

XL Convert

Version 1.1 User Manual

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1 XL Convert Summary

XL Convert is a simple to use utility for unit conversion in MS Excel. XL Convert consists of two parts (or files) the main MS Excel add-in (Xlconvert.xla) and the unit database, unitdb.xls. Using this approach allows users to completely customize the units available to convert. This becomes especially convenient in specialized industries that have units not common to the mainstream. Engineers, scientists and many others have found XL Convert to be extremely easy to use and best of all, flexible.

2 Installation of XL Convert

2.1 Microsoft Office 2003 and Office XP Users

Be sure to uninstall any previous versions of XL Convert prior to proceeding (see Section 3). Create a temporary file folder on your hard drive in a convenient location. You may delete this folder once the installation is complete. Unzip the contents of the folder XLConvertV1.1zip to this temporary location. Double click the *XLConvertSetup.msi* file to begin installation. Follow the prompts on screen until the installation completes. Start Microsoft Excel. From the Tools menu, select Add-ins. Click the 'Browse' button to locate "C:\Program Files\SFSW\XLConvert\XLConvert.xla" (or the location you selected during installation if different) and click 'OK'. The XL Convert file is now listed in the dialog box. Check the check box next to XL Convert and

click 'OK' to dismiss the dialog. You should now see XL Convert start up and locate a single button on the toolbar at the top of the Excel Window.

3 Uninstalling XL Convert

To uninstall XL Convert go to Control Panel > Add/Remove Programs. Find the section for XL Convert and click 'Remove'. Once removed, upon starting Microsoft Excel, you will receive an error indicating that Excel cannot find 'Xlconvert.xla' (assuming you have the add-in loaded and selected to startup). To remove this file from the search list, go to Excel's menu Tools > Add-ins and select XL Convert. You will receive a message stating that the file is not found and asking if you wish to remove it from the list, click 'Yes'.

4 Running XL Convert

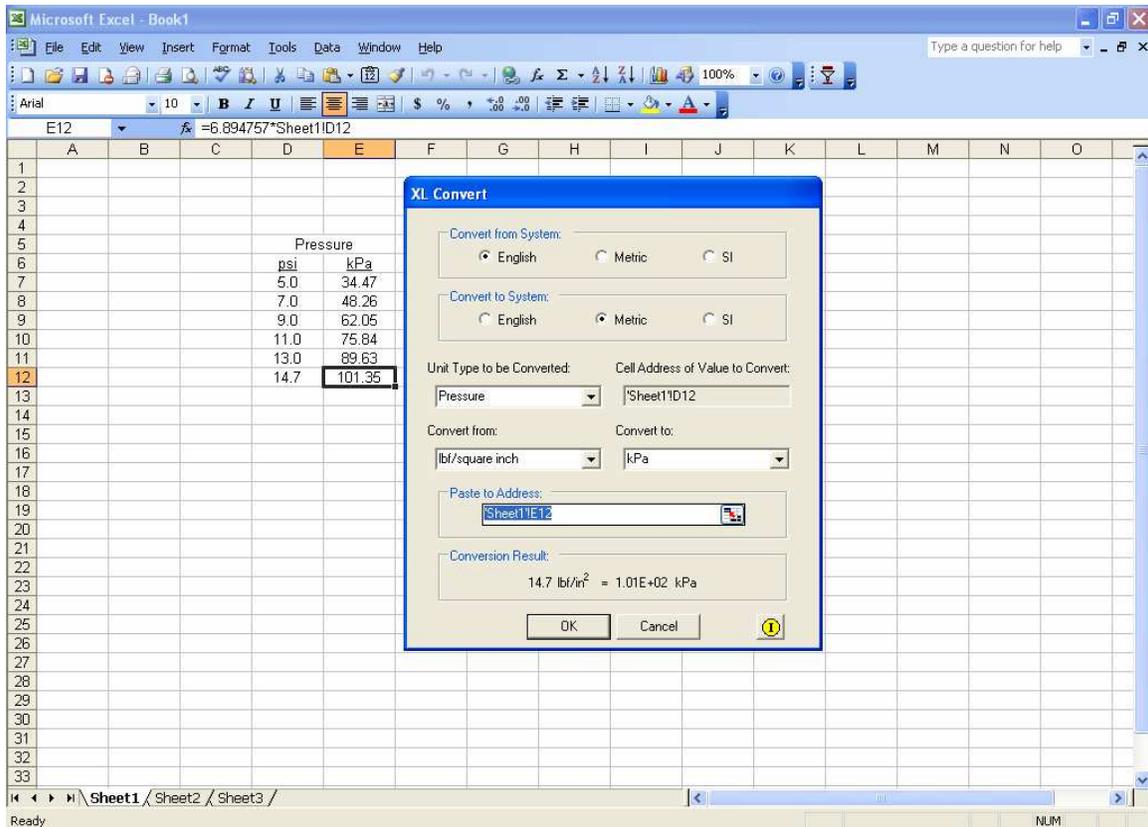
To start XL Convert simply select a cell containing a numeric value that you wish to convert. Click the XL Convert Button image and the main convert form is displayed. Then follow these simple steps:

1. Select the system that the value is currently in, English, Metric or SI.
2. Next select the system that the value shall be converted to.
3. Select the type of unit to be converted
4. Select the units of the current value
5. Select the units to convert to.

The result is displayed in the form's result box with appropriate units. Select 'OK' to dismiss the form.

4.1 Paste value to WorkSheet

If you wish, you may paste this value to any cell in the current workbook by clicking the 'Paste To Address' button. The form will shrink and allow you to select your destination cell. Once selected you then click the down arrow to restore the form and the 'Paste To Address' is now highlighted. Click 'OK' and the value is pasted to the destination. It's that simple!



4.2 Using Temperature Units

Since temperature conversion is not a simple linear transform, XL Convert converts the value selected in the 'Value to Convert Box' to the equivalent

value in the selected 'Unit To Box' with no reference to the original cell address. If the value converted is pasted to the sheet, only the converted value is pasted, and not (as in all other cases) a conversion factor multiplied by the original cell address. Therefore, the usual drag and copy function in Excel will not work for Temperature conversions.

5 Customizing Units

XL Convert allows users to add and/or delete any units they wish. The program works by maintaining an Excel database (unitdb.xls) in the sub directory "unit_database". Opening this file reveals two WorkSheets (UnitDB and OriginalDB_Backup). The UnitDB WorkSheet is the main database that XL Convert uses upon startup. The OriginalDB_Backup is a duplicate copy of the original data that comes with the package. If for any reason the UnitDB WorkSheet becomes destroyed, erased or corrupted, the original state may be returned by simply selecting the entire data table in OriginalDB_Backup and transferring this data back to the UnitDB WorkSheet.

5.1 Database Description

The UnitDB WorkSheet contains the following columns: SYSTEM, UNIT_TYPE, UNIT_NAME, UNIT_CONV_VALUE, and UNIT_TAG. Each of columns is described below.

5.1.1 SYSTEM

XL Convert uses three unit system types, English, Metric and SI. Each UNIT_TYPE must have a single SI entry and at least one English or Metric equivalent. There is no limit to the amount of English or Metric equivalents you can use of each UNIT_TYPE (Excel does have a limit of rows at over 65,000 so for all practical purposes, it is limitless)

5.1.2 UNIT_TYPE

The UNIT_TYPE is the general type of unit, i.e. Length, Acceleration, etc. As stated above, each UNIT_TYPE must have a single SI entry and at least one entry in either English or Metric.

5.1.3 UNIT_NAME

UNIT_NAME is the common or user defined name you will apply to the unit, i.e. feet, meters, etc.

5.1.4 UNIT_CONV_VALUE

This value is critical to XL Convert as it is used as the basis for the conversions. The value is the quantity required to convert a specified unit to the equivalent SI unit. For example, the SI unit for Length is meter. The UNIT_CONV_VALUE for the SI unit meter is 1.00. In other words, 'x' meters times 1.00 = 'x' meters. For the English unit inch, the UNIT_CONV_VALUE is 0.0254 since 1 inch = 0.0254 meters. The general equation is thus;

$$[\text{value in SYSTEM}] * [\text{UNIT_CONV_VALUE}] = [\text{equivalent value in SI SYSTEM}]$$

5.1.5 UNIT_TAG

The UNIT_TAG values are simply the unit's shorthand for the associated UNIT_NAME. For example, meters have a UNIT_TAG of 'm'. The UNIT_TAG is for display purposes only and does not change the resulting conversion values, however, it MUST BE supplied. For squared or cubed values, insert the symbols ² or ³.

5.2 Adding User Defined Unit Types

Adding user defined unit conversions is quite simple; however there are several rules that need to be adhered to. To help clarify these rules, open the unitdb.xls file and examine the UnitDB WorkSheet.

1. For each entry, every column must have a value. Do not omit any of the database headings listed above
2. For each new UNIT_TYPE. The UNIT_TYPE must have a single SI equivalent. This SI value MUST be the first entry in the table for the new UNIT_TYPE. Each new UNIT_TYPE must have at least one equivalent unit in SYSTEM English or Metric.
3. No blank rows are allowed. If a blank row is encountered, the values below the blank row will not be read into XL Convert.
4. All SYSTEM entries of the same system must be grouped. For convention, the SI unit is listed first, then the English units and finally the Metric units. If the units are mixed values below the SI unit, SYSTEM values will not be read for that UNIT_TYPE.
5. New UNIT_TYPE entries shall be placed at the bottom of the table. Adhering to this rule will keep your user-defined units easy to

maintain. This will also minimize any disturbance to the database reading module in XL Convert.

Once all entries are made, save unitdb.xls and exit MS Excel. Upon restarting MS Excel and XL Convert, the new values will appear in the XL Convert program.

5.3 Adding values to the Original Database

If you wish, you may add entries to the original database on WorkSheet UnitDB. To do this select where in the table you wish to add your new unit. Select that row and 'Insert Row' from the Excel Insert Menu. Enter the SYSTEM, UNIT_TYPE, UNIT_NAME, UNIT_CONV_VALUE and UNIT_TAG for that unit. For example, suppose you wished the database to include the length unit 'decameter'. 1 decameter is equal to 10 meters so you would need to add:

SYSTEM:	Metric
UNIT_TYPE:	Length
UNIT_NAME:	decameter
UNIT_CONV_VALUE:	10
UNIT_TAG:	dm

Once all entries are made, save unitdb.xls and exit MS Excel. Upon restarting MS Excel and XL Convert, the new values will appear in the XL Convert program.

6 Registration

In order to eliminate the nag screen upon start up, a registration code may be purchased at www.seaflowersonline.com for \$5.00 (USD). Once purchased, the code should be entered during startup of XL Convert. During the startup, the nag screen will appear with a button 'Enter Registration Code'. Click this button and a text box will appear, enter the registration code in this box and click 'Ok'. Upon successful entry of the code, the nag screen will no longer appear on startup. Thank you for your support!

7 Reference

All unit conversions in XL Convert have been taken from the following publication:

Standard Practice for Use of the SI International System of Units, The Modernized Metric System. ASTM E 380-92, Published by ASTM, Philadelphia, PA 1993.

8 Support

If you have any problems installing or using XL Convert check the FAQ's section of Seaflower Software's web site at www.seaflowersonline.com/index_files/Page320.htm. If your issue cannot be resolved by checking here, please contact customer support at support@seaflowersonline.com and document your issue.

9 Units

The following table contains all the units available for conversion in XL Convert (full edition).

Unit System	Unit Type	Unit
SI	Acceleration	meter/second squared
English	Acceleration	inch/second squared
English	Acceleration	feet/second squared
Metric	Acceleration	gal
Metric	Acceleration	free fall, g
SI	Angle	radian
English	Angle	second
English	Angle	minute
English	Angle	grade
English	Angle	degree
Metric	Angle	second
Metric	Angle	minute
Metric	Angle	grade
Metric	Angle	degree
SI	Area	square meters
English	Area	square inches
English	Area	square feet
English	Area	square yards
English	Area	acres
English	Area	square miles (internat.)
Metric	Area	square millimeters
Metric	Area	square centimeters
Metric	Area	hectares
Metric	Area	square kilometers
SI	Consolidation	square meter/second
English	Consolidation	square inches/year
English	Consolidation	square feet/year
English	Consolidation	square inches/day
English	Consolidation	square feet/day
English	Consolidation	square inches/second
English	Consolidation	square feet/second
Metric	Consolidation	square centimeters/year
Metric	Consolidation	square meters/year

Unit System	Unit Type	Unit
		square centimeters/day
Metric	Consolidation	
Metric	Consolidation	square meters/day
		square centimeters/second
Metric	Consolidation	
SI	Density/Unit Weight	kg/cubic m
English	Density/Unit Weight	grain/gallon (US liquid)
English	Density/Unit Weight	lb/cubic yd
		ounce (avdp)/gallon (US liquid)
English	Density/Unit Weight	
English	Density/Unit Weight	lb/cubic ft
English	Density/Unit Weight	lb/gallon (US liquid)
English	Density/Unit Weight	slug/cubic ft
English	Density/Unit Weight	ton (short)/cubic yd
English	Density/Unit Weight	ton (long)/cubic yd
		ounce (avdp)/cubic inch
English	Density/Unit Weight	
English	Density/Unit Weight	lb/cubic inch
Metric	Density/Unit Weight	gram/cubic cm
Metric	Density/Unit Weight	tonne/cubic m
Metric	Density/Unit Weight	Mg/cubic m
SI	Dynamic Viscosity	pascal second
Metric	Dynamic Viscosity	centipoise
Metric	Dynamic Viscosity	poise
		poundal·sec/square foot
English	Dynamic Viscosity	
English	Dynamic Viscosity	lb/(ft·h)
English	Dynamic Viscosity	lb/(ft·s)
English	Dynamic Viscosity	lbf·s/square foot
English	Dynamic Viscosity	lbf·s/square inch
English	Dynamic Viscosity	slug/(ft·s)
SI	Energy	joule
English	Energy	ft-poundal
English	Energy	ft·lbf
English	Energy	Btu (thermochemical)
English	Energy	Btu (60°F)
English	Energy	Btu (59°F)
English	Energy	Btu (internat. Table)
English	Energy	Btu (mean)
English	Energy	Btu (39°F)
English	Energy	therm (US)
English	Energy	therm (European)

Unit System	Unit Type	Unit
Metric	Energy	electronvolt
Metric	Energy	erg
Metric	Energy	W·s
Metric	Energy	calorie (20°C)
Metric	Energy	calorie (thermochemical)
Metric	Energy	calorie (15°C)
Metric	Energy	calorie (internat. Table)
Metric	Energy	calorie (mean)
Metric	Energy	W·h
Metric	Energy	calorie (kg, thermochemical)
Metric	Energy	kilocalorie (thermochemical)
Metric	Energy	calorie (kg, Internat. Table)
Metric	Energy	kilocalorie (Internat. Table)
Metric	Energy	calorie (kg, mean)
Metric	Energy	kilocalorie (mean)
Metric	Energy	kW·h
SI	Flow Rate	cubic meter/second
English	Flow Rate	gallon (US liquid)/day
English	Flow Rate	cubic inch/min
English	Flow Rate	gallon (US liquid)/min
English	Flow Rate	cubic feet/min
English	Flow Rate	cubic yard/min
English	Flow Rate	cubic feet/s
Metric	Flow Rate	liter/day
Metric	Flow Rate	cubic meter/day
Metric	Flow Rate	liter/min
Metric	Flow Rate	liter/s
Metric	Flow Rate	cubic meter/min
SI	Force	newton
English	Force	poundal
English	Force	ounce-force
English	Force	lbf
English	Force	kip (1000lbf)
English	Force	ton-force (2000 lbf)
Metric	Force	dyne
Metric	Force	kgf
Metric	Force	kilopond

Unit System	Unit Type	Unit
SI	Kinematic Viscosity	square meter/second
English	Kinematic Viscosity	square feet/second
Metric	Kinematic Viscosity	stokes
Metric	Kinematic Viscosity	centistokes
SI	Length	meter
English	Length	mil
English	Length	inch
English	Length	feet
English	Length	yard
English	Length	fathom
English	Length	rod
English	Length	chain
English	Length	mile (internat.)
English	Length	mile (US nautical)
Metric	Length	femtometer
Metric	Length	picometer
Metric	Length	angstrom
Metric	Length	nanometer
Metric	Length	micrometer
Metric	Length	millimeter
Metric	Length	centimeter
Metric	Length	decimeter
Metric	Length	kilometer
Metric	Length	light year
Metric	Length	parsec
SI	Mass	kg
English	Mass	grain
English	Mass	pennyweight
English	Mass	ounce (avdp)
English	Mass	ton (assay)
English	Mass	ounce (troy)
English	Mass	pound (troy)
English	Mass	lbm (avdp)
English	Mass	slug
English	Mass	hundredweight (short)
English	Mass	hundredweight (long)
English	Mass	ton (short, 2000 lb)
English	Mass	ton (long, 2240 lb)
Metric	Mass	carat
Metric	Mass	gram
Metric	Mass	kgf·second squared/meter

Unit System	Unit Type	Unit
Metric	Mass	tonne
Metric	Mass	Mg
SI	Power	watt
English	Power	ft·lbf/h
English	Power	ft·lbf/min
English	Power	Btu (thermochemical)/h
English	Power	Btu (Internat. Table)/h
English	Power	ft·lbf/s
English	Power	Btu (thermochemical)/mi n
English	Power	horsepower (metric)
English	Power	horsepower (550 ft·lbf/s)
English	Power	horsepower (UK)
English	Power	horsepower (electric)
English	Power	horsepower (water)
English	Power	Btu (thermochemical)/s
English	Power	Btu (Internat. Table)/s
English	Power	horsepower (boiler)
Metric	Power	erg/s
Metric	Power	calorie (thermochem.)/min
Metric	Power	calorie (thermochem.)/s
Metric	Power	kilocalorie (thermochem.)/min
Metric	Power	kilocalorie (thermochem.)/s
SI	Pressure	pascal
English	Pressure	poundal/square ft
English	Pressure	lbf/square ft
English	Pressure	inch of water (60°F)
English	Pressure	inch of water (32°F)
English	Pressure	foot of water (39.2°F)
English	Pressure	inch of mercury (60°F)
English	Pressure	inch of mercury (32°F)

Unit System	Unit Type	Unit
English	Pressure	lbf/square inch
English	Pressure	kips/square ft
English	Pressure	tons/square ft
English	Pressure	kips/square inches
Metric	Pressure	dyne/square cm
Metric	Pressure	kgf/square m
Metric	Pressure	centimeter of water (4°C)
Metric	Pressure	gram-force/square cm
Metric	Pressure	millibar
Metric	Pressure	millimeter of mercury (0°C)
Metric	Pressure	kPa
Metric	Pressure	centimeter of mercury (0°C)
Metric	Pressure	tonnes/square m
Metric	Pressure	kgf/square cm
Metric	Pressure	bar
Metric	Pressure	atmosphere
Metric	Pressure	MPa
Metric	Pressure	kgf/square mm
SI	Temperature	Kelvin
English	Temperature	Fahrenheit
English	Temperature	Rankine
Metric	Temperature	Celsius
SI	Time	second
English	Time	minute
English	Time	hour
English	Time	day
English	Time	year (365 days)
Metric	Time	minute
Metric	Time	hour
Metric	Time	day
Metric	Time	year (365 days)
SI	Velocity	meter/second
English	Velocity	feet/day
English	Velocity	feet/hour
English	Velocity	feet/min
English	Velocity	inch/second
English	Velocity	feet/second
English	Velocity	miles/hour (internat.)
English	Velocity	knot (internat.)

Unit System	Unit Type	Unit
English	Velocity	miles/minute (internat.)
English	Velocity	miles/second (internat.)
Metric	Velocity	centimeter/day
Metric	Velocity	centimeter/second
Metric	Velocity	kilometer/hour
Metric	Velocity	kilometer/second
SI	Volume	cubic meters
English	Volume	teaspoon
English	Volume	tablespoon
English	Volume	cubic inches
English	Volume	ounce (US fluid)
English	Volume	gill (US)
English	Volume	cup
English	Volume	pint (US liquid)
English	Volume	pint (US dry)
English	Volume	quart (US liquid)
English	Volume	quart (US dry)
English	Volume	board foot
English	Volume	gallon (US liquid)
English	Volume	gallon (US dry)
English	Volume	peck (US)
English	Volume	cubic feet
English	Volume	bushel (US)
English	Volume	barrel (oil, 42 gal)
English	Volume	cubic yards
English	Volume	acre-foot
Metric	Volume	cubic millimeters
Metric	Volume	cubic centimeters
Metric	Volume	milliliters
Metric	Volume	liter