hour	mi/h	Although use of mph as an abbreviation is common, it should not be used as a symbol.
milli	m	SI prefix for 10^{-3}
milliampere	mA	
millibar	mbar	Use of the bar is strongly discouraged in ANSI Z210.1, except for limited use in meteorology.
milligram	mg	
millihenry	mH	

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
milliliter	mL	See note *for liter*.
millimeter	mm	
conventional millimeter of mercury	mmHg	1 mmHg = 133.322 Pa (deprecated, see ANSI Z210.1-1976).
millimicron	nm	Use of the name *millimicron* for the nanometer is deprecated.
millipascal second	mPa•s	SI unit-multiple of dynamic viscosity.
millisecond	ms	
millivolt	mV	
milliwatt	mW	
minute (plane angle)	...′	
minute (time)	min	Time may also be designated by means of superscripts as in the following example: $9^{h}\ 46^{m}\ 30^{s}$.
mole	mol	SI unit of amount of substance.
month	mo	
nano	n	SI prefix for 10^{-9}.
nanoampere	nA	
nanofarad	nF	
nanometer	nm	
nanosecond	ns	
nautical mile	nmi	1 nmi = 1852 m
neper	Np	
newton	N	SI unit of force.
newton meter	N•m	

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
newton per square meter	N / m^2	SI unit of pressure or stress, see pascal.
nit	nt	$1 nt = 1 cd / m^2$ The name *nit* is sometimes given to the SI unit of luminance, the candela per square meter.
oersted	Oe	The oersted is the electromagnetic CGS unit of magnetic field strength. Deprecated (see ANSI Z210.1-1976).
ohm	Ω	SI unit of resistance.
ounce (avoirdupois)	oz	
pascal	Pa	$1 Pa = 1 N / m^2$ SI unit of pressure or stress.
pascal second	Pa•s	SI unit of dynamic viscosity.
peta	P	SI prefix for 10^{15}
phot	ph	$1 ph = lm / cm^2$ CGS unit of illuminance. Deprecated (see ANSI Z210.1-1976).
pico	p	SI prefix for 10^{-15}.
picofarad	pF	
picowatt	pW	
pint	pt	1 pt (UK) = 0.568 26 L 1 pt (US dry) = 0.550 61 L 1 pt (US liquid) = 0.473 18 L
poise	P	Deprecated (see ANSI Z210.1-1976).
pound	lb	
pound per cubic foot	lb / ft^3	
pound-force	lbf	

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
pound-force foot	lbf-ft	
pound-force per square foot	lbf/ft^2	
pound-force per square inch	lbf/in^2	Although use of the abbreviation psi is common, it should not be used as a symbol.
poundal	pdl	
quart	qt	1 qt (UK) = 1.136 5 L 1 qt (US dry) = 1.101 2 L 1 qt (US liquid) = 0.946 35 L
rad	rd	A unit of absorbed dose in the field of radiation dosimetry. Use of the SI unit, the gray, is preferred. 1 rd = 0.01 Gy.
radian	rad	SI unit of plane angle.
rem	rem	A unit of dose equivalent in the field of radiation dosimetry. (Use of the SI unit, the sievert, is preferred. 1 rem = 0.01 Sv)
revolution per minute	r/min	Although use of rpm as an abbreviation is common, it should not be used as a symbol.
revolution per second	r/s	
roentgen	R	A unit of exposure in the field of radiation dosimetry.
second (plane angle)	. . . ′	
second (time)	s	SI unit of time.
siemens	S	1 S = 1 Ω^{-1} SI unit of conductance. The name mho has been used for this unit in the USA.
sievert	Sv	SI unit of dose equivalent in the field of radiation dosimetry. Name adopted by the CIPM in 1978.
slug	slug	1 slug = 14.5039 kg

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
square foot	ft^2	
square inch	in^2	
square meter	m^2	
square meter per second	m^2/s	SI unit of kinematic viscosity.
square millimeter per second	mm^2/s	SI unit-multiple of kinematic viscosity.
square yard	yd^2	
steradian	sr	SI unit of solid angle.
stilb	sb	1 sb = 1 cd/cm^2 A CGS unit of luminance. Deprecated (see ANSI Z210.1-1976).
stokes	St	Deprecated (see ANSI Z210.1-1976).
tera	T	SI prefix for 10^{12}.
tesla	T	1 T = 1 $N/(A \bullet m)$ = 1 Wb/m^2. SI unit of magnetic flux density (magnetic reduction).
therm	thm	1 thm = 100,000 Btu
ton (short)	ton	1 ton = 2000 lb
ton, metric	t	1 t = 1000 kg. The name *tonne* is used in some countries for this unit, but use of this name in the USA is deprecated (see ANSI Z210.1-1976).
(unified) atomic mass unit	u	The (unified) atomic mass unit is defined as one twelfth of the mass of an atom of the ^{12}C nuclide. Use of the old atomic mass unit (amu), defined by reference to oxygen, is deprecated.
var	var	IEC name and symbol for the SI unit of reactive power.
volt	V	SI unit of voltage.
volt per meter	V/m	SI unit of electric field strength.

Symbols for Units in General Use (Cont'd)

Unit	Symbol	Notes
voltampere	VA	IEC name and symbol for the SI unit of apparent power.
watt	W	SI unit of power.
watt per meter kelvin	W / (m•K)	SI unit of thermal conductivity.
watt per steradian	W / sr	SI unit of radiant intensity.
watt per steradian square meter	$W / (sr \bullet m^2)$	SI unit of radiance.
watthour	Wh	
weber	Wb	Wb = V•s SI unit of magnetic flux.
yard	yd	
year	a	In the English language, generally yr.