Style Guide

Chapter 1
Johnson Controls Style

About Style

This style guide is intended to serve three goals:

- We want Johnson Controls literature to be **clear.** Following agreed-upon rules about how to communicate can help reduce ambiguity and transmit information more efficiently.

- We want Johnson Controls literature to be **consistent.** Consistency reinforces the company brand and can aid clarity by removing distracting differences.

- We want Johnson Controls literature to be **correct.** This encompasses both technical accuracy—which is outside the realm of this guide—and correctness according to the generally accepted rules of usage. Readers who perceive (or believe) that our literature violates convention may lose confidence in the Johnson Controls brand.

This document is a work in progress. If it doesn't include the answer you need, ask a technical editor. You can also consult a standard reference such as *Merriam-Webster's Collegiate Dictionary, The American Heritage Dictionary of the English Language, The Chicago Manual of Style,* and *The Microsoft Manual of Style for Technical Publications.* While the guidelines in these documents do not take precedence over the Johnson Controls guidelines described here (and do not necessarily reflect guidelines we may adopt in the future), they will usually steer you in the right direction.

This style guide gathers information that formerly was found in other Johnson Controls publications, including the *Writer's Guide (LIT-12011368).* If you find a guideline that conflicts with a guideline in another Johnson Controls reference, contact a technical editor so the inconsistency can be corrected.

When this style guide contrasts desirable and undesirable usages, incorrect, unapproved, and less desirable usage examples are put in italics, while approved terms and publication titles are set in bold text. (Italics are also used for titles and headings, and bold text is used for emphasis and to distinguish examples from the rest of the sentence.)

What's New in This Revision

New sections:

- Apple Trademarks
- Microsoft Trademarks: Windows 8 and Windows Server 2012*;* 32-bit and 64-bit
- Globalization (new chapter)

New and revised usage guide entries:

- administrator
- as well
- desired
- DOS
- figure
- found in
- fully open, fully closed
- hex
- host name
- launch
- located in
- machine
- media
- No.
- ohm
- printer-friendly
- same exact
- touchpad
- toward, towards
- whether or not
- workflow
- writable

Acronyms added to those that need not be spelled out:

- ASCII
- SD

Appendix B *(Johnson Controls Trademarks)* has been extensively revised, with many obsolete trademarks removed.

Items changed or added in this revision have been marked with change bars.

Acronyms

Acronyms can help make text readable. A long technical document that always refers to *Application and Data Server/Extended Application and Data Server computers* instead of **ADS/ADX computers** would be difficult to get through.

On the other hand, too many acronyms can turn a document into alphabet soup, obscuring the meaning by overusing acronyms, especially acronyms that are not well known and that may have been defined only in passing, many pages earlier.

Before using an acronym, consider whether it serves the needs of the reader. Use discretion when deciding whether to introduce an acronym that appears infrequently in a document. If a term is used only a few times and the spelled-out form is not cumbersome, it may be clearer to use the term without providing its acronym. Also, remember that some acronyms commonly used by engineers and developers are not approved for use in customer-facing documentation. (One example is *NUT* for the NAE/NIE Update Tool.)

Some acronyms are more generally understood than the terms they stand for. You do not need to define these acronyms. For a list, see Appendix A: Abbreviations and Acronyms That Need No Defining.

Using Acronyms in Body Text

In general, define acronyms the first time they are used in the body text of a document, unless they have recently been defined in a heading. To define an acronym, spell out the term and follow it by its acronym in parentheses. Use the spelling and capitalization indicated in the Acronyms and Terms database (acronyms and terms.mde).

When an acronym is part of a compliance statement (for example, NFPA, UL 864), do not define the acronym.

When using an acronym with an indefinite article (**a** or **an**), choose the article based on the acronym's pronunciation (an ANSI standard, a WYSIWIG system, an XML document).

To form the plural of an acronym, use a lowercase **s** without an apostrophe.

Using Acronyms in Titles and Headings

In the titles and headings of technical pieces (such as technical bulletins, installation instructions, troubleshooting guides, and commissioning guides), use acronyms without spelling them out, and then define them when they are first used in body text.

Define acronyms in the titles and headings of product bulletins, catalog pages, and release-to-sales letters if they represent Johnson Controls products or company-specific terms. Sales documents may be the reader's first introduction to the product.

Defining acronyms in tables, figures, or flow charts is not necessary if they are defined elsewhere.

File Name Extensions

A file name extension is not an acronym, even though a file name extension often matches the acronym for a file format. For example, XML is the acronym for Extensible Markup Language; .xml is the file name extension for files that contain code in this language. A file whose extension is .xml contains XML code. It is most correctly referred to as an XML file.

When referring to a file name extension, precede it with a period and write it in lower case.

Capitalization

Refer to a dictionary or *The Chicago Manual of Style* for guidance about how to capitalize words and phrases. Unless specified elsewhere in this guide, use sentence-style capitalization, in which only the first word of the sentence or phrase is capitalized, and also any other words that are always capitalized, such as proper nouns (such as **Tuesday, Microsoft,** and **Kevin**).

Capitalize **Step, Pin, Jumper,** and most other nouns (except **page**) that are followed by a number. Also capitalize the word **Series** when it is part of a product family name. However, do not capitalize **version** except when referring to versions of Johnson Controls products.

When referring directly to an item or text that appears in the software, capitalize the item as it appears in the software, regardless of other rules.

Capitalization in Headings and Titles (Title-Style Capitalization)

In title-style capitalization, most words are capitalized, according to the guidelines for headline-style capitalization in *The Chicago Manual of Style*. Capitalize the first word of the title, the last word of the title, and all other major words. Do not capitalize the following words in titles:

- The articles **a, an,** and **the**
- Prepositions, except when part of a verb phrase or used as an adjective (Look Up, Come To, the On Button)
- The conjunctions **and, but, for, or,** and **nor**
- The word **to** when part of an infinitive verb: to Run, to Troubleshoot
- The word **as**
- Parts of proper names that are not capitalized, such as **von** and **de**

Do capitalize both words in a two-word hyphenated term: Pre-Configured.

Lists

You can use lists to break up complex statements, to emphasize key ideas, or to put ideas or steps into logical order.

Unless the list immediately follows an explanatory heading, introduce lists with a statement that explains what follows. Write the listed items using parallel structure—whenever possible, the items in a list should match in form and tense. If the list is a list of attributes (such as features), each list item must be based around a noun or noun phrase; if a list contains actions or benefits, each list item should start with a verb. List items should be roughly of the same length and importance. Each entry in a list should contain only a single item, action, or concept.

When a listed item does not seem to belong, consider including it as a note rather than as part of the list.

Using Lists

Although lists are used to make things clearer, too many lists can make a document more difficult to understand quickly. Unless the document format prohibits it, consider using a sentence or two when body text is just as clear. For example, a list that contains only two or three short items can be just as easy to read when recast as a sentence.

List:

> The PCP-625 also includes the following items:
>
> - An adjustable flange
> - An exhaust system

Sentence:

> The PCP-625 also includes an adjustable flange and an exhaust system.

Do not create a list of only a single item.

Use a numbered list only to describe a sequence of actions or to list things in order of importance. Otherwise, use a bulleted list.

Introducing a List

Use a clause or a sentence to introduce a list. End the introductory statement with a colon, unless it is a complete sentence, in which case you may use either a colon or a period. If the introductory statement ends with the words **the following** or **as follows**, end it with a colon.

If a note or a warning comes between the introductory statement and the list, use a complete sentence that ends with a period.

Capitalizing Lists

Capitalize list items when they:

- are complete sentences. When this is true, the introductory statement must also be a complete sentence.

- are steps written as complete sentences. Use a numbered list for steps.

- contain multiple sentences. The first phrase, if not a complete sentence in itself, should begin with a lowercase letter and end with a period. Subsequent sentences should begin with a capital letter and end with a period (as in body text).

Punctuating Lists

Do not punctuate list items as if they are all part of the same sentence. For example, omit commas after the items in a list, and avoid the use of **or** and **and** at the end of a list item.

Use a period after a list item only if it finishes a complete sentence that began in the same list item. Omit the period if the item completes a sentence that was begun in the introductory statement.

Lists Within Lists

Tagging list items correctly in Word, FrameMaker, and XMetaL results in a correctly formatted list. Second-level list entries in a numbered list take lowercase letters (or bullets, if the items require no order). Second-level list entries in a bulleted list are set off with hyphens. In both kinds of lists, second-level list entries are indented one extra step.

Regardless of whether the main list is numbered or bulleted, a list within a list is numbered only when its items need to be in order.

1. This is a first-level entry in a numbered list.

    a. This entry is the first in a second-level ordered list.

2. This is the second step or item in a numbered list.

    - This entry is the first in a second-level unordered (bulleted) list.

- This is a first-level entry in a bulleted list.

    ▫ This is a second-level entry in a bulleted list.

Measurement

Systems of Measurement

The systems of measurement that are used in the United States include the Inch-Pound (I-P) system and the International System of Units (SI). Units in the I-P system are also known as English, Imperial, or customary units. SI is based on the metric system of units.

Although much of the world uses SI exclusively, international trade necessitates the use of both systems. Most Johnson Controls product documentation teams use SI units followed by I-P units in parentheses. However, because the majority of HVACR products are sold only in the United States, HVACR documents use I-P units followed by SI units in parentheses.

Symbols and Abbreviations

Although the I-P system uses abbreviations (such as **in.** and **ft**) that follow most of the general rules for the use of abbreviations, the short forms of SI units are considered symbols. SI symbols never end in a period.

Do not use the marks ′ and ″ to indicate feet and inches.

SI Prefixes

Instead of multiple units for a physical quantity (foot, yard, mile; ounce, pound, ton), the SI system uses only a single unit for each quantity (meter, gram). SI units use prefixes to indicate significantly large or small amounts of each unit. The prefix is combined with the unit symbol without the use of hyphens or spaces, as in **kg** (kilogram) and **MHz** (megahertz).

Symbol	Prefix	Magnitude	Note
P	peta	10^{15}	
T	tera	a trillion	
G	giga	a billion	
M	mega	a million	
k	kilo	a thousand	
d	deci	a tenth	Rare; seen in **decibel**
c	centi	a hundredth	Uncommon; seen in **centimeter**
m	milli	a thousandth	
μ	micro	a millionth	
n	nano	a billionth	

Units

The following table lists the most commonly encountered SI units and their I-P equivalents.

Symbol	Name	Measure	I-P Equivalent
A	ampere	electric current	
Btu **or** BTU	British thermal unit	heat energy	calorie (cal)
°C	degrees Celsius	temperature	degrees Fahrenheit (°F)
g	gram	mass (weight)	ounce (oz.), pound (lb)
Hz	hertz	frequency	
L	liter	volume	gallon (gal)
m	meter	length	inch (in.), foot (ft)
N	Newton	force	pound (lb)
N·m	Newton-meter	torque	foot-pound (ft·lb)
	ohm	electric resistance	
Pa	pascal	pressure	pounds per square inch (lb/sq. in) or pounds per square foot (lb/sq. ft)
V	volt	electric potential	
W	watt	electric power	

Note: Johnson Controls documentation does not use the omega (Ω) symbol for the ohm. Instead, write the word **ohm.**

Using Measurements in Text and Tables

Always use numerals to express measurements.

Separate the value from the unit with a space. Exceptions: degrees (°) and k following a number to indicate thousands (for example, 56k).

When you list multiple measurements, repeat the unit of measure whenever space permits (4.5-in. or 5.25-in. disk; 10 in. x 5 in. x 20 in.). When it is not possible to repeat the unit of measure after every measurement, place the unit after the last numeral in the sequence.

When a quantity is unspecified, write out the unit name instead of using its symbol or abbreviation.

Use a dot to indicate that the measurement combines units (N·m, ft·lb). The Windows shortcut for the dot is ALT+0183, using the number pad.

In tables, when all values in a column are of the same unit and the unit is specified in the column header, you do not have to repeat the unit in each cell of the column.

Temperatures and Temperature Ranges

When reporting measurements, the degree sign precedes the symbol (5°C); when reporting spans or differentials, the degree sign follows the symbol (5C°). There is no space between the symbol and the degree sign.

Use the word **to** instead of a dash in a temperature range.

Byte Measurements

Computer memory is measured in bytes (B). Do not use a small b to indicate a byte; the small b is reserved to indicate a computer bit. One byte equals eight bits.

Although the SI prefix kilo- uses a small k as its symbol, the symbol for a kilobyte (1,000 bytes) is KB, with a capital K. Other common byte measurement symbols include MB (megabyte), GB (gigabyte), and TB (terabyte).

Numbers

Spelling Out Numbers

As a general rule, write values from zero through nine as words. Use numerals for numbers 10 and above. However, always express the following values using numerals:

- Quantities followed by units of measurement: 27 mm, 45 ft^3

- Page numbers, figure numbers, and table numbers

- Monetary values: $1.50

- Ratios: 3:1

Spell out numbers that begin a sentence, regardless of other rules: **Three hundred employees work here.**

> **Note:** If a number appears at the beginning of a sentence, but spelling it out is awkward, rewrite the sentence so that the number does not appear at the beginning.

Spell out approximate numbers: **More than two hundred people.**

Express several numbers in the same sentence in the same way, regardless of other rules. For example, use 1 instead of one in the following sentence: Johnson Controls has 1 corporate office, uses 150 branch offices, and employs 1,600 people.

When numbers appear to run together in the same phrase, spell out one of the numbers. If one of the numbers appears with a unit of measurement, spell out the other number.

> **Incorrect:** The order was for 12 6 in. pipes.
>
> **Correct:** The order was for twelve 6 in. pipes.

Use a numeral and the percent symbol for percentage in technical documentation: **5%.**

Fractions and Fractional Values

Express simple fractions as numerals: **27-1/2 miles.** When a value includes both a whole number and a fraction, as in this example, separate the fraction from the whol number with a hyphen.

When using I-P units, prefer simple fractions (1/2, 3/4) to decimal fractions. When using SI units, prefer decimal fractions.

Express 1/4, 1/2, and 3/4 using three characters rather than one—that is, enter the fractions using whole numbers separated by a slash, and do not allow the software to substitute a special glyph such as ¼.

In a simple fraction used as a measure of length, the denominator should not be larger than 32. (The smallest visible unit on a standard tape measure is 1/32 in.) Else, use a decimal fraction.

Write decimal fractions as numerals: **5.21 mm**.

Set decimal fractions of less than 1.00 using a zero: **0.25**.

Large Numbers

Use commas in numbers that have four or more digits. However, for baud and bit rate, use commas when the number has five or more digits. Examples:

- 1,500 bytes
- 9600 bps
- 108,462 baud

Use the numeral and the word for large round numbers of 1 million or more, even when the numeral is less than 10: **3 million.** For numbers over 1 million that are not round, write the entire number in numerals: **67,593,600.**

You may use scientific notation wherever it is appropriate. Set exponents in superscript: 2.4×10^8.

Dates

In documents for the United States, write dates in a month-day-year sequence, and follow the year with a comma: **The October 12, 2001, issue.**

When a date is expressed in day-month-year sequence, no comma follows the year: The **15 March 2013 issue.**

Do not insert a comma between the month and the year if no date is included: **The product was released in September 2009.**

Documents for other countries should follow the date format used in those countries. To find the correct date format for a country in Windows 7, open **Region and Language** in Control Panel, and select the country in the Format list. For example, for Spain, select **Spanish (Spain)**. Use the date format in the Examples section of the Region and Language dialog box.

Time

Spell out the time when it is not followed by A.M. or P.M.: **seven o'clock.**

Express hours and minutes as numerals when A.M. and P.M. follow: **8:15 A.M.**

Ordinal Numbers

In most writing, spell out an ordinal number if it is a single word (for example, **tenth**). Write it in numerals if it is more than one word (such as **312th**).

Hyphenate a number and a unit of measure when they form a compound adjective that precedes the noun: **12-in. damper, 3-year warranty**.

Addresses

Spell out numbered streets of 100 or less except when space is at a premium: **East Tenth Street.**

Write building numbers as numerals, except for the number one: **4862 East Monument Street; One East Tenth Street.**

Write highways numerically: **I-43**, **U.S. 57**.

Phone Numbers

Format phone numbers using hyphens, not parentheses. Precede toll-free numbers (which are always entered starting with 1 in the United States) with a **1.**

414-524-6903

1-800-328-7448

Other Guidelines for Numbers

Form the plural of a spelled out number just as you would for any other noun. Write the plural of a numeral with s. Do not use an apostrophe. (**5s, 12s**)

Do not follow a word that represents a value with a numeral in parentheses that represents the same value.

Incorrect: Include three (3) copies.

Correct: Include three copies.

Tables

This section is a quick reference to style rules that involve tables. For detailed instructions about how to create, format, and troubleshoot tables in Microsoft Word and Adobe FrameMaker, refer to Chapter 4 of the **Writer's Guide**.

Table Nomenclature

Column Header (Columnhead)	Column Header (Columnhead)
Row Header (Rowhead)	This is a cell.
Row Header (Rowhead)	Another cell

Capitalization and Structure

The title of a table should use title-style capitalization.

Column headers and row headers should also use title-style capitalization. In general, the text in header cells should be in bold type. (The Columnhead and Rowhead styles in our templates automatically apply bold formatting.)

Ordinary cell entries should use sentence-style capitalization. If the cell contains a complete sentence, or if the cell entry begins with a verb, end the sentence with a period. Regardless of whether it is a complete sentence, capitalize the first letter of the first word in a cell, unless you are matching what appears in the software. (For example, a parameter such as nciSetpoints should never be capitalized.)

All the entries in a column should share a parallel structure. For example, all the entries in a Description column should begin with a verb or a noun.

Alignment and Size

Cells (including headers) should be aligned at top left. However, if the cells in a column contain fewer than six characters each or straddle multiple columns, the column and the column header may be centered.

Try to keep a table within the margins of the template.

Lines

Outside borders and the borders of header cells should be 1-1/2 points. Internal lines should be 3/4 point. In FrameMaker, use medium weight and thin weight lines.

Note: By default, lines in Microsoft Word are 1/2 point. Reformat these lines. XML-generated tables do not follow these conventions.

Common Johnson Controls Tables

Features and Benefits

When a Features and Benefits table is present, entries in the Benefits column begin with a verb and end with a period, as if completing a sentence that was begun in the Features column of the same row.

Technical Specifications

A Technical Specifications table lists specification categories in the left column and detailed specifications in the right column.

When a cell entry contains multiple items, separate the entries by a line break. For example, an entry that contains ambient operating conditions may include a temperature range, a range of relative humidity values, and a maximum dew point. Each of these items should be listed on its own line.

In Technical Specifications tables, write ranges using **to** instead of an en dash to avoid confusion with the minus sign: **-40° to -20°F**.

Trademarks

A trademark identifies the source of sold goods and distinguishes them from the goods of competitors. It may be a word, a name, a slogan, a design, or any kind of symbol.

A trademark must be used in particular ways in order to protect the trademark as the legal property of its owner. As writers, our first priority is to protect the trademarks of Johnson Controls, including **Johnson Controls** and **Metasys**. We must always be perfectly correct in our use of these trademarked terms. Second in priority is to respect the trademarks of other companies, as we insist they respect our trademarks. While we never err in using others' trademarks as we would use our own, in ordinary documentation it is acceptable to use third-party trademarks as they are used in the official publications of their owners.

Trademark Symbols

Always write the trademark with its symbol the first time that it appears in the body text of the document. If the trademark first appears in a title or heading, use it with the correct symbol in the heading, and then again in the text. However, you do not need to use trademark symbols in table of contents entries.

The trademark symbol (™) indicates that someone claims ownership of the words or designs (trademarks) that precede the symbol. The registered trademark symbol ® indicates that the trademark has been registered with the United States Patent and Trademark Office (USPTO) for the specified products. (If the mark is used in another country, the symbol indicates that the trademark is registered in the trademark registry of that country.)

The Windows shortcut for ™ is ALT+(numpad) 0153. (Do not create the symbol by using the letters T and M in superscript.) The Windows shortcut for ® is ALT+(numpad) 0174.

Place the trademark symbol immediately after the trademark, without an intervening space. The symbol must follow the trademarked name itself. Use the same font for the symbol as is used by the surrounding text.

>   **Incorrect:** Pentium processor®
>   **Correct:**   Pentium® processor

Although the registered trademark symbol ® is traditionally typeset in superscript, our software tools do not make this practical across all applications.

General Guidelines for Trademarks

Trademarks are best respected when used as modifiers, not as nouns. The noun that follows the trademark should be a generic noun that indicates the class of product: **Band-Aid® adhesive bandages; Ford® Mustang® automobiles; Adobe® Photoshop® software; Metasys® building automation systems.** Note that the trademark should modify a class of product, not an attribute: **Metasys® building automation systems,** not *Metasys® performance.*

Because trademarks should not be used as nouns, trademarks do not take plural or possessive forms when used formally. Never use the plural or possessive forms of a Johnson Controls trademark.

Do not abbreviate a trademark unless the abbreviation itself is also a registered trademark of the same owner.

Use the same spelling, capitalization, punctuation, and style every time you use the same trademark. Use the trademark in the same way that it was trademarked. Do not use a trademark as a verb (*Xerox the document, Google the search term*).

A company's website is not considered trustworthy regarding the status of trademarks. If the trademark status of a company name or a product is in question, ask an editor to research the trademark on the USPTO site. A personal communication from a representative of the trademark owner is also sufficient.

Names of Companies

Unlike trademarks that denote products, company names may be used as nouns. In this situation, the company name is **not** treated as a trademark. The company name (if it is trademarked) should be treated as a trademark only when it is associated with a product; the company name then indicates the source of the product.

> **Trademark:**   Adobe® Reader® software
> **Company name:** Adobe Systems Inc. announced today…
>
> **Trademark:**   Johnson Controls® Metasys® building automation systems
> **Company name:** Johnson Controls recommends…
>
> **Trademark:**   Microsoft® Encarta®
> **Company name:** To learn more about Microsoft's Intellectual Property offerings…[1]

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[1] The possessive form matches Microsoft's own usage; see *http://www.microsoft.com/about/legal/en/us/ IntellectualProperty/Default.aspx*.

Using Natural Language with Trademarks

When using a trademark to modify a generic noun, use the same common sense you use when using any other modifier and noun. Instead of repeating the noun after every trademark in a long list of trademarks, use the noun in such a way that it is clear that it is the kind of product designated by every trademark in the list. Also, remember to use the correct article (**a**, **an**, or **the**) required by the sense.

> **Incorrect:** If you are using Windows Server® 2008 R2 Operating System (OS), Windows Server 2008 OS, Windows 7® OS, or Windows XP® OS, follow these steps to install the Software Configuration Tool (SCT).

> **Correct:** If you are using the Windows Server® 2003 R2, Windows Server 2003, Windows 7®, or Windows XP® operating systems, follow these steps to install the Software Configuration Tool (SCT).

The phrase **operating systems** is the generic noun that each trademark modifies. Its placement at the end of the list of system names indicates, without needless repetition, that each of the trademarked names refer to a brand of operating system. The definite article **the** is used according to the rule that an article is required when a generic noun is used instead of a proper noun alone. Finally, the abbreviation **OS** is not introduced because the term is only used once. (If the term were used many times in the remainder of the document, it would be appropriate to introduce the acronym.)

Because Microsoft's trademarked products are among the most widely used and recognized products in the world, the generic noun may sometimes be used only after the first occurrence. This practice matches Microsoft's own guidelines and practice. For example, introduce Windows Internet Explorer as **the Windows Internet Explorer web browser** (or just **browser**). In subsequent mentions, you can simply write **Internet Explorer**. Similarly, after the first mention of the Windows 7 operating system, you can simply write **Windows 7**.

See the **Microsoft** entry in Chapter 3 for Microsoft's usage guidelines regarding its major products.

Use of *the* with Trademarks

Unless the owner of the trademark does otherwise, use the definite article **the** when referring to specific technologies, protocols, and networks: **the BACnet protocol, the LONWORKS network.** Omit the article when referring to a general descriptor or a class of items: **Windows operating systems, HP technology.**

Official Trademark Notices

Always display the full name Johnson Controls, Inc. in all materials that include trademarks owned by Johnson Controls. The full, unabbreviated company name should appear at the end of the document, on the inside cover of the publication, or in a similarly appropriate location. Similarly, display the full names of other companies when their trademarks are used in the document. Do this immediately following the appearance of the full name of Johnson Controls, Inc. at the end of the document. For example: **Alliance® is a registered trademark of Johnson Controls, Inc. Adobe® is a registered trademark of Adobe Systems, Inc.**

When the trademarks of several companies are used in a document, use the designation **All other marks herein are the marks of their respective owners.** This wording can also be used when the exact ownership of a trademark is unknown.

Correct:

(Unknown owner:) All other marks herein are the marks of their respective owners.

(Various owners:) Alliance® is a registered trademark of Johnson Controls, Inc. All other marks herein (including Adobe®, Apple®, and Google®) are the marks of their respective owners.

Johnson Controls Trademarks

Johnson Controls, Inc.

Always display the full name **Johnson Controls, Inc.** in all materials that include trademarks that are owned by Johnson Controls. This full name can appear at the end of the document or on the inside cover of the publication.

When Johnson Controls is mentioned in the course of discussing a trademark, use the full name of the company.

> **Incorrect:** Metasys® is a registered trademark of Johnson Controls.
> **Correct:**   Metasys® is a registered trademark of Johnson Controls, Inc.

When using Johnson Controls, Inc. in a sentence, do not follow it with a comma.

> **Incorrect:** Johnson Controls, Inc., was founded in 1885.
> **Correct:**   Johnson Controls, Inc. was founded in 1885.

Do not break the name **Johnson Controls** across lines. Always keep these words together. To make sure that the words are not separated when the document reflows (such as when text is added or removed elsewhere in the document), use a non-breaking space between the words.

Metasys

Do not use Metasys as a stand-alone noun (except when referring to its trademark status, as in the examples above). In general, refer to the Metasys system. However, avoid using the words **Metasys system** as part of the title of any component in any document. For example, do **not** refer to the LN Series Controllers as the *Metasys System LN Series Controllers*. Refer to the NAE, NCM, SCT, and every other component by its correct name only, without the words **Metasys system** attached.

Use **Metasys** as a modifier only of a product or service, and not to modify an attribute or quality:

> **Incorrect:** Metasys® performance
>
> **Correct:**   Metasys® building automation system performance

Whenever possible, avoid the terms *Extended Architecture* and *Metasys System Extended Architecture*. Also avoid the abbreviation *MSEA*. If necessary, you may refer to **the architecture of the Metasys system** or to extending the Metasys system, but it is better to find different words for the same concept, such as **engines**:

- The architecture of the Metasys system was extended in 2003 by the introduction of powerful engines.

- Your Metasys system can be extended by adding one or more network engines.

- Our new engines and servers can coexist with the NCMs and N30s that are already a part of your Metasys system.

Apple Trademarks

The name of the company is Apple, and the operating systems it makes are OS X® and iOS®. There is no Mac® before OS X. The word Mac is used only to describe the line of hardware products that includes the iMac®, the MacBook Pro®, the MacBook Air®, the Mac mini®, and the Mac Pro®. Hardware products that run the iOS operating system include the iPad™ and the iPhone®.

Operating Systems

The first time that OS X or iOS is mentioned, it should be preceded by **Apple** and followed by **operating system** (with a small **o** and a small **s**). These qualifiers do not have to be repeated on subsequent mentions.

Although Apple generally refers to its OS X operating system without version numbers (for example, **OS X Mavericks**), the version number does appear in the About box on a Mac, while the operating system name does not. So to be clear, many writers insert the version number between OS X and the name (**OS X 10.9 Mavericks**). Apple approves of this usage:

> the Apple® OS X® 10.6 operating system (Snow Leopard)

> OS X 10.7 Lion

> OS X 10.8 Mountain Lion

> OS X 10.9 Mavericks

The iOS family of operating systems uses version numbers: iOS 7.1, iOS 7, iOS 6.

Safari

Safari® is available for both Mac computers and Windows computers.

> **First use:** the Apple Safari® web browser

> **Subsequent uses:** Safari

To specify versions of Safari, use **version** with a small v:

> Safari version 7.0

> Safari version 6.x

Other Products

The iPad line of tablet computers takes a trademark symbol (iPad™, iPad mini™; note the capitalization of **mini**). The iPhone and iPod products take a registered trademark symbol (iPhone® 5s, iPhone®, iPod®, iPod touch®).

Microsoft Trademarks

Do not abbreviate **Microsoft** to *MS*.

When you first mention a Microsoft product (other than the products listed below), precede the name of the product with **Microsoft**. You do not have to repeat **Microsoft** after the first mention. However, do not precede the names of the following products and services with **Microsoft**:

- Windows® Internet Explorer®
  Note: After the first mention, simply write **Internet Explorer.** Identify major versions of Internet Explorer with whole numbers only: **Internet Explorer 8, 9, 10, or 11.**
- Windows 7
- Windows XP
- Windows Server 2008 R2
- Windows Server 2008
- Windows Server 2003
- Windows Vista®
- Windows Azure
- Xbox

Windows 8 and Windows Server 2012 (and later)

Windows 8, Windows Server 2012, and later versions of Windows are designed to work with touch screen computers as well as with mouse-based pointing systems. When we write about software that may run on a touch screen computer, we write **click or tap** where for earlier operating systems we would write **click**.

Note that software that could run on a touch screen system may rarely be run on such a system in actuality. In such a case, **click** may be used even though **click or tap** would be more technically accurate. The program manager can make this call.

Windows 8 and Windows 8.1 come in the following major editions:

- Windows 8
- Windows 8 Pro
- Windows 8 Enterprise

Note that the full name of the the second edition above is **Windows 8 Pro.** Unlike in Windows 7, there is no *Windows 8 Professional* edition.

Service Packs

After the first mention, Service Pack **n** for any product can be written as SP**n** (where **n** represents a cardinal number such as 1, 2, 3, and so on). To save space in tables, **Service Pack** does not need to be spelled out the first time.

When referring to an operating system that has a service pack applied, use **with**:

> Windows 7 Professional with SP1
> Windows Server 2008 Standard with SP2

32-bit and 64-bit

In tables, the bit level of the software always comes at the end, following the name of the service pack, if any:

> Windows 7 Professional with SP1 (32-bit)
> Windows 8.1 Pro (64-bit)
> SQL Server 2008 Express SP3 (32-bit)

In body text, it is preferable to write **the 32-bit version of** or **the 64-bit version of** followed by the name of the software. However, the table format is also acceptable.

Note that the following operating systems are available only in 64-bit versions. Therefore, we don't have to specify their bit level.

- Windows Server 2012 R2
- Windows Server 2012
- Windows Server 2008 R2

The original release version of Windows Server 2008 was available in both 32-bit and 64-bit versions.

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The Windows shortcut for the copyright symbol is ALT+(numpad) 0169.

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Miscellaneous Style Issues

Anthropomorphism

Avoid attributing human characteristics to devices and software. Common words that indicate human characteristics and actions include **behaves, refuses, wants, thinks, knows, realizes,** and **likes**.

> **Incorrect:** The software can tell when the input is within range. When the input is correct, the program behaves correctly.
>
> **Correct:** The software accepts only input that is within range. When the input is correct, the program returns the correct results.

Latin Words and Phrases

Avoid Latin words and phrases and their abbreviations unless there is no concise English equivalent.

<u>Latin</u>	<u>English</u>
e.g.	for example
i.e.	that is
via	by using **or** through
etc.	Write around by indicating the kind of series that is being continued: **Microsoft Word, Excel, and similar software**; **menu item, text box, or other interface item**.

Note: Vice versa is acceptable, since it is well understood and there is no concise English equivalent.

Long URLs

Use a line break to break a long URL before the last slash before the end of the line (for example, start the second line of the URL at **/Metasys**). If necessary, confirm that the URL can be reached by clicking both the first line and the second line of the URL.

Pronoun References

To avoid ambiguity, follow the word **this** with a noun or noun phrase that clarifies the reference: **this issue.**

Grammar and Syntax

Making Writing Clearer

Strong Verbs and Weak Verbs

Verbs such as **be** (including forms such as **is** and **was**), **have**, and **do** are weaker and more vague than more descriptive, action verbs. They can often be replaced with stronger verbs. The **is…that** construction is a particularly good candidate for improvement.

Weak:	The Status Reporting Tool is a tool that reports the status of a building climate system.
Strong:	The Status Reporting Tool reports the status of a building climate system.
Weak:	If you are not able to view the log file…
Strong:	If you cannot view the log file…
Weak:	Remember to perform a backup of your files regularly.
Strong:	Remember to back up your files regularly.

Avoid starting sentences with **There is** or **There are**.

Weak:	There are three panels on the front of the device.
Strong:	The front of the device includes three panels.
Weak:	There is no way to turn off this function.
Strong:	You cannot turn off this function.

Hidden Verbs (Nominalizations)

Nouns that end in **-tion, -sion, -ment, -ity**, and similar suffixes are often verbs in noun form. You can strengthen sentences, remove weak verbs, and state your meaning more clearly by restoring these nominalizations to verb form.

Nominalization:	conducted an investigation into
Restored Verb:	investigated
Nominalization:	is a description of
Restored Verb:	describes
Nominalization:	has the capability of reducing
Restored Verb:	can reduce

Voice

In grammar, **voice** refers to the relationship between the subject of the sentence and the verb. In the **active voice**, the subject of the sentence performs the action of the verb: **the editors made mistakes.** In the **passive voice,** the subject is acted upon, often by an unknown person or force: **mistakes were made.**

In general, clear writing relies on the active voice; the passive voice depends on the weak **to be** verb form, may obscure the true subject, and is less likely to be instantly understood. For this reason, you should prefer the active voice when writing technical documentation.

However, there are a few situations in which the passive voice is the better option. **Make sure the password is entered correctly** keeps the focus on solving the problem and is less accusatory than **make sure you entered the password correctly.** And **The website cannot be found** is more familiar and less awkward than any alternative in the active voice. Although you should minimize your use of the passive voice, it is better to resort to the passive than to twist a sentence into a less than optimal form.

Limiting Prepositional Phrases

When prepositions—connecting words such as **to, with, by, in,** and **for**—appear too frequently, writing becomes more difficult to understand (and translate). Often, a preposition is a symptom of another problem, such as a weak or hidden verb: **of** in **perform a backup of your files** disappears when corrected to **back up your files**, and **into** goes away when **conducted an investigation into** becomes **investigated**.

A sentence that contains more than two prepositions can usually be cleaned up by looking for nominalizations and weak verbs. If more than two prepositions remain, the idea of the sentence can probably be stated more clearly and forcefully in two sentences instead of one.

Punctuation

Commas

When **and** or **or** separates the last two items in a series of three or more items, use a comma before the word.

When a conjunction such as **and, or,** or **but** separates two independent clauses (phrases that could stand alone as sentences), use a comma before the conjunction.

A parenthetical phrase (see **Parentheses**) can be set between two commas instead of a pair of parentheses. Using commas emphasizes the phrase less than the use of parentheses.

When using the full company name **Johnson Controls, Inc.** in a sentence, do not follow **Inc.** with a comma.

For detailed guidance about the use of commas, see **The Chicago Manual of Style**, sections 6.16 through 6.53.

Semicolons

A semicolon is a stronger separator than a comma. It should rarely be used where a period could not also be used correctly. One exception is in lists where the use of commas to separate the elements could cause confusion or ambiguity.

When an adverb such as **however, therefore, then, nevertheless, consequently,** or **accordingly** begins an independent clause (a phrase that could stand alone as a sentence), the adverb should be preceded by a period or a semicolon and followed by a comma. The same is true for **for example**.

Parentheses

A parenthetical phrase adds additional information that clarifies or adds to the other information in the sentence. When a parenthetical phrase is removed, the sentence remains complete. A parenthetical phrase may be set off by parentheses or commas, depending on its importance and its effect on the readability of the sentence.

If the text inside parentheses is a complete sentence, do not nest the parentheses inside another sentence.

   Incorrect: Do not attempt to use your own materials (all materials are provided).

   Correct: Do not attempt to use your own materials. (All materials are provided.)

Whenever possible, write the sentence to avoid **nested** parentheses (one set of parentheses inside another). Nested parentheses most often appear when XML code automatically defines an acronym. For example, you can rewrite the phrase

> **Access Controllers (D600 or Intelligent Access Controller (IAC))**…

as

> **Access Controllers, such as D600 or Intelligent Access Controller (IAC)**…

When nested parentheses absolutely cannot be written around, use square brackets ([ ]) as the interior parentheses.

Parentheses can be used for quick figure references, as in **In the Focus window, click New (Figure 1)**.

Hyphens

Phrases are usually hyphenated when used as adjectives: **line-of-sight, out-of-pocket, well-constructed**. But when these phrases follow the verb, they are not hyphenated: **it obstructed the line of sight; I paid for it out of pocket; it looked well constructed.** Note that phrases that begin with an adverb ending in **-ly** are never hyphenated: **largely irrelevant, quickly formed.**

Words with standard prefixes such as **auto-, multi-, non-,** and **pre-** may be hyphenated or unhyphenated. To determine whether a word should be attached to its prefix with a hyphen, first check the **Alphabetical Guide to Usage** in this document. If the word is not found there, check a standard dictionary such as *Merriam-Webster's Collegiate Dictionary* (*http://www.merriam-webster.com/*) or *The American Heritage Dictionary of the English Language* (*http://ahdictionary.com/*).

Dashes

Use an **en dash** (–; Windows shortcut ALT+150) to denote a range between two positive numbers, dates, or times (but if **to** is used to mark the range elsewhere in the same table, list, or series, be consistent). Do not use a hyphen to indicate a range.

To avoid confusion with a minus sign, do not use an en dash for ranges that include a negative number. Instead, use the word **to.** For parallelism, also use **to** in other ranges nearby, such as in the same table.

Use an **em dash** (—; Windows shortcut ALT+151) to indicate a sharp break in a sentence, to set off a parenthetical phrase more sharply than parentheses would, and to separate an item from its explanatory text in a list.

Ellipses

In Microsoft Word documents, use an ellipsis (…) after **Continued on next page** in the last table cell in a split table. To enter an ellipsis, press ALT+CTRL+. (period). To enter an ellipsis in Adobe FrameMaker, press CTRL+Q and then SHIFT+I. To enter an ellipsis in XMetaL, show the Symbols toolbar and double-click the ellipsis symbol.

Entering an ellipsis by using three periods may cause the ellipsis to break across lines.

Two-Word Verbs

Verbs that are expressed in two words are often combined as a single word or as a hyphenated word when they are used as an adjective or a noun.

Verb: Be sure to **back up** your files.

Noun: Make a **backup** of your files.

Verb: Enter your password to **log in**.

Noun: The system allows only a single **login**.

The distinction is important because the spelling of the word or phrase gives a clue to how it is intended to be understood (as an action, an item, or a description). The different forms also differ in emphasis when they are pronounced aloud.

The following list includes the most commonly seen two-word verbs and their noun or adjective equivalents.

Verb phrase	Adjective or noun
add on	add-on
back up	backup
break in	break-in
build up	buildup
built in	built-in
call back	callback
check in	check-in
check out	checkout
close off	close-off
cool down	cooldown
cut off	cutoff
cut out	cut-out
follow up	follow-up
log in	login
log out	logout
pay back	payback
pick up	pickup
play back	playback
plug in	plug-in
pop up	pop-up

pull down	pull-down
see through	see-through
set back	setback
set up	setup
short circuit	short-circuit
shut down	shutdown
shut off	shutoff
stand alone	stand-alone
tie down	tie-down
turn off	turnoff
warm up	warm-up

Note that some two-word verbs are better expressed as single-word verbs.

Unnecessary Two-Word Verbs

Do not pair a verb with a preposition that does not add to the meaning. For example, **click on the button** is no clearer than **click the button**. Other examples include **clear out, click on, help to, lift up, meet up** (or **meet up with**)**, pass on,** and **send out**. When possible, use such verbs by themselves: **clear, click, help, lift, meet, pass, send.**

Globalization

Creating English Documentation for a Global Audience

To **globalize** is to create and revise content with a global audience in mind. Members of a global audience may not have learned English as their first language, or the English that they read and write may differ from the English used in the United States. Global-friendly content is created to be more easily understandable regardless of the reader's culture or locale. It reduces translation costs by using words consistently and avoids complex sentence structures. And in many cases, it can improve the clarity of a document for native English speakers.

Globalization includes writing English that can be more easily understood worldwide. In this way, globalization is different from localization, which adapts content to the standards of a particular locale. However, because global content is easier to translate, a globalized document is easier and less expensive to localize.

Globalization is also known as **internationalization.** Globalization rules work at the word level and at the sentence level.

Choosing Words Effectively

Use Words Consistently

Don't use synonyms to include variety. Use the same word or phrase for the same item or concept, every time.

Although the urge to avoid repetition can be strong, being consistent greatly improves the clarity of technical information by eliminating the possibility that the different words mean different things. Consistency helps prevent translation errors, and it greatly reduces the cost of translation, which is typically billed by the number of words translated.

Avoid Ambiguity When Using Pronouns

To avoid repeating a word so often that it becomes distracting, you can use pronouns such as **it** and **they.** However, the noun to which the pronoun refers must be perfectly clear from the context. Usually, the noun or concept for which you are substituting a pronoun should be the very last concept that was mentioned before the use of the pronoun.

Incorrect: The reports that the operations generate are stored in the Completed folders for each area's operations. Make sure that they are correct. (*They* could refer to the reports, the operations, or the folders.)

Correct: The reports that the operations generate are stored in the Completed folders for each area's operations. Make sure that the reports are correct.

Use Optional Words to Aid Comprehension

Although English lets you drop prepositions, articles, and other helper words in many cases, their absence can be confusing to non-native readers and to translators. To improve clarity, include these words whenever you can logically do so.

Before: Set options using the Options menu and verify the settings are correct.
After: Set options **by** using the Options menu and verify **that** the settings are correct.

Also repeat these helper words when writing a parallel structure.

Before: To set up an ADS or ADX, follow the instructions in the PDF or Help system.
After: To set up an ADS or **an** ADX, follow the instructions in the PDF or **the** Help system.

Before: Set the Timeout property to Auto or Maximum.
After: Set the Timeout property to Auto or **to** Maximum.

Replace Nominalizations with Strong Verbs

A nominalization is a noun that is made from a verb by adding **-tion**, **-sion, -ment, -ance**, or a similar ending. Although these kinds of nouns are sometimes the only words that will serve, when they are paired with a weak verb such as **be, do, make,** or **perform**, they are better replaced by the stronger verbs from which they were formed. When you rewrite a phrase in this way, the weak verb and the nominalization are both replaced by the stronger verb, and associated prepositions are also eliminated. Sentences become shorter and clearer, and translation costs are reduced.

Before: perform an installation of
After: install

Before: results in the minimization of
After: minimizes

Before: upon inspection of
After: when you inspect

For more examples, see p. *xx*, *Hidden Verbs (Nominalizations)*.

Words Ending in -ing

In English, words that end in **-ing** may be verbs (**I am thinking of a number**), adjectives (**He put on his thinking cap**), or nouns (**She saw a flaw in his thinking**). However, other languages may not allow using verbs as nouns or adjectives in this way. Readers whose first language is not English may interpret an **-ing** phrase as a verb when another meaning is intended.

For example, consider the phrase *meeting requirements*. It could be equivalent to any of the following phrases, which all mean different things:

- that meet requirements
- how to meet the requirements
- requirements for the meeting

Or consider the phrase *The user can modify components using the configuration scheme.* This could have either of two meanings:

- The user can use the configuration scheme to modify components.
- The user can modify components that use the configuration scheme.

Be aware of the multiple meanings an -ing phrase may have, and try to write in a way that reduces the ambiguity.

When possible, use a strong active verb instead of an -ing word.

Global-unfriendly: When installing the product…
Global-friendly: When you install the product…

Avoid Idiomatic Expressions

Colloquial English includes many synonyms whose meaning is not preserved when they are translated literally. For example, we may use **as well as** to mean **in addition to**, when it literally means something like **to an equal degree of quality as.** For international audiences, it's much better to use **in addition to** or **and**.

Whenever possible, use an unambiguous synonym instead of an idiom.

Idiom	Synonyms
as well	also
as well as	and, in addition to
carry out	perform
comes up	results, occurs unexpectedly
deal with	handle, respond to
figure out	understand
find out	discover, learn
for good	permanently
get back to	return to
get rid of	discard, delete
go ahead	proceed, begin
go back	return

Idiom (cont.)	Synonyms (cont.)
go on	continue
in case	if
in general	generally
put up with	tolerate
right away	immediately
takes place	occurs

Constructing Sentences Efficiently

The most basic structure of an English sentence is subject-verb-object (SVO): **The subject acts on the object.** In general, the simplest sentence that fits this model is the best for a global audience.

A **compound** sentence consists of two or more subject-and-verb clauses which could stand alone: **The client initiates the connection, and the server sends an acknowledgement.**

A **complex** sentence includes one or more dependent phrases that begin with a preposition. It may also include descriptive or parenthetical phrases. The following is a complex sentence: **A server that receives a connection request from a client, such as a local or remote desktop application, responds by sending an acknowledgement packet to the requester.**

A **complex compound** sentence is a sentence of two or more clauses that could stand alone, at least one of which is complex: **A server that receives a connection request from a client, such as a local or remote desktop application, responds by sending an acknowledgement packet to the requester, and the process repeats until no more connection requests arrive.**

For globalization, the most effective sentence is the least complex sentence. This may mean breaking a complex or compound sentence into multiple smaller sentences:

A server that receives a connection request from a client responds by sending an acknowledgement packet to the requester. The requestor may be a local application or a remote desktop application. This process repeats until no more connection requests arrive.

Keep Sentences Short and Straightforward

The unit of information is the sentence. In the clearest writing, each sentence makes a single informational point, instead of handling several points in compound and complex constructions. Don't confuse using simpler sentences with oversimplifying content. You can convey the same information in less complex sentences as you can in denser prose. To do this:

- Consider splitting a compound sentence of two concepts or more into one sentence per concept. (Often, this means looking for a word such as **and** to find the split point.)

  Before: The reporting system points to a specific System Configuration Tool (SCT) archive (MyArchive1) that is empty, except for a Site object, and can be used as a starter for site configuration.

  After: The reporting system points to a specific System Configuration Tool (SCT) archive (MyArchive1) that is empty except for a Site object. You can use this archive as a starter for site configuration.

- Move a clause starting with **which** or **that** into its own sentence.

  Before: If variable speed chilled water pumps are selected, this system is equipped with a bypass valve that opens as the building flow decreases below the chilled water minimum flow setpoint.

  After: If variable speed chilled water pumps are selected, this system is equipped with a bypass valve. The bypass valve opens as the building flow decreases below the chilled water minimum flow setpoint.

  Before: The fan speed adjustment, which can also be controlled manually, indicates the amount of power provided by the remote generator.

  After: The fan speed adjustment indicates the amount of power that is provided by the remote generator. The fan speed adjustment can also be controlled manually.

- Move parenthetical phrases, including those set off by commas, into their own sentences.

  Before: The UI viewer and builder, Alarms log, and Log Manager, all of which were in older versions of the LNS network management tool, are now available as a new stand-alone tool.

  After: The UI viewer and builder, the Alarms log, and Log Manager are now available in a new stand-alone tool. These features were previously in older versions of the LNS network management tool.

Avoid Inverted Word Order

Although the subject-verb-object construction is standard, English also allows the verb to precede the subject. This order is most often used for questions, and non-English speakers usually readily understand it this way:

Statement: The product is available. **(SVO)**
Question: Is the product available? **(VSO)**

However, when the verb precedes the subject for other reasons, comprehension is more difficult for non-native users of English. Avoid inverted sentences like the following by putting the subject before the verb.

Inverted: Below the properties field is the size control. **(OVS)**
Better for Globalization: The size control is located below the properties field. **(SVO)**

Inverted: Only rarely do these attributes conflict. **(VS)**
Better: These attributes rarely conflict. **(SV)**

Inverted: The closer these two values are to each other, the greater is the chance for error.
Better: The closer these two values are to each other, the more the chance for error increases.

Inverted: New at this release is the one-step installation feature.
Better: The one-step installation feature is new at this release.
Even Better: New features include one-step installation.

Keep Modifiers Close to Their Subjects

The English language gives its users a great deal of flexibility in choosing where to place modifying words and phrases. When a word or phrase is separated from the word it modifies, the reader (or listener) has to work harder to understand the sentence. Consider this sentence:

You can only install the preference manager on a Windows 7 system.

There are three things the word **only** could be modifying here.

1. You can only **install** the preference manager on a Windows 7 system. You can't modify it or uninstall it.

2. You can only install **the preference manager** on a Windows 7 system. You can't install anything else.

3. You can only install the preference manager **on a Windows 7 system.** You can't install it on Windows XP or Windows Server 2008.

Only the reader's familiarity with the English language, with programs, and with computers lets him or her decide that number 3 is most likely correct. The sentence is really saying that you can install the preference manager **only on a Windows 7 system.**

Keep all modifying words and phrases close to their objects, even if the meaning seems to be clear. What is clear to a native speaker may not be as clear to one whose first language is not English.

Before: When an ADS/ADX server computer restarts on a network that does not have the Metasys system installed **during a domain migration**, data loss may occur.

After: When an ADS/ADX server computer restarts **during a domain migration** on a network that does not have the Metasys system installed, data loss may occur.

The data loss occurs when the computer restarts during a domain migration, not when the network does not have Metasys installed during a domain migration.

Before: The log file lists all the data points, including erroneous data points **on the Data tab**.
After: The log file lists all the data points **on the Data tab**, including erroneous data points.

The first sentence seems to say that the log file includes every data point from every tab, including erroneous data points from the Data tab alone.

Alphabetical Guide to Usage

#

Do not use except to identify wire gauge or screw size.

&

Do not use unless it appears on the screen, in code, or as part of a trademark.

Ω

Do not use for **ohm**.

above

Except in letters, use **preceding** and **following** to refer to something elsewhere in the same document**.**

adapter, adaptor

Use **adapter** except in HVAC contexts, where **adaptor** is preferred when referring to hardware. (In HVAC documents, **adapter** refers to a person who adapts.)

add-on

See *Two-Word Verbs*.

administrator, Administrator

Do not capitalize **administrator** when used to describe a user role with administrative privileges. Capitalize **Administrator** when referring to a built-in Administrator account or another named account.

ADS/ADX

When ADS and ADX are first defined as part of a combined phrase, spell out both definitions, and then give the combined acronyms: **Application and Data Server/Extended Application and Data Server (ADS/ADX).**

Because it is rare to use these spelled-out terms in preference to their acronyms, it is also acceptable to introduce the terms as acronyms and put the definition in parentheses: **ADS/ADX (Application and Data Server/Extended Application and Data Server).**

To use the plural of **ADS, ADX, or ADS/ADX,** add a generic noun such as **computers** or **devices** after the unchanged acronym: **ADS computers, ADX computers, ADS/ADX devices.** This usage avoids difficult-to-pronounce acronym plurals such as *ADSs* and *ADSs/ADXs.*

air-condition (*v.*)**, air-conditioned** (*adj.*)**, air condition** (*n.*)

Hyphenated as a verb or an adjective; two words as a noun phrase.

airflow

One word.

air line

Two words when referring to tubing.

airstream

One word.

alarm

Avoid when referring to a sound (**beep** is preferred).

Allen-head

Hyphenated adjective.

allow, allow for

To **allow** is to permit or to let something occur. To **allow for** is to take a possibility into account or to make allowance for. It is stronger and clearer to write that a configuration **allows you to install** than to write that it **allows for the installation of**. The first indicates that the user is enabled, while the second says only that the configuration does not prevent the installation.

alphanumeric

Not *alphanumerical.*

A.M., P.M.

All caps, periods, no spaces. Do not spell out. Use **12:00 noon** and **12:00 midnight** for these times.

amp

Do not use for **ampere** (A).

amperage

Do not use. Slang for **current**.

and/or

Do not use.

You can almost always pick one or the other with no loss of clarity. If you are sure both terms are required, use the form **a, b, or both**.

and so on

Do not use **and so on** to end a phrase that begins with **for example** or **such as**. (Because these opening phrases indicate that what follows is not an exhaustive list, adding **and so on** is superfluous.)

Avoid **and so on** when you have room to replace it with a more specific class of items.

Incorrect: Plan in advance how you want to install FACs, FECs, and so on.

Correct: Plan in advance how you want to install FACs, ASCs, and other controllers.

appears

Use instead of *is displayed.* **Appears** does not require a direct object (and is in the active voice).

appendixes

The preferred plural (over *appendices*) of **appendix**.

Application server

When this term is used in Metasys documentation, **Application** is capitalized, and **server** is not.

assembly language

Not capitalized.

assure

Ensure is preferred. Use with caution, as the word may imply a warranty.

as well

Do not use to mean **also**.

auto-

Use a hyphen with **auto-** unless the word that it begins is one of the few listed in a general dictionary without a hyphen: **autoimmune, automobile.** In technical documentation, most words that begin with **auto-** are specialized words or new coinages. Such words in use at Johnson Controls include **auto-answer, auto-call, auto-dial, auto-discovery,** and **auto-restore.**

backbox

One word.

backlight

One word.

backplate

One word.

band-pass

Hyphenated.

bar code

Two words.

base frame

Two words.

baud, baud rate

Use **baud** with a number (for example, **3400 baud**), but use **baud rate** without a number. (Use commas in five-digit rates.) Not the same as **bits per second (bps)**.

below

When used to refer to something elsewhere in the same document, use **preceding** and **following.**

branch

Capitalize only when referring to a specific branch (for example, **the Madison Branch**).

break-in

Hyphenated.

brownout

One word (not hyphenated).

bus

Preferred to *bus bar.*

button

Use to refer to a physical (hardware) button. Avoid when discussing a software option: refer to an option by its label unless it has no label. For example, instead of *click the Win64 button,* write **click Win64**. But to maximize a window, **click the Maximize button** (because the Maximize button has no label).

card holder

Two words.

card reader

Two words.

cash flow, cashflow

Two words as a noun; one word as a descriptor.

catalog

Not *catalogue.*

change-of-state

Always hyphenate. The plural is **changes-of-state**.

check box

Two words.

check-in, check in

See *Two-Word Verbs*.

checklist

One word.

check mark

Two words.

checkvalve

One word.

click

Not *click on.*

close off, closeoff

See *Two-Word Verbs.*

collateral

As a noun, use only to mean property used as security for a loan. For material shipped with a product, use **material**, **documents**, or another specific noun.

common

Do not use to identify an electrical ground. A common is a circuit point or connection that allows a current to return to its source.

control-agent

Hyphenated.

copy and paste

Just use **copy** and explain where to copy the item.

Incorrect: Copy and paste the file to the desktop.
Incorrect: Copy the file and paste it to the desktop.
Correct: Copy the file to the desktop.

cover plate

Two words.

crankarm

One word.

cross-reference

Hyphenated.

cut-in

Hyphenated.

data

May be used as singular or plural.

database server

Not capitalized.

daughter board

Two words.

daylight saving time

Not *daylight savings.* No hyphens.

deadband

One word.

de-energize

Hyphenated.

de-rate

Hyphenated.

deselect

Clear is preferred where it is also correct.

desired

Remove *desired* (adj.) and *as desired* (adv.). If the user's preferences are critical to the sense, use **preferred** or write around.

Incorrect: Set the desired timeout option.
Correct: Set the timeout option.

Incorrect: Edit the properties as desired.
Correct: Edit the properties.

Incorrect: Make sure the limits are set to their desired values.
Correct: Make sure the limits are set appropriately (or **to their preferred values**)

dew point

Two words.

dialog

Not *dialogue.* Use **dialog box** to mean a window on the screen that requires user input.

die-cast

Hyphenated.

different from

Do not use *different than.*

DIP switch

Two words. Note capitalization.

discontinued

Preferred to *obsolete.*

displays

Requires a direct object: for example, **displays a warning message**. To indicate that an item is displayed, use **appears** (see).

DOS

Refer to the window used to enter text commands as the **command-prompt window**, not as the *DOS window.* Do not use *DOS* to describe actions or items related to the command line.

double-

Hyphenate constructions such as **double-click, double-density, double-pole, double-sided, double-throw,** and so on.

double-click

Do not use *double-click on.*

drafter

Use instead of *draftsman* or *draftsperson.*

drag and drop

Unless referring directly to the drag-and-drop feature itself, just use **drag:** the action of dragging includes dropping the element in place.

drive letters

Use capital letters as drive letters.

drive shaft

Two words.

dry bulb

Two words.

ductwork

One word.

earlier

See **versions, comparing.**

When used to refer to something elsewhere in the same document, use **preceding.**

e.g.

Always use **for example** (followed by a comma).

email

Lower case. Not hyphenated.

end user

Two words.

ensure

Use with caution. May imply a warranty.

etc.

Use an English phrase instead (such as **and so on, and so forth, and similar items**). Or, rewrite to avoid the use of this kind of end phrase. Lists that begin with **for example** or **such as** do not need to end with **etc.** or an English equivalent, because it is already understood that the list is incomplete. See **and so on.**

Ethernet

Although this term is no longer trademarked, it is still usually spelled with a capital E. Capitalize.

exit

When used to mean leaving a program, use **quit** instead.

fail-safe

Use **fails to predetermined state** instead.

fax

Not an abbreviation. Do not define.

field

Do not use when referring to a box or an option in a dialog box. Use **box**.

Figure

Do not abbreviate. Always initial cap. To refer to a figure in the body text, put a link to the figure inside parentheses: **…the Welcome page (Figure 7)**.

Note: To aid translation, insert the figure reference only at the end of the sentence.

Figures should always be referenced if they are not on the same page or on the page immediately following. If the figure being referenced is on the same page or on the page immediately following, the reference can be omitted.

file name

Two words.

fire management, fire safety

Use **fire management** instead of *fire safety* or *life safety*.

flash

Not capitalized unless referring to the technology used for animation on the web.

flat-head

Hyphenated.

follow-up

See *Two-Word Verbs.*

found in

When specifying the location of an item, just say **in.** Also see **located in.**

freestanding

One word.

fully open, fully closed

Not *full-open* or *full-closed*.

ground plate

Two words.

handheld

One word.

handwheel

One word.

hang

Do not use. Use **stop responding**.

hard disk

Two words. Do not use *hard drive.*

hardwire, hard-wired

One word as a verb. Hyphenated as an adjective.

headend

One word.

Help

Capitalize when referring to a Help system. Do not italicize unless **Help** is part of a Help system title.

help

Do not use *help to* or *help (object) to.* See *Unnecessary Two-Word Verbs*.

hex, hexadecimal, hex editor

When used to refer to base 16 notation, spell out as **hexadecimal**. **Hex editor** is approved to describe a program used to examine hexadecimal code. Do not capitalize **hex** except at the beginning of a sentence.

hex-head

Hyphenated.

high-

Hyphenate constructions such as **high-capacity, high-density, high-level,** and so on (except for **high band**).

high band

Two words; not hyphenated.

higher

See **versions, comparing.**

host name

Two words, unless describing a label in the user interface. If the user interface uses *hostname*, use the one-word form only to describe the interface element: **In the Hostname box, enter your host name.**

i.e.

Always use **that is** or a close equivalent (followed by a comma).

IE

Do not use for Internet Explorer.

if vs. whether

Use **whether** when the choice is between clearly stated alternatives. Use **if** when there are many possible alternatives or when the situation is ambiguous.

illegal

Use only for actions or methods that are against the law. Otherwise, use **invalid.**

inline

One word.

install, installation

Do not use *install* as a synonym for **installation.** Use **install** only as a verb.

insure

Ensure is preferred. Use with caution, as the word may imply a warranty.

Internet

The World Wide Web and other globally networked digital services. Always capitalize.

Internet Explorer, versions of

Use whole numbers without decimal places to refer to major versions of Internet Explorer: **Internet Explorer 8, Internet Explorer 10, Internet Explorer 11.** Do not abbreviate to *IE.* Per trademark guidelines, use **Windows® Internet Explorer®** on first use.

intranet

A company's private, internal network. Not capitalized.

I/O

Input/Output. Not *I-O.*

is displayed

Passive voice; do not use. Prefer **appears** (see).

jackshaft

One word.

JCI

As an abbreviation for **Johnson Controls, Inc.**, it can be used in price lists, but never in body text.

kb, KB

Kilobit (rare) and kilobyte. In data measurement, a small b indicates a bit; a large B indicates a byte. Although the standard metric prefix for 1,000 is a small k, data measurement symbols are usually in all caps.

keypunch

One word.

keyswitch

One word.

keyword

One word.

later

See **versions, comparing.**

launch

Use **start** instead.

lb

Abbreviate **pound** as **lb** with no period and no **s.**

left-hand, right-hand

Just say **left** or **right.**

line of sight, line-of-sight

Following the general rule for phrases that can act as either nouns or adjectives, hyphenate when used as an adjective; do not hyphenate when used as a noun.

listing

When used as a noun, prefer **list**.

located in

Frequently unnecessary. For example, instead of *located in the upper right corner,* just write **in the upper right corner.**

locknut

One word.

lock washer

Two words.

log in, login; log out, logout

Two words as a verb. One word as a noun. Do not use *log on* or *log off* except to match UI. **Note:** This is a reversal of earlier practice based on the fact that most of our applications use *log in* or *login* in their interfaces.

loopback

One word.

low-

Hyphenate constructions such as **low-capacity, low-density, low-level,** and so on.

low band

Two words; not hyphenated.

lower

See **versions, comparing.**

machine

Do not use as a synonym for **computer**. OK to use in the term **virtual machine.**

media

Plural. The singular is **medium**. Specify the kind of media meant whenever possible: **insert the product disc,** not *insert the product media.*

Metasys system *Help*

System is lowercased; **Help** is capped and italicized.

mid band

Two words.

midnight

Use **midnight** or **12:00 midnight**, not *12:00 A.M.*

minute

Do not abbreviate.

molly bolt

Two words.

motherboard

Do not use. Use a more specific term that specifies the part or parts of the motherboard that are meant.

MS

Do not use for Microsoft. Microsoft is a trademark name.

MSEA

Metasys System Extended Architecture. **Do not use** unless you are referring to a coded interface item or a graphic that cannot be changed.

needle-nose

Hyphenated.

No.

Always capitalize, but prefer **number** if the sense allows it.

noncondensing

No hyphen.

nonvolatile

No hyphen.

noon

Use **noon** or **12:00 noon**, not *12:00 P.M.*

normalband

One word.

obsolete

Use **discontinued**.

offline

One word.

off-load

Hyphenated.

ohm

Not capitalized (unless part of a title-capped sentence or phrase). Use the plural in measurements of other than 1 ohm (**4.2 ohms**; **1.5 ohms/meter**).

onboard, on board

One word when used as a frontal descriptor: **onboard systems.** Two words when used as the object of a verb: **get on board.**

once

Do not use for **when** or **after**.

One-to-One

In an HVAC context, capitalize when using the term to distinguish an application from a mesh-network application.

online

One word.

on-screen

Hyphenated, but use **on the screen** if possible.

operator

Not capitalized when used alone.

O-ring

Hyphenated, initial cap.

outdoor, outside

Outside is preferred, but you can use **outdoor** to match the usage in the name of an existing product.

pan-head

Hyphenated (**pan-head screw**).

Panoptix

Use a registered trademark symbol (®) after the first reference (and only after the first reference) to Panoptix.

When you refer to a Panoptix application for the first time in a sales letter or a product bulletin, precede the name of the application with **Panoptix.** For example, **Panoptix Carbon and Energy Reporter.**

path name

Two words.

PC

Do not use for **computer**.

perform

A weak verb. Often, there is a stronger, shorter way to express the action.

Weak: If you are performing an upgrade
Strong: If you are upgrading

Weak: When you perform an installation
Strong: When you install

Phillips-head

Hyphenated, with a capital P.

phoneline, phone line

One word as a descriptor. Two words as a noun.

phone numbers

Use the following formats:

- 1-800-xxx-xxxx
- 414-xxx-xxxx

pinout

One word except as a verb phrase.

plug-in

Lowercase; hyphenated.

P.M.

All caps, periods, no spaces. Do not spell out.

P.O.

Purchase order. No spaces; do not spell out.

populate

Jargon. Use **fill, complete,** or another less technical synonym.

pop-up, pop up

See *Two-Word Verbs.* Do not use as a noun.

power down

Do not use. Use **turn off**.

PowerShell

Windows PowerShell® is a Microsoft task automation framework. Note the internal capitalization.

PPM

Pulse per minute. Do not spell out. Do not use for **parts per million.**

ppm

Parts per million. Do not spell out. Do not use for **pulse per minute.**

preassembled

Not hyphenated.

---

pre-built

Hyphenated.

pre-configured

Hyphenated.

predefine, predefined

Not hyphenated.

preprogram

Not hyphenated.

prerequisites

Use instead of *pre-installation* or other similar terms.

preventive

Preferred to *preventative.*

pre-wire, pre-wired

Hyphenated.

printer-friendly

Not *print-friendly.* Hyphenate.

prior to

Before is preferred, especially when **prior to** precedes a gerund or a nominalization (such as **installing** or **installation**) that can be converted to a simple verb: **before you install.**

-proof

Add **-proof** to a single word (unhyphenated) only when the usage is already established, such as **fireproof.** In other cases, add **proof** as its own word, such as **explosion proof.**

PTFE

Polytetrafluoroethylene. Do not spell out, even if you can.

push-button, push button

Hyphenated as a modifier. Two words as a noun.

Q.A.

Quality Assurance. No spaces.

Q&A

Question and answer. No spaces; do not spell out.

qty

Quantity. No period.

radio button

Do not use. Use **option button** if you must refer to the button itself rather than its label.

RAP

Do not use.

read/write

When referring to the ability to modify and save files, always use **read/write**, not *read and write*. Refer to **permission** instead of **access**.

readme

One word (**readme file**).

read-only

Hyphenate when used as a file permission term. In Refrigeration documents, the term **view only** is standard.

real-time, real time

Hyphenated as a descriptor. Not hyphenated as a noun phrase.

reboot, restart

Use **restart** instead of **reboot** to refer to turning off and then turning on a computer.

receiver-controller

Hyphenated.

refer to, see

Use **refer to** when directing the reader to another document. Use **see** when directing the reader to another place in the same document.

reimage

Not hyphenated.

reinstall

Not hyphenated.

release

When referring to changes that occur with a particular release, use the preposition **at** (for example, **at Release 6.0**).

relicense

Not hyphenated.

Rev. —

Use an em dash (Windows shortcut: ALT+num 0151).

revision levels

Do not use the letters I, O, or Q for revision levels.

RF

Radio frequency. Do not spell out when discussing wireless technology.

right-click

Hyphenated. Do not use *right-click on.*

right-hand

Just say **right.**

rolloff

One word.

rough-in box

Do not use. Use **wallbox.**

runtime

One word.

(s)

Do not add *(s)* or *(es)* to a singular noun to indicate that it can be singular or plural: choose one. If it is very important to indicate both, use **one or more**.

same exact

Do not use. Use **exactly the same.**

see, refer to

Use **refer to** when directing the reader to another document. Use **see** when directing the reader to another place in the same document.

see-through

See *Two-Word Verbs.*

select

Click is preferred where it is also correct.

setpoint

One word.

set screw

Two words.

sheet metal

Two words.

short circuit, short-circuit

Two words as a noun; as a verb, hyphenated.

sideloop

One word.

stand-alone, stand alone

See *Two-Word Verbs.* Do not use as a noun.

Standard Control Panel

Use initial caps.

sub-

Do not use a hyphen with **sub-** unless the word that it begins is listed in a general dictionary with a hyphen. Words used in Johnson Controls documentation include **subassembly, subcontractor, subdirectory, submaster, submenu, subpanel, subsystem** and **subtotal.** However, see **sub band.**

sub band

Two words.

super band

Two words.

superuser

One word.

swap out

Do not use. Use **replace, exchange,** or **substitute**.

switchline

One word.

switchover

See *Two-Word Verbs.*

switch point

Two words.

system/object name

Use a slash instead of a space.

sync

Okay to use for **synchronize.** Do not use *synch.*

taskbar

One word.

T-bar, T-connector

Hyphenated; capital T.

temp

Use only to abbreviate **temperature.** Do not use to abbreviate **temporary.**

thru, thru-put

Do not use. Use **through** and **throughput.**

tie-rod

Hyphenate.

time zone

Two words.

tooltip

One word.

touchpad

One word.

touch screen

Two words.

toward, towards

Although both are correct, **toward** is more common in American English, while **towards** is more common in British English. Prefer **toward.**

U-bolt

Hyphenated; capital U.

uninstall, uninstallation

Uninstall is a verb. **Uninstallation** is the corresponding noun and adjective. However, use **remove** and **removal** when a direct parallel with **install** and **installation** is not required and it is not necessary to match the UI.

user name

Two words, unless describing a label in the user interface. If the user interface uses *username*, use the one-word form only to describe the interface element: **In the Username box, enter your user name.**

Version

Capitalize **Version** when identifying the version of a Johnson Controls product together with the product name. Do not capitalize **version** when referring to other companies' products.

versions, comparing

When referring to versions of hardware, use **higher** and **lower**. When referring to versions of software, use **earlier** and **later.**

view only

Used instead of **read-only** in Refrigeration documents.

vs., versus

Spell out in text. In headings, use a period and do not capitalize.

W.C.

Water column. All caps, periods, no spaces. Do not spell out.

wallbox

One word.

warm-up

See *Two-Word Verbs.*

washer-head

Hyphenated.

web

Do not capitalize except in the phrase **World Wide Web**.

web/application server

Not capitalized. This term refers to a single computer (and not to a web server and an application server).

web-based

Hyphenated.

web browser

Two words, not capitalized.

webcast

One word, not capitalized.

web-enabled

Hyphenated.

webpage

One word, not capitalized.

website

One word, not capitalized.

wet bulb

Two words.

wg

Water gauge. Lowercase, no periods. Do not spell out.

What's New

Use **at** when specifying new features of a release: **What's New at Release 1.1.**

whether or not

Use **whether.** See also **if vs. whether.**

Windows Server 2003

Always include the word **Server** immediately after **Windows**. Microsoft has made no *Windows 2003* or *Windows 2003 Server* product.

within

Use **within** only to indicate a sense of enclosure: **the control fits within the case**. Use **in** for other senses: **the file is editable in** (not *within*) **any text editor**; **the feature in** (not *within*) **the Regulator application.**

workflow

One word.

worksheet

One word.

writable

No *e*—do not write *writeable.*

wrong

Use **incorrect.**

wt

Abbreviation for **weight.** No period.

WWW

World Wide Web. Lowercase when used as part of an Internet address. Do not spell out.

Abbreviations and Acronyms That Need No Defining

A	ampere	
A.M.	*ante meridiem* (before noon)	**All caps, periods, no spaces**
ABCS	Authorized Building Controls Specialists	
AC	air conditioning	
AH	ampere hour	
ASCII	American Standard Code for Information Interchange	
ATTN	attention	
AWG		
bps	bits per second	
BTU	British thermal units	
C	Celsius	
CCW	counterclockwise	
cfm	cubic feet per minute	
cph	cycles per hour	
CRT	cathode ray tube	
CW	clockwise	
dB	decibels	
DC	direct current	
DIP	dual inline package	
DOS	disk operating system	
dpi	dots per inch	
FAT	file allocation table	
fax		**Not an abbreviation**
FLA	full load amperes	
Fpm	feet per minute	

ft	feet	
GB	gigabytes	
GBPS	gigabytes per second	
GUI (Obsolete)	graphical user interface	**Use UI**
H	height	
hp	horsepower	
HTML	Hypertext Markup Language	
HTTP	Hypertext Transfer Protocol	
HTTPS	Secure Hypertext Transfer Protocol	
HVAC	Heating, ventilating, and air conditioning	
HVACR	Heating, ventilating, air conditioning, and refrigeration	
I.D.	inside diameter	
in.	inches	**Use a period**
IP	Internet Protocol	
ips	inches per second	
ISO	International Organization for Standardization	
IT	information technology	
JPEG	Joint Photographic Experts Group	
K	kelvin	
kb	kilobits	
KB	kilobytes	
L	length	
LAN	local area network	
lb	pounds (Latin *libra*)	
LCD	liquid crystal display	
LED	light-emitting diode	
mA	milliamperes	

MAC	media access control
MB	megabytes
Mbps	megabits per second
N.C.	normally closed
N.O.	normally open
N1LAN (Obsolete)	
O.D.	outside diameter
OEM	original equipment manufacturer
OSHA	Occupational Safety and Health Administration
ping	**Not an abbreviation**
P.M.	*post meridiem* (after noon)
P.O.	purchase order
PDA (Obsolete)	personal digital assistant
PPM	pulse per minute
ppm	parts per million
psi	pounds per square inch
psig	pounds per square inch gauge
PTFE	polytetrafluoroethylene
Q&A	question and answer
RF	radio frequency
RH	relative humidity
RMA	return material authorization
ROM	read-only memory
rpm	revolutions per minute
SD	Secure Digital (used in **SD card,** a digital storage device)
SI	International System of Units
sq ft	square feet

sq m	square meters	
SQL	Structured Query Language	
SVG	scalable vector graphic	
SVGA	Super VGA	
SVGZ	compressed scalable vector graphic	**Extension, not abbreviation**
TCP/IP	Transmission Control Protocol/Internet Protocol	
UI	user interface	
UPS	uninterruptible power supply	
URL	Uniform Resource Locator	
USB	Universal Serial Bus	
UTC	Coordinated Universal Time	
V	volts	
VAC	volts alternating current	
VAV	Variable Air Volume	
VBA	Microsoft Visual Basic for Applications	
VDC	volts direct current	
VGA	video graphics array	
VLAN (Obsolete)	virtual local area network	
VPN	virtual private network	
VRAM	video (or voice) random access memory	
VROM	video (or voice) read-only memory	
W	watts	
W	width	
W.C.	water column	
WAN	wide area network	
wg	water gauge	
WLAN	wireless local area network	

WWW   World Wide Web

XML   Extensible Markup Language

Johnson Controls Trademarks

ACBS™
Actrol™
All-Polymer™
Auto Vision™
AutoCal™
AutoOffice™
Bantam™
BASO®
BASOTROL®
Basotron®
Bic™
Big Foot™
Blue Top™
Blueconnect™
BoilerMaker™
Bosmart™
Bosmart.com™
Bos-Net™
Business Operations Solutions Marketplace™
Capcycle™
Cel-Form™
Comfortcools®
Comfortlab®
Cortex™
Desert Shield™
Driving Force®
Dry Plus™
Dual Tough™
DuraGold™
Duralast™
Dynasty®
Eco-Board™
Eco-Cor™
EnNet®
Everstart®
Grand™
Heat Buster™

Heat Handier™
Home Lock™
Homelink®
ISS™
JC/80™
Johnson®
Johnson Controls®
Johnson Controls/PENN®
Labelcycle™
Liberty™
LifeCycler™
Light Foot™
Maxxam™
Metasys®
Metasys Integrator®
MICRO-SET®
Monopet™
Nucycle™
Optima Batteries™
Panoptix®
Personal Environments®
Power Connection®
Powerframe™
Prince™
Redieye®
Second Chance™
Stage One®
Starfacility.com™
StationPac™
Stratasound™
Street Smart™
Sun Tracker™
Supercycle™
Superhose™
Teams™
TI OO™
Uni-Flex™
Uniloy™
Uni-Trim™
Yellow Top™

Appendix C
Windows ALT Codes for Special Characters

Hold down the ALT key and use the number pad to enter these characters in any Windows program.

Note: Some programs (such as Word and FrameMaker) may also have their own shortcuts for these characters. Either will work.

Name	Character	Code	Usage
Degree	°	ALT+0176	Temperature or angle
Em dash	—	ALT+0151	Standard dash for body text
En dash	–	ALT+0150	Use to indicate a range (0°–75°C)
Micro (Greek *mu*)	µ	ALT+0181	SI symbol (for example, µA)
Raised dot	·	ALT+0183	Use between symbols in combined measures
Plus or minus	±	ALT+0177	
Trademark	™	ALT+0153	
Registered trademark	®	ALT+0174	
Copyright	©	ALT+0169	