

GrafiCalc Specifications

GrafiCalc offers a collection of facilities that have been enhanced over several years to incorporate latest computing technology and valuable inputs from users. (Items in green are applicable to the extended version only)

User sensitive features

- Automatic unit checking and conversion
- Continuous discrete prompts for tools and commands
- Double precision floating point accuracy – accurate to ten decimal places
- Mouse controlled Pan and Zoom
- Multiple documentation interface (MDI) for simultaneous display of multiple worksheets
- Multiple level user definable (up to 1000 steps) Undo/Redo capability
- On-line help and tips
- User definable units library
- Work with inch and metric units, as well as user defined unit system
- Automatic unit checking of every calculation

Sketching tools

Constraint manager: GrafiCalc includes an ultra-fast constraint manager especially tailored for function modeling. The powerful point and click constraint manager can resolve virtually unlimited number of circularities. It tracks original design intents to automatically resolve plural solutions. Initial geometry can be entered within GrafiCalc as well as imported from any DXF compliant CAD software using the built-in 2-way automatic translator.

Geometry definition tools: Line, Circle, Arc, Poly Line, Closed Boundary. Initial geometry can also be imported from any DXF compliant CAD software.

Constraint tools: Free point, Concentric, Centroid, Endpoint, Proportional, Tangent, Intersection, Virtual Intersection, On-Entity/Slider, Parallel, Perpendicular, and at a fixed angle with respect to another line.

Automatic Constraint inferring facility: GrafiCalc includes an automatic constraint inference facility which, when turned on, allows you to snap automatically to center, endpoints, tangents, centroid, and on-geometry automatically. Lines snap automatically to horizontal and vertical.

Text tool: Allows entering notes and annotations. Use all available fonts in your computer.

View manipulation tools: Pan, Zoom, Zoom by 2X, Zoom by .5X, Zoom to fit, Show paper boundary.

Array Operations: Mirror, Copy, and Translate selected geometry through user defined array

Automatic measurements

GrafiCalc incorporates linear, radial, and angular dimensions that can be constrained to measure any aspect of the flexible model. The measurements are updated automatically as design intents are altered. The measurements can be directly included in calculations setup in GrafiCalc Formula bar.

Automatic backsolving (Goal Seek)

GrafiCalc allows users to stipulated any measured or calculated value as design target and then have the computer Goal Seek the characteristics of any geometry that participates in the result until the actual value of the measurement or the calculated value is equal to the stipulated target value.

Calculations facilities

Formula Bar: GrafiCalc incorporates a "point and click" Excel type Formula bar that is used to establish bi-directional association between geometry, dimension, values, and calculations.

Built-in calculation functions: GrafiCalc includes a library of 88 built-in functions to setup in the Formula bar and the Programmable calculator. Complete built-in function listing is available at the end of this page.

Programmable geometrical calculators: GrafiCalc includes a programmable calculation facility that enables users to setup multi-line $x = f(y)$ type of calculations. Dimensions and geometrical values can be directly incorporated in the calculation statements that are checked for unit integrity on a line by line-by-line basis. If and Else statements are supported. Multiple calculations can be combined. Results are used for developing calculation driven geometry. Calculation statements and answers can be copied into the Windows clipboard for pasting into technical reports.

Motion Simulation and Analysis

- Value generator for controlling geometry behavior to simulate any imaginable motion
- Trace Function for generating motion envelop

Transient Data Acquisition

- Collect values in selected cells containing calculation results and dimension values in Windows clipboard in tabulated format that can be pasted into any Office application.
- Hot link to transfer selected cells containing calculation results and dimension values to dynamically update Excel

Tolerance Analysis

- Right Mouse Button controlled tolerance allocation to any attribute of any geometry
- Polar Tolerance allocation
- Automated Monte Carlo statistical tolerance analysis of selected calculation result or dimension

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Input Output

- Built-in 2-way DXF translator
- Print drawing directly from GrafiCalc
- Cut, copy, and paste information from GrafiCalc to Windows clipboard.
- Windows standard 2-way Dynamic data exchange (DDE)

System requirements

GrafiCalc is Vista enabled Windows standard application that can be used on any personal computer

Disc requirement

<2 MB

Built-in Functions Listing

Mathematical Functions

Alphanumeric Word
abs()
ANGLE(point_or_complex)
CEIL(number)
FLOOR(number)
DISTANCE(point_a,point_b)
E()
EXP(number)
I()
LN(number_or_complex)
LOG(number_or_complex)
MOD(number_a,number_b)
NOUNITS(value)
NROOT(number_or_complex,optional_nth,optional_ii)
PI
QUADRATIC(number_a,number_b,number_c,optional_number_ii)
RAND()Returns a random number between 0 and 1.
RANDOM(number_a,number_b)
ROUND(number_a,number_b)
SQRT(number_or_complex)

Geometry-associative Calculation Functions

Area
Distance of neutral axis to extreme fiber
Diameter
Moments a of Inertia
Polar Moment of Inertia
Product of Inertia
Radius of Gyration
Perimeter
Static Moment of Inertia
Centroid
Radius
Section Modulus
End or Endpoint
Included Angle
Length
Angle
Origin
Start Vector
Value
Vector

Statistical Functions

MAXIMUM(number_1,number_2,...)
MINIMUM(number_1,number_2,...)

Trigonometric Functions

ACOS(number)
ACOSH(number)
ASIN(number)
ASINH(number)
ATAN2(number_y,number_x)
COS(number)
COSH(number)
SIN(number)
SINH(number)
TAN(number)
TANH(number)

Point and vector Functions

HORIZONTAL()
Point
UNITIZE(point)
Vector Add
VECANG(number)
Vector Dot Product
Vector Subtract
Vector Return
VERTICAL()
point_or_complex.X
point_or_complex.Y

Control Functions

Choose
False
IF
Is Complex
Is Error
Is Geometry
Is Logical
Is Not Available
Is Number
Is Point
True

Binary Operators

A plus B, A minus B
A times B, A dot B, A divide B, A ratio B
A exponent B
A not equal B, A equal B etc.
A or B, A and B
Average

Unary Operations

A
~ A

Postfix Operators

A%

Textual Components

Comment
DDE Reference
Dot Field Operator
{geometry Tag}
Variable