# STRUCTWARE®

## Program Documentation

## for

# CONVERT

## Metric Conversion Utility

# STRUCTWARE

SHEET _____ OF _____

JOB TITLE Convert Program Documentation    ORIGINATOR RM    DATE 4/9/2004

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## INTRODUCTION

Convert may be used to convert parameters between english and metric units.

The graphical interface is shown in Section B.  A verification calculation is included in Section C.  Additional information is contained in the following files installed in the program directory.

*License.txt* - The license agreement contains the terms and conditions for use of this program and documentation.

*Readme.txt* – The installation instructions, copyright notices and version history is contained in this file.

The following step is recommended for users new to the program.

1. To learn how to use the program, read the "About Convert" selection from the help menu.
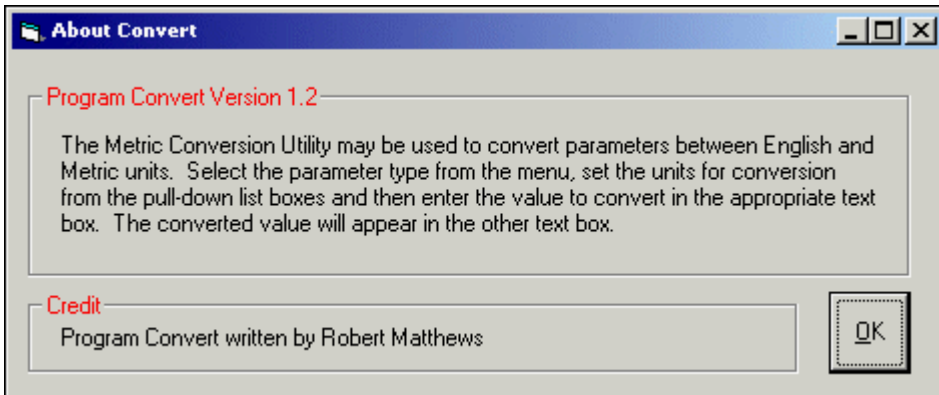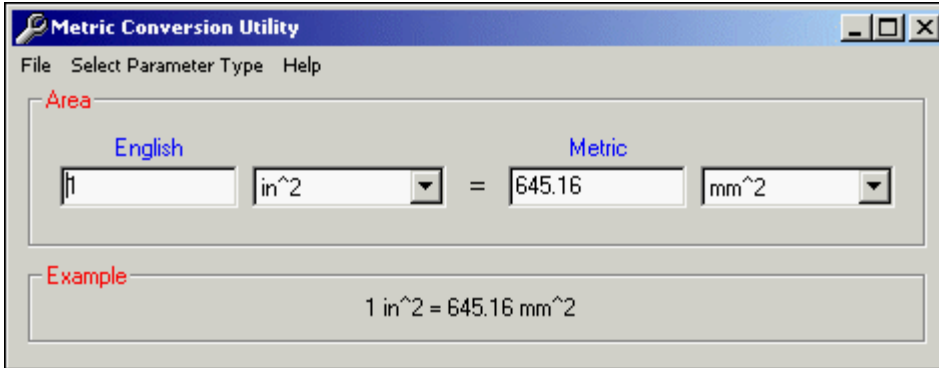
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## GRAPHICAL INTERFACE

### Metric Conversion Utility

File   Select Parameter Type   Help

**Area**

English                     Metric

$1$    in^2    =    645.16    mm^2

**Example**

1 in^2 = 645.16 mm^2

### About Convert

**Program Convert Version 1.2**

The Metric Conversion Utility may be used to convert parameters between English and Metric units. Select the parameter type from the menu, set the units for conversion from the pull-down list boxes and then enter the value to convert in the appropriate text box. The converted value will appear in the other text box.

**Credit**

Program Convert written by Robert Matthews

[ OK ]

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## VERIFICATION CALCULATION

Program CONVERT is validated by comparing the output values with a recognized metric conversion guide. The table below summarizes the comparison. The first column lists the parameter type. The second column lists the value input into CONVERT. The third column lists the value output from CONVERT. The fourth column lists the value from the [1]NIST Guide.

| PARAMETER TYPE | ENGLISH | METRIC (CONVERT) | METRIC ([1]NIST) |
|---|---|---|---|
| **Length** | 1 inch | 0.0254 m | 0.0254 |
| | 1 foot | 0.3048 m | 0.3048 |
| | 1 yard | 0.9144 m | 0.9144 |
| | 1 mile | 1609.344 m | 1609.344 |
| **Area** | 1 in$^2$ | 6.4516E-4 m$^2$ | 6.4516E-4 |
| | 1 ft$^2$ | 0.09290303 m$^2$ | 0.09290304 |
| | 1 yd$^2$ | 0.8361273 m$^2$ | 0.8361274 |
| **Volume** | 1 in$^3$ | 1.638706E-5 m$^3$ | 1.638706E-5 |
| | 1 ft$^3$ | 0.02831684 m$^3$ | 0.02831685 |
| | 1 yd$^3$ | 0.7645547 m$^3$ | 0.7645549 |
| **Moment of Inertia** | 1 in$^4$ | 4.162314E-7 m$^4$ | 4.162314E-7 |
| | 1 ft$^4$ | 8.630974E-3 m$^4$ | 8.630975E-3 |
| **Weight/Force** | 1 lb | 4.448222 N | 4.448222 |
| | 1 kip | 4.448222 kN | 4.448222 |
| | 1 lb/in | 175.1268 N/m | 175.1268 |
| | 1 lb/ft | 14.59389 N/m | 14.5939 |
| **Pressure** | 1 lb/in$^2$ | 6894.757 Pa | 6894.757 |
| | 1 lb/ft$^2$ | 47.88022 Pa | 47.88026 |
| **Density** | 1 lb/in$^3$ | 27679.9 kg/m$^3$ | 27679.9 |
| | 1 lb/ft$^3$ | 16.01846 kg/m$^3$ | 16.01846 |
| | 1 lb/yd$^3$ | 0.5931802 kg/m$^3$ | 0.5932764 |
| **Moment** | 1 in-lb | 0.1129848 N-m | 0.1129848 |
| | 1 ft-lb | 1.355818 N-m | 1.355818 |
| **Gravity** | 32.2 ft/s$^2$ | 9.807 m/s$^2$ | 9.80665 |
| **Temperature** | 212° F | 100° C | 100 |

Notes:

1. Values are from the NIST Guide for the Use of the International System of Units (SI), Appendix B, at http://physics.nist.gov/Pubs/SP811/appenB.html