

Science Manual

(by Ants Technologies, Inc. www.antstech.com)

0. Installation

Please install both ScienceManual.prc and SciManualDB.pdb into your Palm.

1. General Description

Science Manual is a must have tool for researchers and students. It contains about 500 units grouped in 27 categories, 112 chemical elements and more than 110 scientific constants sorted in 5 categories. It allows you to make unit conversion and check scientific constants and chemical elements. In addition, the flexible database allows you to manage any kind of scientific data you may have.

2. Content

- **Unit Conversion:**

About 500 units are grouped in 27 categories as follows:

1. Length
2. Accel-Angular
3. Accel-Linear
4. Angle
5. Area
6. Capacitance
7. Computer
8. Density
9. Energy
10. Flow
11. Force
12. Fuel Consumption
13. Number
14. Power
15. Pressure

- 16.Speed-Angular
- 17.Speed-Linear
- 18.Temperature
- 19.Time
- 20.Torque
- 21.Volume
- 22.Weight
- 23.SI Prefixes
- 24.Moment of Inertia
- 25.Momentum
- 26.Viscosity-Dyn.
- 27.Viscosity-Kine.

- **Chemical Elements**

Each chemical element has following info:

1. Name
2. Symbol
3. Atomic Number
4. Atomic Weight
5. Atomic Volume
6. Density @293K
7. Classification
8. Color
9. Discovered
- 10.State
- 11.Melting Point
- 12.Boiling Point
- 13.Crystal Structure
- 14.Heat of Fusion
- 15.Heat of Vaporization
- 16.Electron Configuration

- **Constants**

Includes 20 SI Prefixes, more than 20 common Physics-Chemical Constants, 16 Electromagnetic Spectrum Constants, 16 Density of Gases at STP and more than 26 Mathematical Constants.

1. Common Physico-Chemical Constants (Universal)
2. Mathematical Constants
3. SI Prefixes
4. Density of Gases at STP
5. Electromagnetic Spectrum

3. Manage your own constants

You can edit/delete built-in constants, you can also create your own records. Each record contains 24 fields and 24 labels. You can customize the labels.

- **Create New Record**

You can create a new record by tapping on New button on Constant List screen (Fig. 1) or on Constant View screen (Fig. 2). If you create a new record by tapping New button on Constant View screen (Fig. 2), the field labels will inherit the field labels from current record. For example, if you tap New button shown in Figure 2, the field labels of the new record will be Name, Symbol, Atomic Number, ..., etc. If you create a new record from Constant List screen (Fig. 1), the field labels of the new record will inherit the field labels from the selected record or the first field in current category if no record is currently selected. If you do not want the record inherit any field labels, you need switch to Unfilled category. The field labels of the new record will be set to be "Other".

Constant List		▼ ChemElements
Hydrogen	H	
Helium	He	
Lithium	Li	
Beryllium	Be	
Boron	B	
Carbon	C	
Nitrogen	N	
Oxygen	O	
Fluorine	F	
Neon	Ne	
Sodium	Na	
Home	New	Clear

(Fig. 1) Constant List Screen

Constant View		ChemElements
Name:	Oxygen	
Symbol:	O	
Atomic Number:	8	
Atomic Weight:	15.9994	
Atomic Volume:	14.0 cm ³ /mol	
Density @293K:	0.001429 g/cm ³	
Classification:	Non-metal	
Color:	Colorless	
Discovered:	by Joseph Priestly in 1774	
Done	Edit	New

(Fig. 2) Constant View Screen

- **Change Field Label**

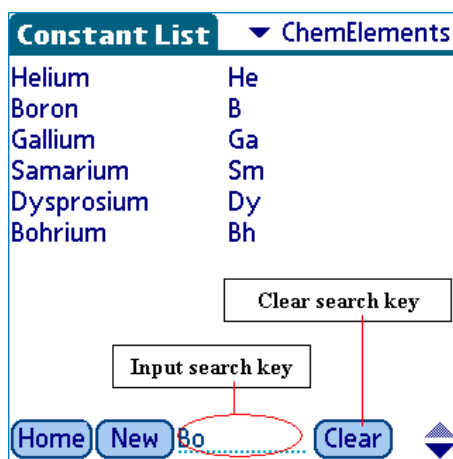
To change a field label, tap on that field label to open Change Label screen (Fig. 3). Then tap Ok button to save the change or tap Cancel button to discard the change.

Constant Edit		▼ ChemElements
Name:	Oxygen	
Symbol:	O	
Atomic Number:	8	
Atomic Weight:	15.9994	
<div> <div>Change Label</div> <div>Please input new Label:</div> <div>Name</div> <div>Ok Cancel</div> </div>		

(Fig. 3) Change Label Screen

4. Search

Science Manual will search all of fields until it finds a field containing the search key. For example, in Fig. 4, if you input “Bo”, records which contain string “Bo” in any field will appear in the list. As long as you remember any piece of info a record has, you can easily to locate the data you need.



(Fig. 4) Search

5. Contact

For product info, how to purchase, questions, problems, bugs, and data errors, please send email to antstech@yahoo.com or please visit our website at www.antstech.com

If you have a large amount scientific constants and do not want directly input them into Palm, please pack them into a Excel file in the following format (shown as Table 1 and 2. Column 1, 3, 5, ... are label column and column 2, 4, 6, ... are data column) and send the file to us, we will add your data into Science Manual's database and send the new database to you. If you want to share the data with other people, please let us know and give us permission to include the data you collected in Science Manual database. We are planning to public the data converter which will allow you to convert your data into Science Manual's database.

(Table 1) Sample Excel file format

Density of Gases at STP			
Gas	Air (dry)	Density	1.2929(g/L)

Gas	Ammonia	Density	0.771(g/L)
Gas	Carbon Dioxide	Density	1.977(g/L)
Gas	Carbon Monoxide	Density	1.25(g/L)
Gas	Chlorine	Density	3.214(g/L)
Gas	Dinitrogen Monoxide	Density	1.977(g/L)
Gas	Ethyne (Acetylene)	Density	1.171(g/L)

(Table 2) Sample Excel file format

Chemical Elements

Name	Hydrogen	Symbol	H	Atomic Number	1 Atomic Weight	1.00794
Name	Helium	Symbol	He	Atomic Number	2 Atomic Weight	4.002602
Name	Lithium	Symbol	Li	Atomic Number	3 Atomic Weight	6.941
Name	Beryllium	Symbol	Be	Atomic Number	4 Atomic Weight	9.012182
Name	Boron	Symbol	B	Atomic Number	5 Atomic Weight	10.811
Name	Carbon	Symbol	C	Atomic Number	6 Atomic Weight	12.0107

6. History

• Version 1.03

Version 1.03 adds 225 more units and 4 more categories as follows:

1. Accel-Linear 13 items -> 27 items ,
2. Angle 8 items -> 11 items ,
3. Area 10 items -> 22 items ,
4. Capacitance 3 items -> 6 items ,
5. computer 11 items -> 12 items ,
6. Density 22 items -> 29 items ,
7. Energy 13 items -> 25 items ,
8. Flow 12 items -> 26 items ,
9. Force 10 items -> 14 items ,
- 10.Length 26 items -> 43 items ,
- 11.Power 9 items -> 35 items ,
- 12.Pressure 16 items -> 34 items ,
- 13.Speed-Angular 10 items -> 12 items ,
- 14.Speed-Linear 8 items -> 23 items ,
- 15.Time 14 items -> 17 items ,
- 16.Torque 9 items -> 12 items ,
- 17.Volume 20 items -> 39 items ,
- 18.Weight 11 items -> 21 items .

four categories:

- 1.Moment of Inertia
- 2.Momentum
- 3.Viscosity-Dyn.
- 4.Viscosity-Kine.