

MxCalc SE

for Pocket PC

Version 3.1.2

User Guide

Product of:-

3GR Technologies

For Installation information & Sales/Support contacts refer the Read Me file.

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1. Introduction.

MxCalc SE is a multi utility tool. It comes with the most comprehensive Unit Converter, Scientific Evaluator, Loan Calculator & Analyzer, Amortization table generator. Newly introduced modules are Matrix Calculator, Base Conversions & Date-Time Calculator.

2. Install/Uninstall

Requirements:

- You need to have MS ActiveSync Software on your device and make sure your device is connecting with Desktop PC.

- **.Net Framework**

Download & install the .Net framework from the following links in case the system prompts for missing runtime files.

- **Pocket PC (.Net Compact Framework)**

<http://www.microsoft.com/downloads/details.aspx?familyid=9655156b-356b-4a2c-857c-e62f50ae9a55&displaylang=en>

- **Desktop**

<http://www.microsoft.com/downloads/details.aspx?FamilyID=0856eacb-4362-4b0d-8edd-aab15c5e04f5&displaylang=en>

Steps to Install MxCalc program.

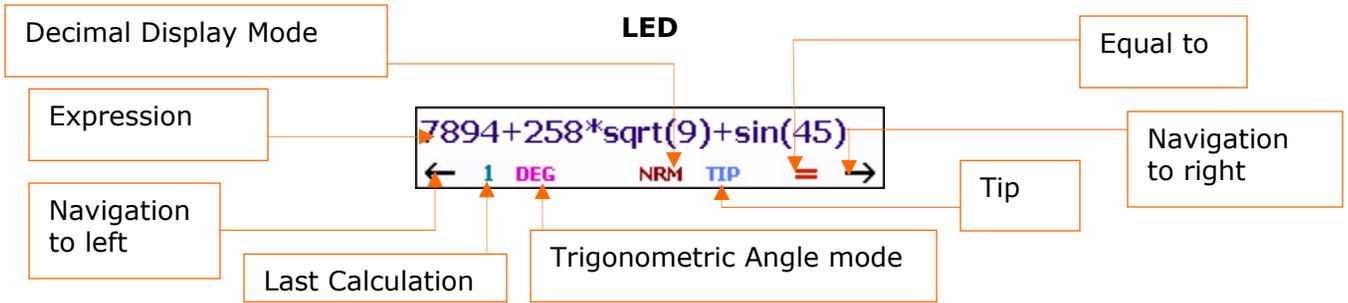
- You need to have MS ActiveSync Software on your device and make sure your device is connecting with Desktop PC.
- Execute MxCalcPPC.exe and follow instructions.

Steps to Uninstall MxCalc program

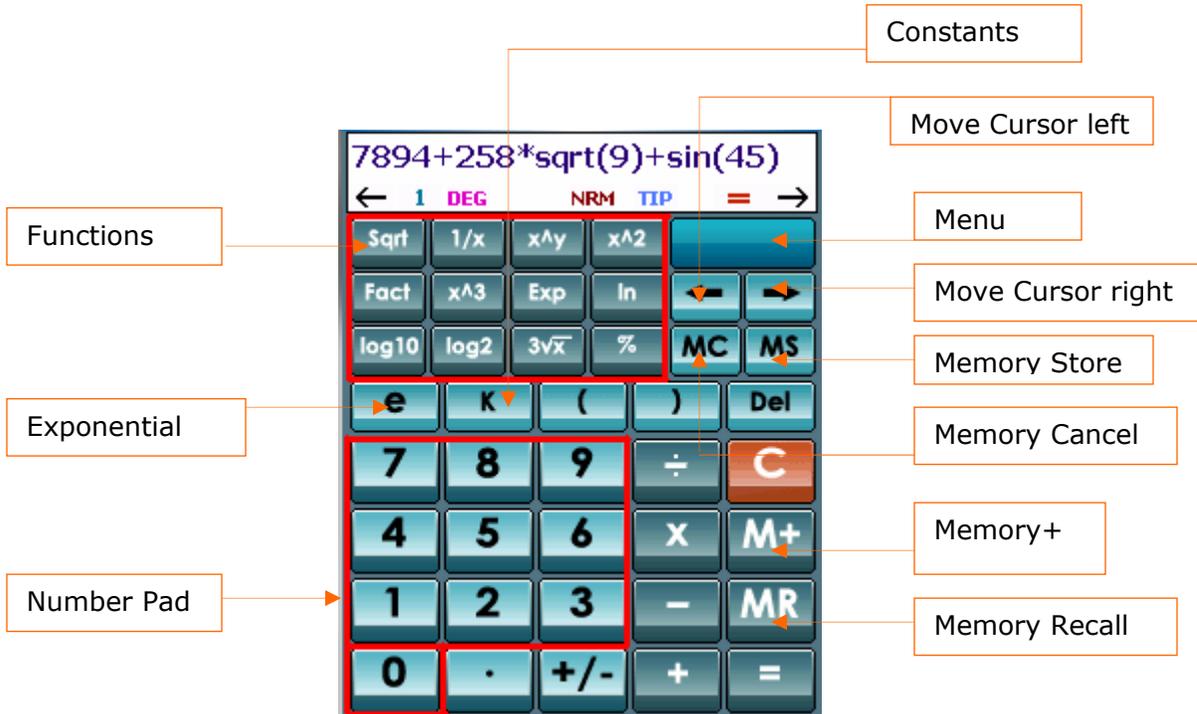
To remove the product from your Pocket PC:

- Go to **Start menu >> Settings**
- Select **System** Tab and tap on **Remove Programs**
- Select MxCalc SE from the list and tap on the Remove button
- Choose **"Yes"** to confirm removing

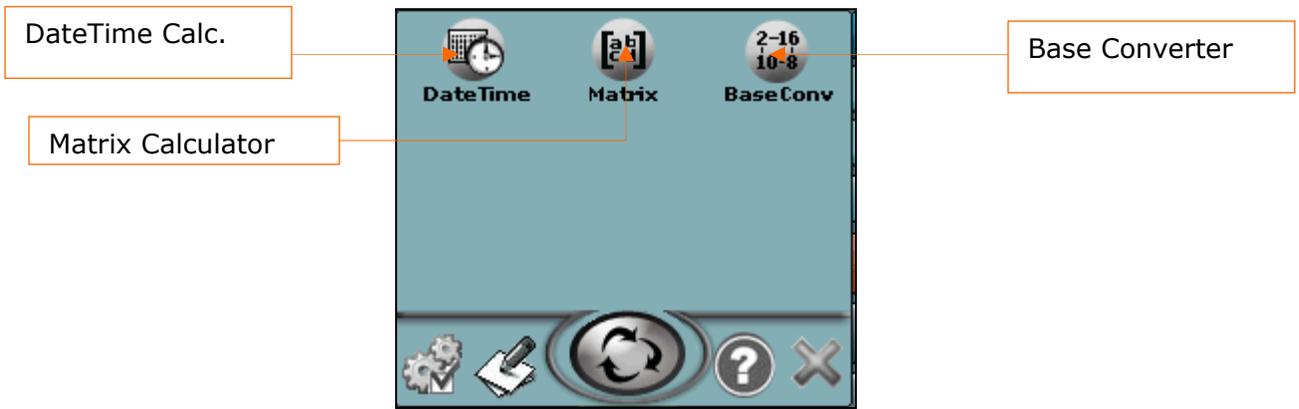
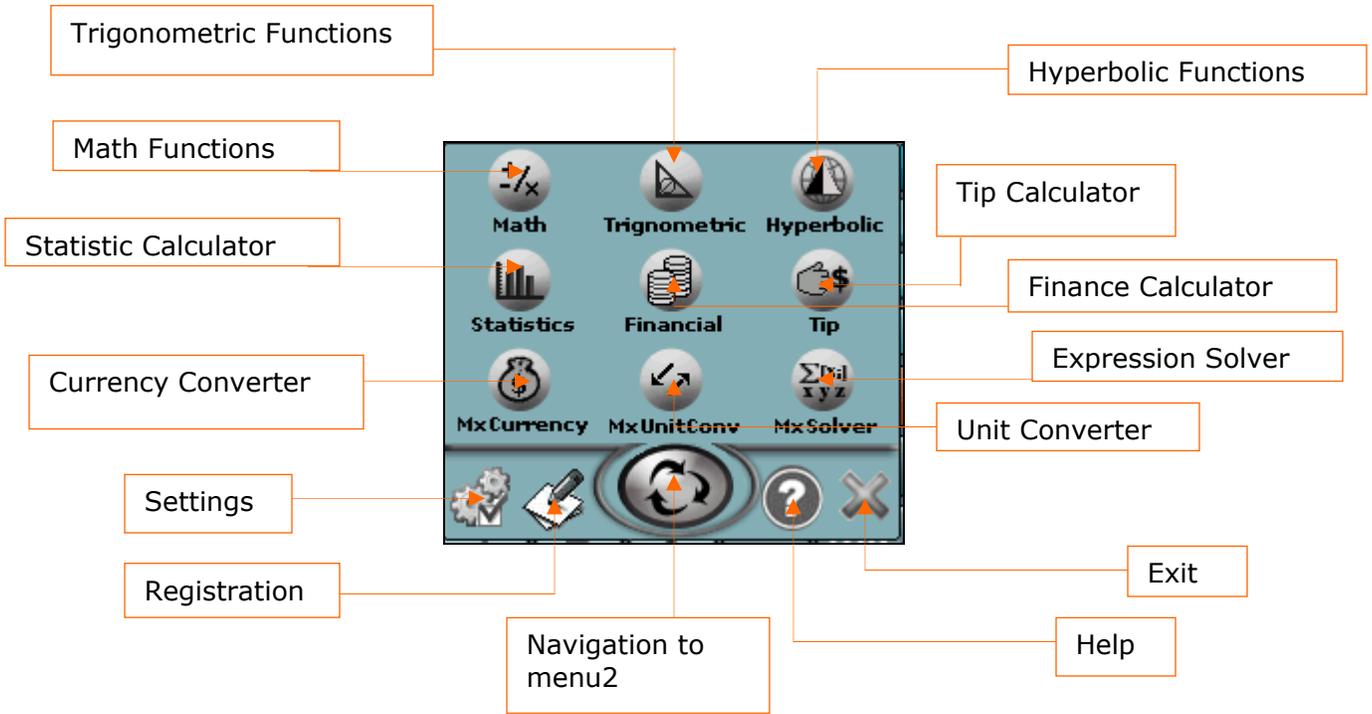
3. Components in the MxCalc SE:



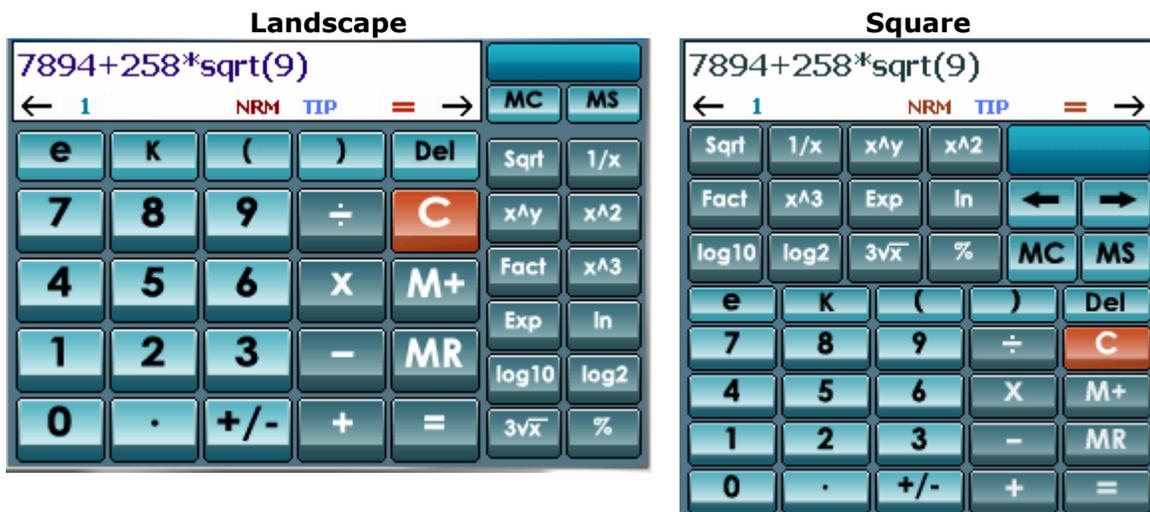
General Usage



Main Menu1.



Screen Orientation:



4. Mathematical Functions



- Tap on Menu button and select [math](#)



Functions:

- **1/x** - Returns the inverse of a number.
- **Sqrt**- Returns the square root of number
- **Exp** - Returns e to the power of the number.
- **3√x** - Returns cube root of the number.
- **!** - Returns the factorial of a nonnegative number
- **x^2** - Returns the square of a number.
- **x^3** - Returns the cube of a number
- **ln** - Returns the logarithm of a number to the natural base 'e'.
- **log10** - Returns the logarithm of a number to the base 10.
- **log2** - Returns the logarithm of a number to the base 2.
- **%**- Returns Percentage.
- **X^y** - Returns the y^{th} power of the number.

5. Trigonometric Functions:



- Tap on Menu button and select

Trigonometric



Functions:

- **Sin** - Returns the sine of the given angle.
- **Cos** - Returns the cosine of the given angle
- **Tan** - Returns the tangent of the given angle.
- **Cot** - Returns the cotangent of the given angle.
- **Sec** - Returns the secant of the given angle.
- **Cosec** - Returns the cosecant of the given angle.
- **Sin⁻¹** Returns the arcsine of the given number.
- **Cos⁻¹** - Returns the inverse hyperbolic cosine of any real number. Number must be Greater than or equal to 1
- **Tan⁻¹** - Returns the arctangent of a number. The arctangent is the angle whose tangent is number.
- **Cot⁻¹** - Returns the arc cotangent of a number. The arc cotangent is the angle whose tangent is number.
- **Sec⁻¹** - Returns the arc secant of the given angle.
- **Csc⁻¹** - Returns the arc cosecant of the given angle.

6. Hyperbolic Functions:



- Tap on Menu button and select

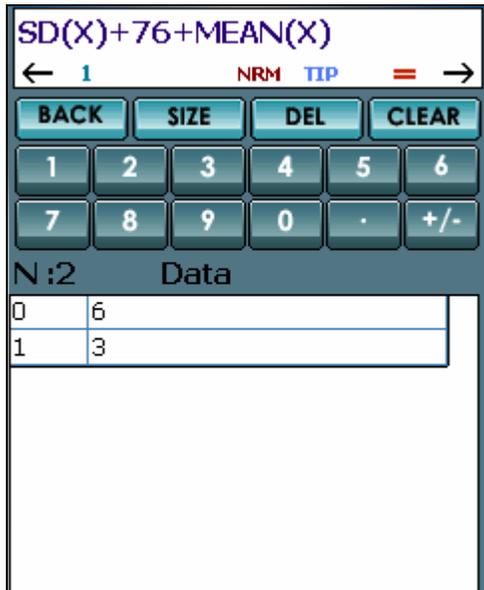


Hyperbolic

Functions:

- **Sinh** - Returns the hyperbolic sine of a real number.
- **Cosh** - Returns the hyperbolic cosine of a real number
- **Tanh** - Returns the hyperbolic tangent of a real number
- **Sech** - Returns the hyperbolic secant of the given angle.
- **Csch** - Returns the hyperbolic cosecant of the given angle.
- **Coth** - Returns the cotangent of the given
- **Sinh⁻¹** - Returns the inverse hyperbolic sine of a real number.
- **Cosh⁻¹** - Returns the inverse hyperbolic cosine of a number. Number must be greater than or equal to 1.
- **Tanh⁻¹** - Returns the inverse hyperbolic tangent of a number. Number must be between - 1 and 1 (excluding - 1 and 1).
- **Coth⁻¹** - Returns the arc cotangent of a number.
- **Sech⁻¹** - Returns the arc secant of the given angle
- **Csch⁻¹** - Returns the arc cosecant of the given angle.

7. Statistics Functions:



- Tap on Menu button and select

Statistics



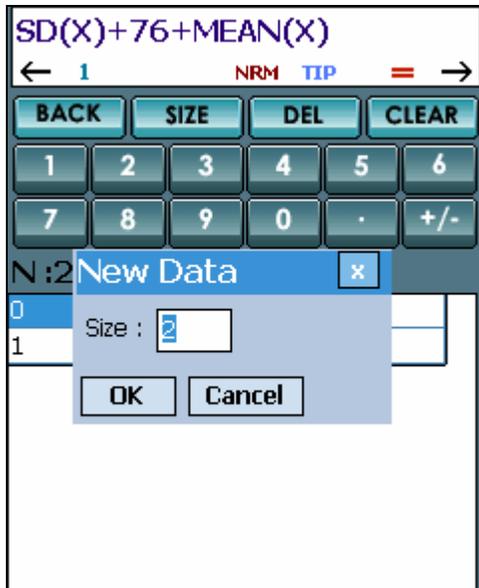
- To see more functions Tap on Shift

SHIFT button

- Enter the data from the Data input area ('Data' button).

Functions:

- **SD**: Standard deviation.
- **X**: The mean (arithmetic average) of all the values of data.
- **ΣX**: sum of all the values of data.
- **AVD**: average of the absolute deviations of all the values of data.
- **DSQ**: sum of squares of deviations of all the values of data
- **MIN**: minimum of all the values.
- **!**: Computes the Factorial
- **nCr**: Compute the number of combination.
- **nPr**: Compute the number of permutations
- **SSD**: Sample standard deviation.
- **Median**: The median of (the number in the middle) all the values of data.
- **ΣX²**: sum of the squares of all the values of data.
- **MD**: repetitive value in all the values of data.
- **GM**: Geometric mean
- **MAX**: Maximum of all the values.
- **N**: Total number of values of data.
- **N(z)**: Standard normal cumulative distribution.
- **z**: Inverse of Standard normal cumulative distribution



8. Financial Functions:



- Tap on Menu button and select

Financial



Functions:

- **NPER** - Calculates number of periods of an investment based on periodic constant payments and a constant interest rate.
- **RATE** The annual interest rate.
- **PV** The present value
- **FV** The future value
- **PMT** The payment made each period
- **PPMT** - Calculates the principal payment for a given period of an annuity based on periodic fixed payments and a fixed interest rate.
- **SYD** - Calculates the sum-of-years digits depreciation of an asset for a specified period.
- **SLN** - Straight-line depreciation.
- **DDB** -Double-declining-balance depreciation method.
- **Comma separator (,)** – It is used to separate parameters. As the values are entered the parameters in the Tip gets highlighted.

8.1. Amortization:

#	IntRate	LoanAm	Paymen
1	0.08	29197.28	2343.32
2	0.08	28331.95	2343.32
3	0.08	27399.13	2343.32
4	0.08	26393.55	2343.32
5	0.08	25309.53	2343.32
6	0.08	24140.95	2343.32
7	0.08	22881.23	2343.32
8	0.08	21523.25	2343.32
9	0.08	20059.35	2343.32
10	0.08	18481.26	2343.32
11	0.08	16780.08	2343.32

Int Saved 153718.615057169

Calculate | Clear | Back |

➤ Launch Amort Calc by tapping **AMRT** button  in **Finance module**.

- Enter all the mandatory Inputs.
- Then tap on **Calculate**.

Functions:

- **Loan amt:** Loan Amount
- **Term:** # of years
- **Periods:** It can be weekly, bi- weekly, 2/month, monthly, Quarterly, 2/year or yearly. E.g. Enter 12 in case of months and 4 in case of quarterly payments.
- **APR:** Annual Percentage Rate
- **Escrow:** Money placed with a third party for safekeeping either for final closing on a property or for payment of taxes and insurance throughout the year, an item of value, money, or documents deposited with a third party to be delivered upon the fulfillment of a condition. For example, the earnest money deposit is put into escrow until delivered to the seller when the transaction is closed.
- **Princi:** You can choose to add extra principal payments.
- After tapping on Calculate it will show the details of the amortization.

8.2. Loan:

Mth	Bal	Towards	PrinciPd
1	1988.45	11.55	11.55
2	1976.83	23.17	11.62
3	1965.14	34.86	11.69
4	1953.38	46.62	11.76
5	1941.55	58.45	11.83
6	1929.66	70.34	11.89
7	1917.7	82.3	11.96
8	1905.67	94.33	12.03
9	1893.57	106.43	12.1
10	1881.4	118.6	12.17

Monthly Payment	23.22
Total Interest	786.75

Calculate | Clear | Back |

- Launch Loan module by tapping **Loan** button  in **Finance module**.
- After entering all inputs, tap on Calculate button as shown in Fig (a).

Functions:

- **Principal** – Principal amount
- **Interest Rate** - Interest rate in percent
- **No. Of years** – Number of years.
- **Mth**- Month
- **Bal** - Balance
- **TowardsPrinci** – Towards Principal
- **PrinciPd**- Principal paid
- **IntPd**- Interest Paid

9. Unit Converter:

Acceleration (Angular)				
rad/sec ²				
10				
rad/min ²				
36000				
e	K	Del		
7	8	9	÷	C
4	5	6	x	M+
1	2	3	-	MR
0	.	+/-	+	=

- Tap on Menu button  after that tap on

MxUnitConv



This module of unit converter offers a very comprehensive collection of properties with respective units. A very useful utility to Convert Values from one unit to another. Following are the steps for Converting Values.

- Choose a property from the list.
- Enter the value and Choose a unit from the 'From Value'
- Choose a unit from the 'To Value' and tap Calculate to see the conversion.
- Tap on clear button to clear Input values.

10. MxCurrency:

Updated :		
USD	EUR	JPY
1	0.831	118.878
20	16.62	2377.56
40	33.24	4755.12
61	50.691	7251.558

USD	0.831	EUR
	118.878	JPY

Update	Clear	Delete	
1	2	3	4
7	8	9	0
		.	+/-

Update the
currency
database

Clear

Summation of
all value

- Convert currency values is similar to converting any other Unit value. Tap on the



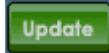
,from the menu
button.

- Select the Currency and enter the value in the Text boxes available below that. The last box will show the summation of all the values. The drop down at the bottom is to show the factor for the currencies converted.

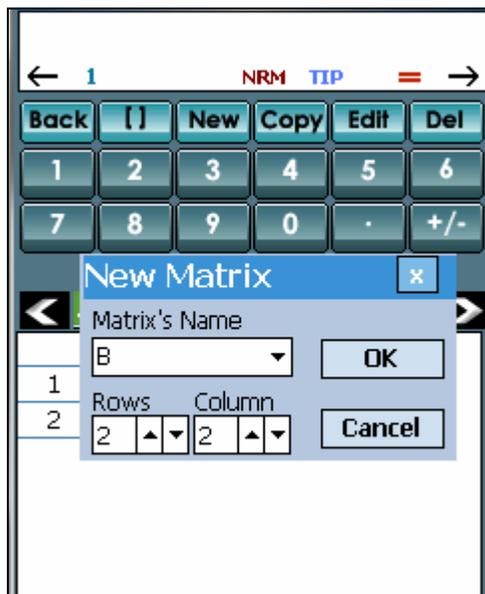
Update Currency Values

Updated :		
Updating Currency Values.....		
[Progress Bar]		

Update	Clear	Delete	
1	2	3	4
7	8	9	0
		.	+/-

- Tap on the update button  to get the current currencies conversion factors.
- The last updated date and time can be found at the top of the screen.

11. Matrix Calculator:



- Tap on menu and then select **Matrix** you will see the screen as beside. Here you can perform matrix calculations such as Determinant, Adjoint, Transpose, Eigenvalue, EigenVector etc.
- **How to create a new matrix and enter data :**
 1. From the Matrix Calculator main screen tap on **DATA**
 2. Select New Matrix...
 4. Select Matrix name
 5. Enter number of Row(s) and Column(s)
 6. Tap on 'OK' button
 7. Enter value for each Elements
 8. After that tap on **Back** button to return main screen
- **How to use matrix functions:** If you want to use simple operators for matrix as (+, -, ÷, ×)
 - Select first matrix from matrix list by tapping on '['
 - Select operator (+, -, ÷, ×)
 - Select second matrix
 - then tap on '=' button
 - you can see the resultant matrix or see the result by clicking on **ANS**
- 6. To view [ANS] just tap on select matrix button and choose Edit Matrix... then you will editing matrix screen
- The matrix calculator has the following functions
- We use two matrices for examples
 Matrix: [A] Matrix :[B]

1	2	5
5	3	1
2	4	2

1
2
3

Label Descriptions

DET: Compute determinant of matrix

Ex: $DET([A]) = 56$
(square matrix only)

SOLV([A],[B])		
= 9.43398113205661		
[]	DET	ADJ
INV	EIGV	EIGL
FNRM	SOLV	DATA
e	,	()
Size = 3 x 3		
1	2	3
-0.09	2	5
0.86	3	1
-0.13	4	2

INV: Invert a matrix
(square matrix only)
Ex: INV([A]) = [ANS]

0.04	0.29	-0.23
-0.14	-0.14	0.43
0.25	0	-0.12

EIGV: Compute the eigenvectors of Specified matrix.
Ex: EIGV([A]) = [ANS]

0.55	-0.95	-0.33
-0.62	0.58	0.86
-0.56	0.33	-0.64

EIGL: Compute the eigenvalues of specified matrix.
Ex: EIGL([A]) = [ANS]

8.36
-1.18
-1.18

RANK: Returns the rank of the specified matrix

Ex: RANK([VA]) = 3

TRANS: Returns the transpose of the specified matrix
Ex: TRA([A]) = [ANS]

1	5	2
2	3	4
5	1	2

SOLVE: Solves a linear system AX = B, return the X matrix
Ex: SOLV([A],[B]) = [ANS]

-0.09	2	5
0.86	3	1
-0.13	4	2

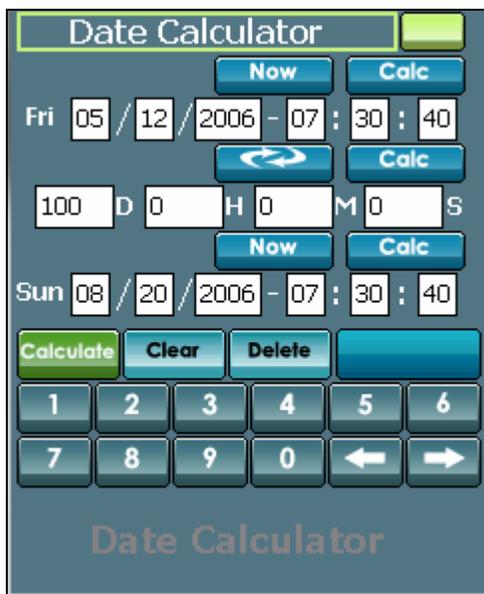
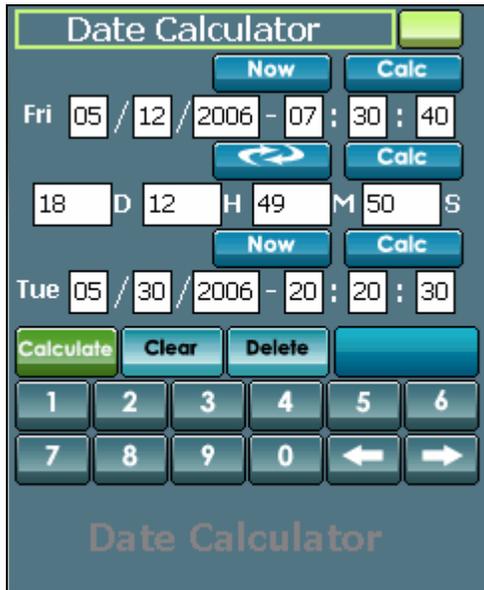
ADJ: Returns the adjoin of the specified matrix
Ex: ADJ([A]) = [ANS]

2	16	-13
-8	-8	24
14	0	-7

FNRM: Returns the Forbenius Norm of the specified matrix

Ex: FNRM([A]) = [ANS]
9.43398113205661

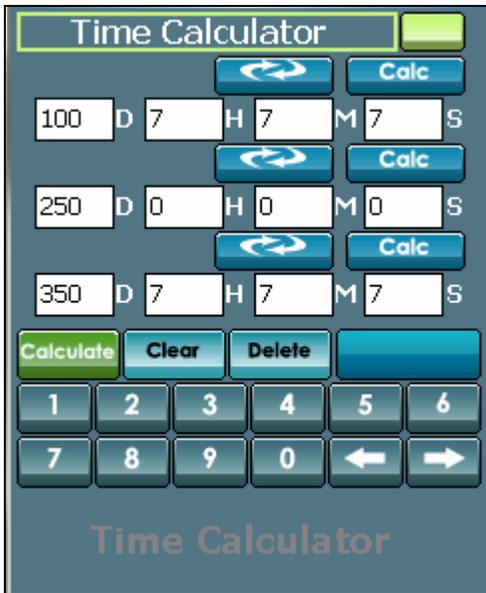
12. Date and Time Calculator:



- Tap on the menu and select [Date-Time](#)

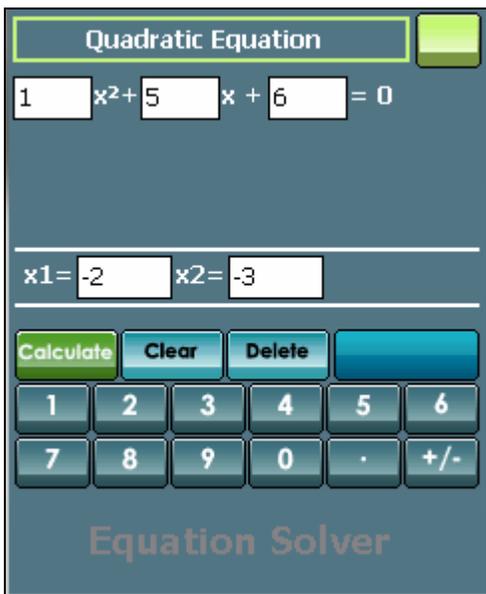


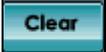
- you will see the screen as besides.
- Here you can perform both date and time calculations
- Date will be shown in US or European style depending on your settings in MxCalcSE Preferences.
- **To calculate date:** There are 3 rows in this module: From bar, Interval bar and To bar.
- Enter date time values in 2 out of 3 rows, the expected result will be shown in the third row by tapping on the calculate button at the end of each row .
- **Examples:** To calculate the Interval between 05/12/2006 at 7h: 30m: 40s and 05/30/2006 at 20h: 20m: 30s. Please follow the below steps.
 1. Enter 05/12/2006 and 7:30:40 in edit box of From row
 2. Enter 05/30/2006 and 20:20:30 in edit box of To row
 3. Tap on Calc button  on Interval Bar then you will see the result of 18d-12h-49m-50s in the box.
- Similarly, you can find the future date after 100 days, since 05/12/2006 at 7h: 30m: 40s:
 1. Enter 05/12/2006 and 7:30:40 in edit box of From row.
 2. Enter 100 days in interval box
 3. Tap on Calc button on To-Now bar then you will see the future date of Sun- 08/20/2006-7h: 30m: 40s.
 - To resume the result into days,
 - Hours, minutes or seconds by tapping on button.
- **To calculate by number of days**
- This calculator allows calculating in number of days, hours, minutes or even seconds.
- There are 3 rows in this calculator: From row, Interval row and To row.
- Enter time values in 2 out of 3 rows, the expected result will be shown in the third row by tapping on button at the end of each row.
- To shift from date Calculator to Time Calculator, please tap on  button.



- **Examples:** To calculate the interval between (100d 7h 7m 7s) and (350d 7h 7m 7s), please follow steps as below:
 -
 - 1. Enter 100d 7h 7m 7s in the From rows edit box
 - 2. Enter 350 d 7h 7m 7s in the To rows edit box
 - 3. Tap on Calc button on Interval row i.e. the middle row , You will have the result of 250d 0h 0m 0s.

13. MxSolver:



- This module allows users to calculate quadratic equation, quadratic simultaneous equations and cubic simultaneous equations with the exact results.
- Tap on the menu button then select  icon you will see the screen as below
- **How to calculate:** Enter equations along with the variable you wish to solve it for and tap on the calculate button.
- **Examples:** You want to solve a cubic simultaneous equation like this: $x^2 + 5x + 6 = 0$
- 1. Choose mode "Quadratic Equation" by tapping on 
- 2. Enter the number 
- 3. Solve it! Tap on Calculate 
- To clear all values, please tap on 

14. Base Converter:



- The Base conversion module supports binary, octal, decimal, and hexadecimal number systems. This module supports integer arithmetic only.

- Tap on the menu button then select **Base**



Conv **BaseConv**, you will see the screen as beside.

- **To calculate:**

1. Select base mode
2. Select word length (i.e. 8/16 or 32 bit)
3. Enter first number
4. Select operator (+, -, ÷, ×, AND, OR, Etc...)
5. Enter second number
6. Tap on '=' button then you will see the result at the second line of the LED.

- When setting limitation to operand, values will be truncated to the selected number of bits for display, with leading zeroes added.

- It is possible to convert or directly set word length on the LED simply by tapping on Base indicator or Word length indicator

- To see more function please Tap on **SHIFT** button

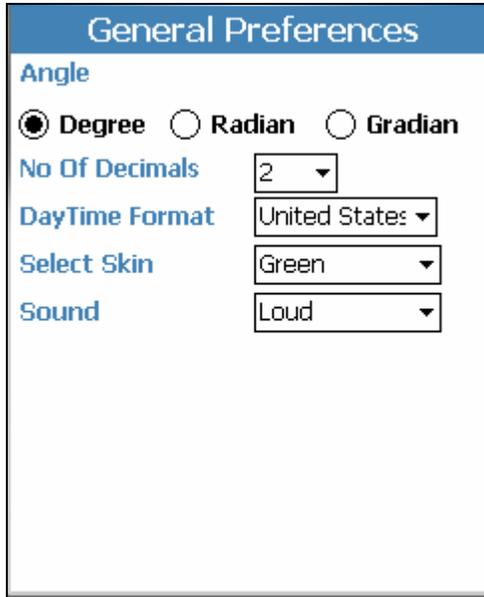
- Base Conversion supports functions as below:

Label Descriptions :

- and:** AND operation
- nand:** operation
- or:** operation
- nor:** operation
- xor:** operation
- mod:** Modulus operation
- lsh:** Shift Left operation
- rsh:** Shift Right operation
- lrt:** Rotate Left operation
- rrt:** Rotate Right operation
- not:** NOT operation
- cpl:** Two's complement operation

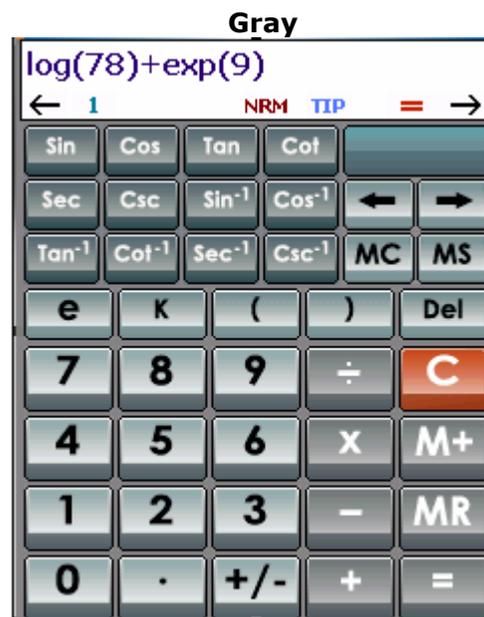
17. Preferences:

17.1. Settings:



- Tap on Settings  icon from the menu.
- You can set the Angle to Degree, Radian or Gradian format.
- You can also set the No. of Decimals, Day Time format.
- You can also select a skin.
- Apart from that even you can set the sound which has 3 categories: Loud, Soft and None.

17.2. Skinning:



18. Registration



- Tap on **Register** in menu
- Enter Serial number.
- Tap 'Enter Key' button

Serial #

Input Panel

- To register you will need the **ActiveSync ID** or **Owner Name** or **Serial #**.
- You can locate the ActiveSync ID as shown below. In the example given below **'WM_XYZ'** is the ActiveSync ID.
- The Serial # is a 19 digit # located in the registration form as seen in the example.
- Owner Name is the name in the Owner Information found in the Today Screen.

