Energy Conversions in DLL file

1   Introduction

The conversion DLL file of unit Energy is written in C/C++ programming language style, and do not require any extra code in using this DLL file. This DLL file includes 2 functions to handle the Energy conversions as follow:
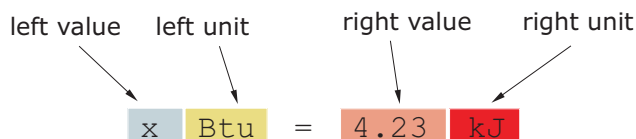
```
double LP_UnitConversionsEnergy_GetLeftValue (char* LeftUnit, char* RightUnit, double RightValue)  ;
double LP_UnitConversionsEnergy_GetRightValue(char* LeftUnit, char* RightUnit, double LeftValue )  ;
```

2   Problems in Energy conversion

The two functions in DLL file are used to handle all Energy conversions in two problems.

Problem 1   The unknown value is on the **left hand side** of equation

This problem in conversions is described in the figure:

The value x is obtained by either one of two methods:

- Method A : The code is :

```
double x = LP_UnitConversionsEnergy_GetLeftValue("Btu", "Kilojoule", 4.23)    ;
```

- Method B : The code is :

```
char LeftUnit[]   = "Btu"                    ;
char RightUnit[]  = "Kilojoule"              ;

double RightValue = 4.23                ;

double x = LP_UnitConversionsEnergy_GetLeftValue(LeftUnit, RightUnit, RightValue)    ;
```
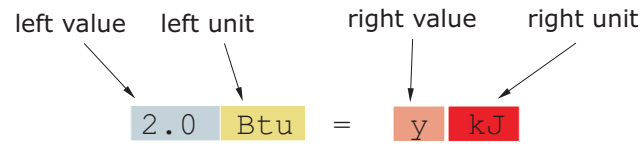
Problem 2   The unknown value is on the **right hand side** of equation

This problem in conversions is described in the figure:

left value   left unit   right value   right unit

2.0   Btu   =   y   kJ

The value y is obtained by either one of two methods:

- Method A : The code is :

```
double y = LP_UnitConversionsEnergy_GetRightValue("Btu", "Kilojoule", 2.0)   ;
```

- Method B : The code is :

```
char LeftUnit[]   = "Btu"             ;
char RightUnit[]    = "Kilojoule"      ;

double LeftValue = 2.0             ;

double y = LP_UnitConversionsEnergy_GetRightValue(LeftUnit, RightUnit, LeftValue)   ;
```
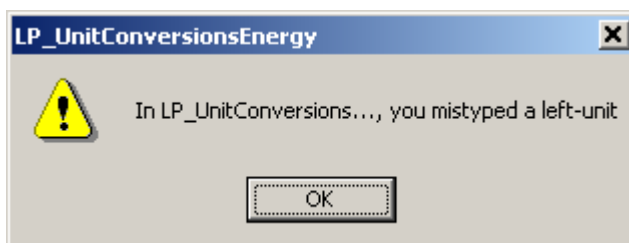
3 Unit names in Energy conversions

You can choose the unit name (case sensitive) in the following table for parameters, LeftUnit and/or RightUnit

Btu	FootPoundal
Calorie	FootPoundForce
Kilocalorie	WattSecond
Electronvolt	KilowattSecond
Erg	WattHour
Millijoule	KilowattHour
Joule	MegawattHour
Kilojoule	GegawattHour
Megajoule	ThermEC
Gegajoule	ThermUS
Quad	TonTNT

When your unit name is not in this table, the returns of functions are -1 and the error message will issue as shown in the following figures:

or
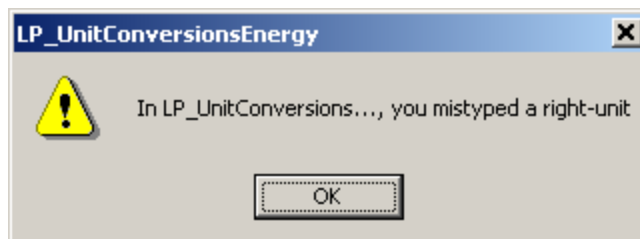
4 Tip

1. The parameters in two functions have the same order of unit name (LeftUnit is first and RightUnit is second) and the last parameter is the known value.

2. Use function LP_UnitConversionsEnergy_GetLeftValue(..)   if your **unknown** value is on the **left hand side** of the equation.

3. Use function LP_UnitConversionsEnergy_GetRightValue(..) if your **unknown** value is on the **right hand side** of the equation.