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NiagaraAX-3.3 Scientific Notation Support

NiagaraAX-3.3 supports the use of very large and very small numbers by using scientific notation. Values equal to or larger than 9007199254740992 are rendered in scientific notation using "E Notation" format. The following sections use examples to describe how NiagaraAX-3.3 displays values in scientific notation:

- [E Notation Format](#)
- [Example Number Expressions](#)

E Notation Format

The general format for scientific notation "E Notation" is: nEx

Where:

- n = the "coefficient", a number that is greater than 1 and less than 10
- E signifies the exponent place, or base 10
- x = the exponent (or "power of") 10

Note: You may enter numbers in property fields as either standard expression or as scientific notation. How the numbers are displayed depends on the size of the number.

Example Number Expressions

Three types of scientific notation examples follow:

- [Example 1: Maximum and Minimum Numbers](#)
- [Example 2: Numbers Displaying in a Graphic Display \(Px Page\)](#)
- [Example 3: Numbers Displaying in a Property Sheet View](#)

Example 1: Maximum and Minimum Numbers

The following table shows a comparison of how numbers display in NiagaraAX-3.3.

Table 1-1 Scientific Notation Display Comparison

Example #	Number Used:	Workbench Displays:
1.	9007199254740991	9007199254740991
2.	9007199254740992	9.007199254740992E15
3.	-9007199254740992	-9.007199254740992E15
4.	-9007199254740991	-9007199254740991

Note the following about these example numbers:

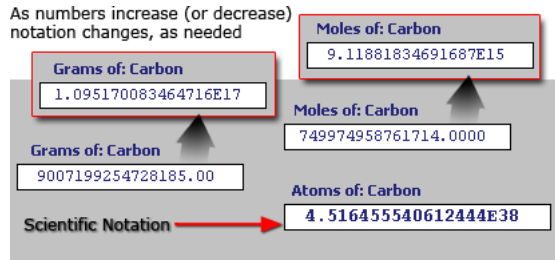
- **In Example 1:**
the number used (entered or calculated) is the largest number that displays in standard expression (without scientific notation). If "1" is added to this number, then it is displayed as the number in Example 2.
- **In Example 2:**
the number used (entered or calculated) is displayed using scientific notation.
- **In Example 3**
the number used (entered or calculated) is displayed using scientific notation.

- **In Example 4**
the number used (entered or calculated) is the smallest number that displays in standard expression (without scientific notation). If "1" is subtracted from this number, then it is displayed as the number in Example 3.

Example 2: Numbers Displaying in a Graphic Display (Px Page)

The following illustration shows an example of how scientific notation expresses a large number in a graphic display of a process application.

Figure 1-1 Displaying Large Numbers Using Scientific Notation



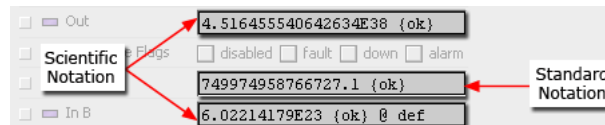
Note the following about Example 2:

- Numbers are displayed using both scientific notation and standard expression on a graphic Px page.
- As a source amount of carbon exceeds a certain value, the expression of that value in "grams", "moles", and "atoms" of carbon changes from standard expression to scientific notation. If the source value is reduced, the value expressions can change back to standard notation from scientific notation, as well.

Example 3: Numbers Displaying in a Property Sheet View

The following illustration shows an example of how scientific notation expresses a large number in the workbench property sheet.

Figure 1-2 Scientific Notation in the Property Sheet View



Note the following about Example 3:

- Property fields display both standard notation and scientific notation, as needed.
- Facet settings for "Precision" do not limit the number of decimal places in the scientific notation expression. For example, a number that is displayed with a precision of "1" decimal place may display with more than one decimal place in scientific notation.

Document change log

Updates (changes/additions) to this *Fox Tunneling and HTTP Tunneling* document are listed below.

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