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## RPN Quick Start Guide

### **Introduction**

RPN for PalmOS is a postfix, programmable scientific calculator. This quick start guide will detail the basic commands and operation of RPN. Please refer to [www.nthlab.com](http://www.nthlab.com) for more information including instructions on programming RPN.

The main features of RPN include

- Programmable functions.
- Drag and drop interface.
- 40 element circular stack.
- 10 user variables.
- Scientific functions.
- Base conversion.
- Number formatting.
- Graffiti or button input.
- 18 digits of precision.
- exponents up to +/-64000.
- Programmable interface.

### **Registration**

RPN is shareware. If you find RPN to be a valuable tool, please register (\$15 US). Once registered, you will remain a registered user of RPN for all future versions and will be provided with a registered version of the software. Secure online registration is available at <http://order.kagi.com/?M6K>

Instructions for other registration methods can also be found at [www.nthlab.com](http://www.nthlab.com)

### **Installation**

To install RPN, simply hotsync `rpn.prc` to your device from your desktop computer.

To install RPN script packages, hotsync the package (\*.pdb) to your device and run RPN.

To install scripts in text form, follow these steps:

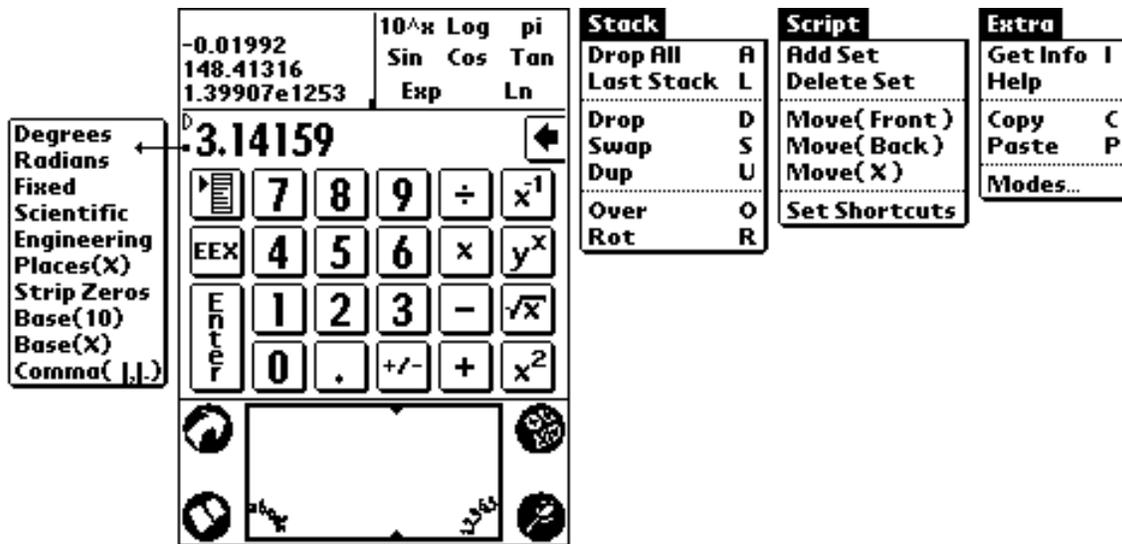
1. make a note containing the text in your desktop memopad
2. hotsync your device with your desktop
3. run memopad on your Palm device
4. copy the script text to the clipboard by selecting the text and choosing Copy from the menu.
5. run RPN.
6. Choose Add Set from the Script menu.

## Drag and Drop

Many features such as rearranging the stack or operating on numbers in place are implemented through drag and drop. Simply drag a number with the stylus to access these features. The most important feature provided through drag and drop is the user storage location. Drop a number onto one of the buttons in the numeric display and the number will be stored there. Dragging that button back to the stack will recall the value. Experiment and you'll see how convenient it dragging numbers is.

## Interface and Basic Usage

The image below shows the complete interface to RPN including popup menus which are accessed by tapping the menu icon beside the graffiti area on the Palm platform. A brief account of the function of each interface element will be given below.



### Mode Menu

Activated by clicking the left side of the main numeric display line, this menu is used to control how numbers are specified and displayed. The items in the menu followed by parentheses indicate menu items which take a number off the stack (or in the case of Base(10) behave as if they received a stack argument).

### ***Main Display***

The RPN main display is composed of three logical sections: the button interface (lower portion of the screen), the stack display (upper left), and the script display (upper right). The button interface contains mostly familiar buttons for entering numbers.

The upper leftmost button which shows a list and a triangle allows the user to select among the installed scripts by name (scripts can also be scrolled through by pressing the scroll button on the Palm device).

The stack display shows the first five entries on the stack and allows the user to manipulate them through drag and drop.

The upper-right hand portion of the screen is the script display and will display the current script. All scripts are composed of byte code and provide special functions to the user. You can write your own or download many scripts from the internet to extend RPN.

### ***Stack Menu***

The Stack menu contains basic stack manipulation commands. Try putting some distinct numbers on the stack and try these commands out.

### ***Script Menu***

The script menu is used to add, delete, and reorganize scripts in RPN. Add Set adds a script set from the text in the PalmOS clipboard (which should contain source code for a script set). Delete Set deletes the current script set. The Move items move the current set to the front, back, or X<sup>th</sup> position in the list of scripts.

Set Shortcuts is an advanced command which installs a script which is triggered by graffiti or keyboard input. Basically, you install a stream of bytecodes containing code of the form `[X]code1;[Y]code2;` and when you write the X character the code1 is executed. For example installing `[c]hV{ _vd1};` will clear the stack when the 'c' character is entered. You should learn to write new script sets before experimenting with this feature.

### ***Extra Menu***

The Extra menu contains miscellaneous commands.

Get Info displays support, registration, and version information about RPN.

Help turns on and off the script help facility. When help is on you will see a small '?' to the left of the input line and tapping a script will display its help string rather than executing its code.

Copy and Paste are used to copy the top stack number to the clipboard and paste the clipboard text into RPN. Pasting happens quickly but is done one character at a time as if you were entering the text yourself.

Modes... describes how to popup the mode menu on the left side of the input line.

### **Things to try:**

1. Press the scroll keys on the device to scroll through the installed function sets.
2. Press the Navigate button (above the EEX button) in RPN to display a list of installed function sets.
3. Enter several numbers using the keypad and the Enter button.
4. Drag numbers from the stack or the 0-9 storage variables. Drop them where ever they seem to be able to go (the stack, storage variables, some buttons, and some functions).
5. Tap the mode display (to the left of the input line) to access the mode menu.
6. Put 3 on the stack and select Places(X) from the mode menu.
7. Select Scientific from the mode menu.
8. Select Help from the Extra menu; now tapping functions in the upper right displays help for the function (some function do not have a help string). Select [Extra->Help] to turn help off.
9. Explore the RPN Web Site at [www.nthlab.com](http://www.nthlab.com)

### **Notes:**

1. The stack is 40 elements deep.
2. The stack wraps around (i.e. items are dropped of the bottom as room is needed).
3. If the maximum exponential value is exceeded or a computational error occurs, the stack displays "Numerical Error."
4. Enter makes a copy of the current number if there is no input.
5. The delete button deletes the current number if there is no input.
6. Tapping a number on the stack moves it to the top of the stack.

## Postfix calculation

The basic idea of a postfix calculator, like RPN, is that all operations take their arguments from a stack; which means, all numbers required by an operation are entered before the operation is selected. Rather than debate the benefits of this calculator style, I'll show a few examples. Note you only need to press enter after a number if you immediately need to enter another number.

Infix	Postfix
$4+2$	4 enter 2 +
$12*(4+3)$	4 enter 3 + 12 *
$(12+\sin(7))/(11*3.1415)$	7 sin 12 + 11 enter 3.1415 * /

Give it a try keeping in mind that operations effect the numbers which are already displayed.

## Legal Stuff

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