FormulaPro - *Manual*

Introduction

Thank you for downloading FormulaPro, an application designed by TI-Planet.org to meet the computational need of students and professionals in the engineering and scientific fields in general. Many hours have been spent in developing this application, and we hope that you will enjoy it and that it will help you !

The topics included in this manual are:

- Key features of FormulaPro
- GUI structure and navigation
- Using the Reference part
- Using the Formula Solving part
- Differences between FormulaPro and EEPro
- Software License and acknowledgements
- Glossary

Key features of FormulaPro

FormulaPro allows you to solve thousands of EE problems using a built in list formulas. All you need to do is enter a list of know variables, and everything you need will be calculated. FormulaPro also handles different units with ease. It contains a reference part, with among others simple calculation tools and symbol lookup tables.

Breakdown of FormulaPro (not including sub-categories):

Reference part

Resistor color chart	Calculate the resistance or color code for a resistor
Standard Component Values	Standard values for commonly used components
Semiconductor Data	
Boolean Expressions	Quickly view commonly used boolean expressions
Boolean Algebra	Most used Boolean Algebra expressions can be found here
Transforms	View transforms tables
Constants	All the constants used by this application
SI Prefixes	Commonly used SI prefixes
Greek Alphabet	The Greek Alphabet

Formula Part

Resistive Circuits	Performs routine calculations of resistive circuits
Capacitors, E-Fields	Compute electric field properties and capacitance of various types of structures
Inductors and Magnetism	Calculate electrical and magnetic properties of physical elements
Electron Motion	Investigate the trajectories of electrons under the influence of electric and magnetic fields

Meters and Bridge Circuits	This category covers a variety of topics on meters, commonly used bridge and attenuator circuits
RL and RC Circuits	Compute the natural and transient properties of simple RL and RC circuits
RLC Circuits	Compute the impedance, admittance, natural response and transient behavior of RLC circuits
AC Circuits	Calculate properties of AC circuits
Polyphase Circuits	
Electrical Resonance	
Op. Amp Circuits	
Solid State Devices	
Linear Amplifiers	
Class A, B, C Amps	
Transformers	
Motors, Generators	

GUI structure and navigation

FormulaPro uses a display library called 'ETK' to provide a nice and intuitive user interface. *ETK* has been developed to provide a similar look&feel as general computer software, so that non-technical users can easily use the application without being “disoriented”. You can navigate within FormulaPro using the touchpad of your TI-Nspire, or by using key controls.

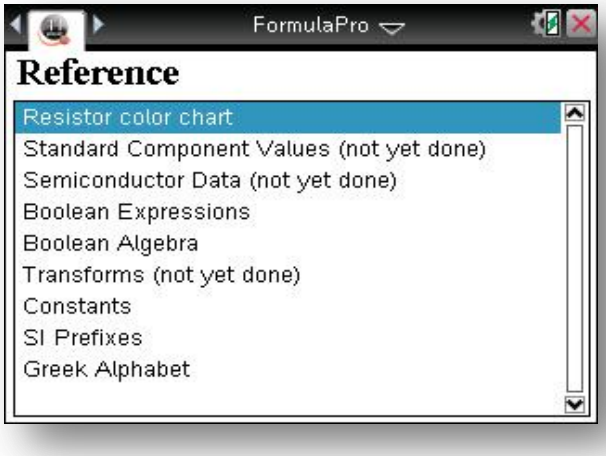
Commonly used keypad shortcuts:

esc	Return to the previous window, or lose widgets’ focus.
tab	On the main screen: Switch between Reference and Formula Part Switch between widgets (input boxes, buttons, etc.)
enter	Confirm input (of text, dropdown menus, buttons, etc.)
Arrow Keys	Move focus and/or selection in dropdown box for example.

Using the Reference part

To enter the Reference part, you will need to press the tab key at the main screen.

You will see the following screen:

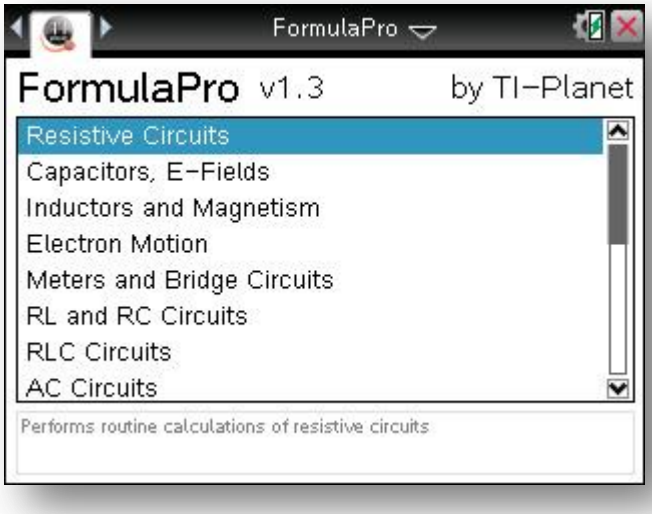


Use the arrow keys to navigate through the available options, and press enter

The navigation within each Reference element works intuitively, and doesn't need much guiding.

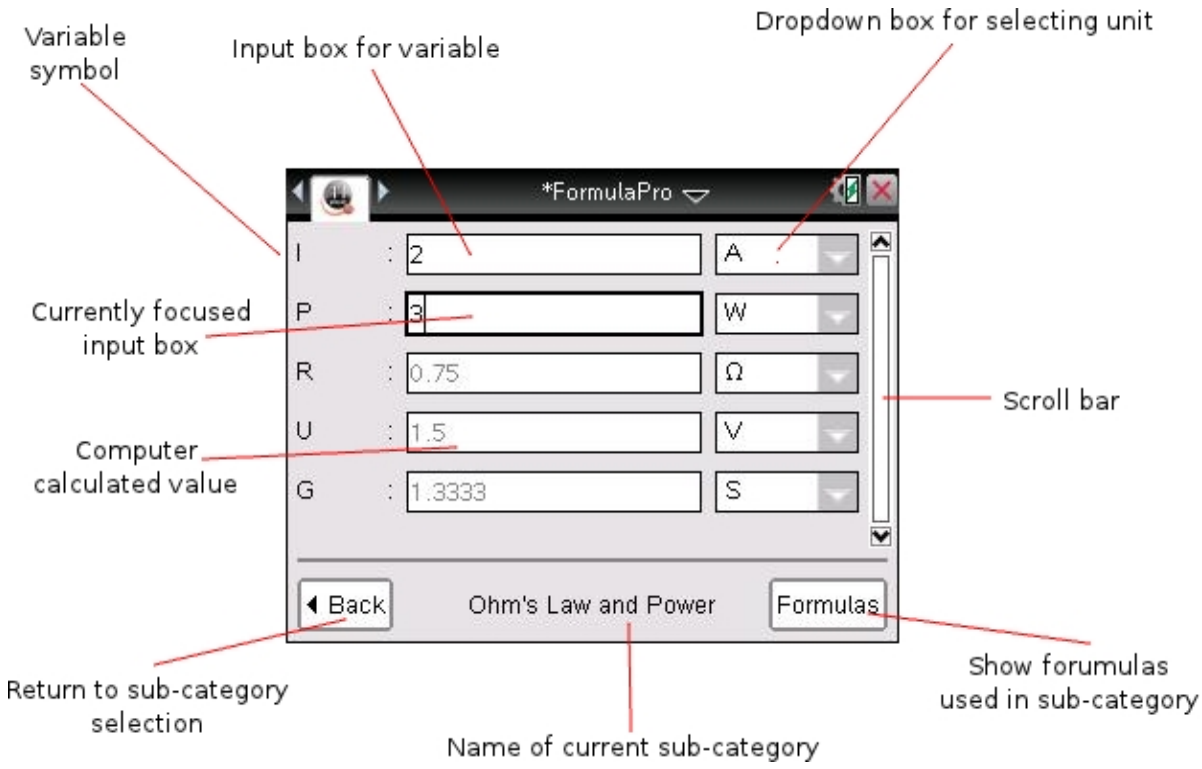
Using the Formula Solving part

The Formula part is the main view and will thus be automatically launched when opening FormulaPro. Here is what it looks like :



You will be presented a list of categories to choose topics from. Each category represents a topic in Electrical Engineering.

Press **enter** to choose your topic. This will bring you to a list of subcategories. Press **enter** again to choose and the solver will appear.



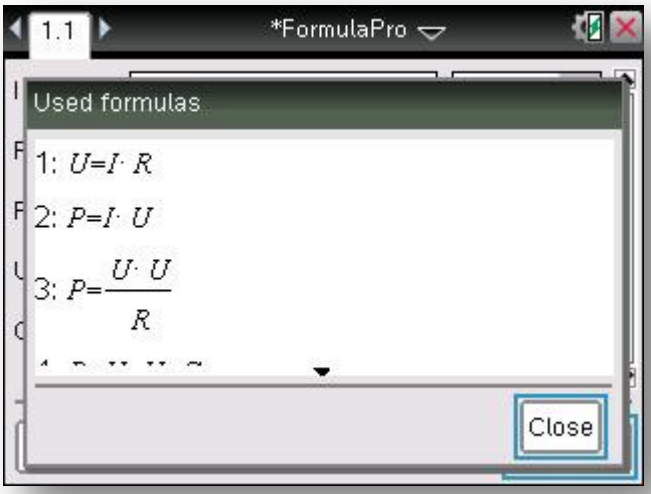
(Formula Solver for Resistive Circuits → Ohm's Law and Power)

Using the formula solver is very simple: just type in the data that you know, inside the proper text box, and press **enter**. FormulaPro will then automatically look what variables it can solve, and calculate the value for them.

After that it will put the values in the text box belonging to the solved variable.

In the above example the user entered '5A' in the text box next to 'I' (current), and '3W' in the 'P' (Power) text box. The computer calculated the values for 'R', 'U' and 'G' and put the values in their respective text box. As you can see, the computer calculated values are gray. This indicates that they cannot be edited (to prevent faulty calculations).

To view the formulas for the current sub-category press the *'Formulas'* button. In our case you would see the following:

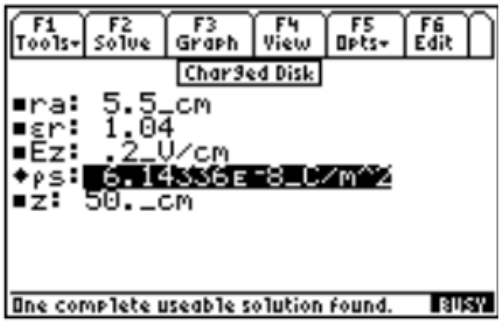


Press the **Close** button or **enter** to exit this window.

Differences between FormulaPro and EEPro

As you might now, FormulaPro is a clone of the popular *EEPro* application. EEPro was developed for the 68k series of graphing calculators (TI-89 for example), while FormulaPro is developed for the TI-Nspire series. FormulaPro currently lacks the 'Analysis' parts, but it's overall simpler, more efficient, and smarter.

EEPro for the TI-89



Software License and acknowledgements

FormulaPro is licensed under the GNU Lesser General Public License.

Credits go to Adrien Bertrand, Jim Bauwens and the original EEPro developers.
Other contributors to FormulaPro are mentioned in the sources and/or Readme file(s).

We would like to thank Texas Instruments for their support during the development. They have been helpful in the testing phase, and generously provided us with hardware to speed up development.

FormulaPro and *TI-Planet* are in no way associated with *Da Vinci Technologies Group Inc.*

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Glossary

EE	Electrical Engineering
GUI	Graphical user interface
TI-Nspire	Graphical calculator by Texas Instruments