In Too Tolerance (iPhone/iPad/iPod touch application)

Operation manual
Ver 1.1 (2019/ 2/ 5)

At the beginning: Please touch the numeric location "where you want to input or change" in the sheet. Numeric is entered.
And calculation result is automatically displayed when you fill desired value.
No explanation is necessary for basic calculations, I think. This manual includes only the minimum functional description.

Attention: This application is intended to modify numeric easily. Conversely, numeric may be changed by unintentionally touch.
Please check by yourself carefully any value, if you use it to practical purpose.
I make no warranty and can't respond to claims of any kind of damage.

Contents

(All figures in this manual is iPhone 3.5inch, iOS9.x)

Calculation Sheet

2*2 **serial/parallel calculation or Ohm's law** sheets (below yellow and green), 1 **voltage level by resistance** sheet (red), and 1 **voltage level by capacitance** sheet (blue) are attached. For distinction, each sheet has a different color.

Numeric part: The thin color large squares are for numerical input or calculation result display. Input guide numeric is dimmed before entering numeric in the input section.
Touch directly the most significant digit of the numeric. The digit changes by the following action. Adjust each digit to necessary numerical values by repeatedly similar touch actions. (See P.4)

Keyboard appears if you press the left side button. (Before numeric input. See P.5)

Button becomes 'lock' when numeric exist. You can lock the numeric by it.

Label part: Dark color behind has the below mentioned functions.
   Sheet Change: Touch and move right or move left.
   Select calculation: Touch and move down or move up.
   Copy/Paste a sheet: Touch and select from balloon.
      (Selector is available in the case it works.)
 Sheet text is stored in pasteboard. You can paste it into another application like E-mail. When pasting, all numerical is fit to setting of the field. But locked field is skipped.

Where it is not the input section, a touch changes it to the input section.

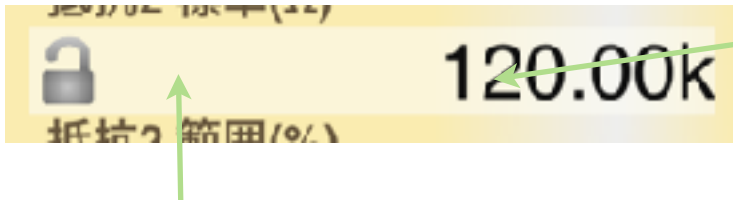**Clear** this sheet numerical (excluding memory) or selected one numerical/memory.

System Settings (See P.6)   Memory   Circuit Diagram

Numerical Input

The touch operation differs whether in blank or on numeric.

On numeric, value of below table is added to or subtracted from the touched digit .
When moving up or down, continuous operation is allowed, to adjust the value. Only the touched digit is affected and other digits are kept.

In blank, right table functions are attached.

	Add 1 in front of highest digit	
Insert 1 digit '0' last	Copy/Paste (See below)	Delete last 1 digit

	+2(-8)	
Insert 1digit right	+1(-9)	Delete 1digit right
	+9(-1)	

Copy/Paste a numeric
(1) Touch blank in front of the numeric you want to copy. It becomes thin color.
(2) Touch destination numeric field. The value (1) is copied. Or touch again same (1). The value is stored in pasteboard.
(3) At no input situation on the input field, by a touch blank in front of numeric guide, the value in pasteboard is pasted.
The memory button is possible to use instead of numeric field.

Each sheet calculation is done when that can be calculated.

Keyboard

3 Keyboards (prefix number, tolerance range, percent) are equipped and suitable keyboard is automatically selected corresponding to the content. (Below is 'tolerance range' keyboard.)

Current Tol.(%) ← Label of the field.

-3.5~8.2 ← This display numeric is stored. Touch correction to numeric or unit is possible. Before storing, it is rounded according to the field setting. (P.6) If it is blank, nothing is stored.

7	8	9	C	← Clear numerical input.
4	5	6	→	← Delete last 1 character.
1	2	3	~	← Separator between upper limit and lower limit.
0	.	+/-	±	← When upper limit and lower limit absolute values are the same.

Done ← Finish numeric input and **quit**.

System Settings

Quantity

| · | 0 | 1 | **2** | 3 | 4 | 5 | 6 |

Numeric is classified 2 kinds(Quantity/Rate(%)). Choose **rounding digit** for each. '.' is full digit display. Number is decimal part length.

Percent

| · | 0 | 1 | **2** | 3 |

Rounding rule is same in all numeric. (Round down/Round off/Round up)

Rounding

| ⇓ | **5/4** | ⇑ |

Metric prefix of 3N exponent, in addition metric prefix of -2, -1, 1, 2 exponent, or exponential display.

Metric prefix

| · | **c,d,da,h** | Exp |

Decimal point/separator type
Blank: default of the unit
,. : 1,234,567,890.
., : 1.234.567.890,
. : 1 234 567 890.
, : 1 234 567 890,
'. : 1'234'567'890.

Numeric Format

| ■ | ' . | · , | · | , | ' . |

| · | **3-3-3** | 2-2-3 | 4-4-4 |

Separator location
-   : 1234567890.
3-3-3 : 1,234,567,890.
2-2-3 : 1,23,45,67,890.
4-4-4 : 12,3456,7890.

0123456789

Number type
20 type numerics are available and switched by touch.

R   **↻**   **Done**

Finish this setting screen and **quit**.

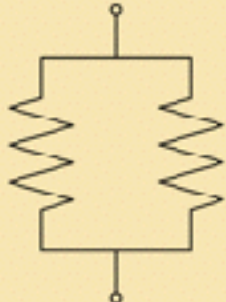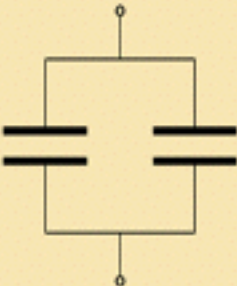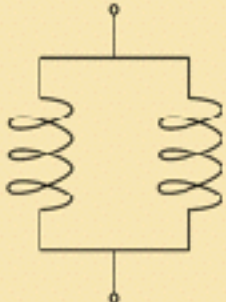**Reset**: Use it only when you want to initialize this application.

Reload: Return to the situation this application starts.

Attached calculations in this Application

* This application equips limited calculation of analog items in digital circuit confirmation.
  Target calculations and circuits of this application are shown as follows.
* Circuit diagram appears when its button is touched. (It is independent from calculation sheet because it may be unnecessary after understood this specifications.)
* By scrolling right and left, you can switch the sheet to other sheet. By scrolling up and down, you can switch to other calculation in the sheet.
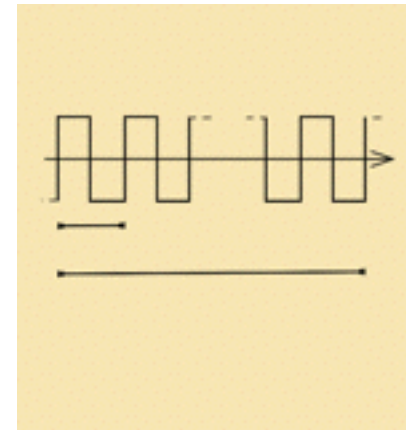
1. Circuit elements (resistor, condenser, coil) serial or parallel connection, minimum - maximum range calculation

Resistor1 Typ.(Ω)	Resistor1 Min.(Ω)
🔓 380.00k	🔓 342.00k
Resistor1 Tol.(%)	Resistor1 Max.(Ω)
🔓 -10.00~ 10.00	🔓 418.00k
Resistor2 Typ.(Ω)	Resistor2 Min.(Ω)
🔓 4.20☐	🔓 3.99☐
Resistor2 Tol.(%)	Resistor2 Max.(Ω)
🔓 -5.00~ 5.00	🔓 4.41☐
Parallel Resistor Typ.(Ω)	Parallel Resistor Min.(Ω)
🔓 4.20☐	🔓 3.99☐
Parallel Resistor Tol.(%)	Parallel Resistor Max.(Ω)
🔓 -5.00~ 5.00	🔓 4.41☐

2. Ohm's law, frequency and time conversion, minimum - maximum range calculation
   By 2 values variation, 1 result value varies in largest range. This largest range value can be switched from 3 cases and is shown on sheet by * mark.
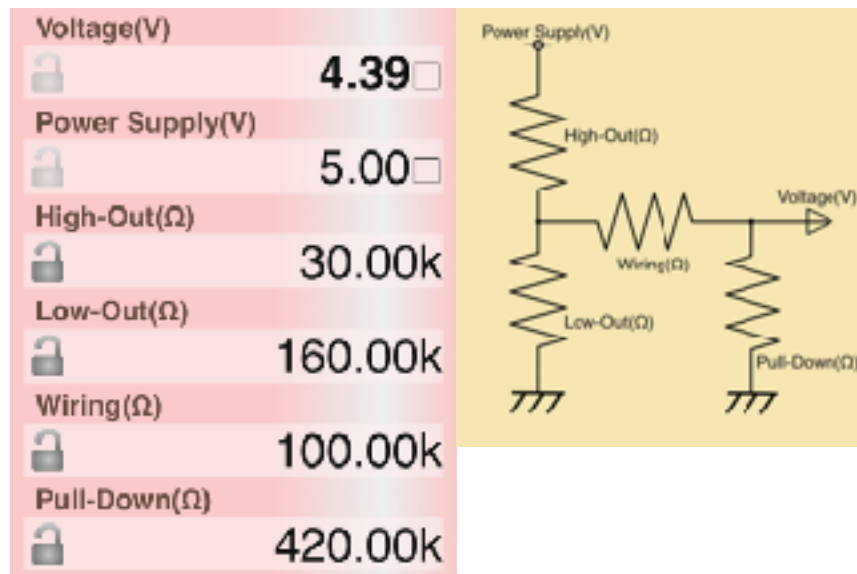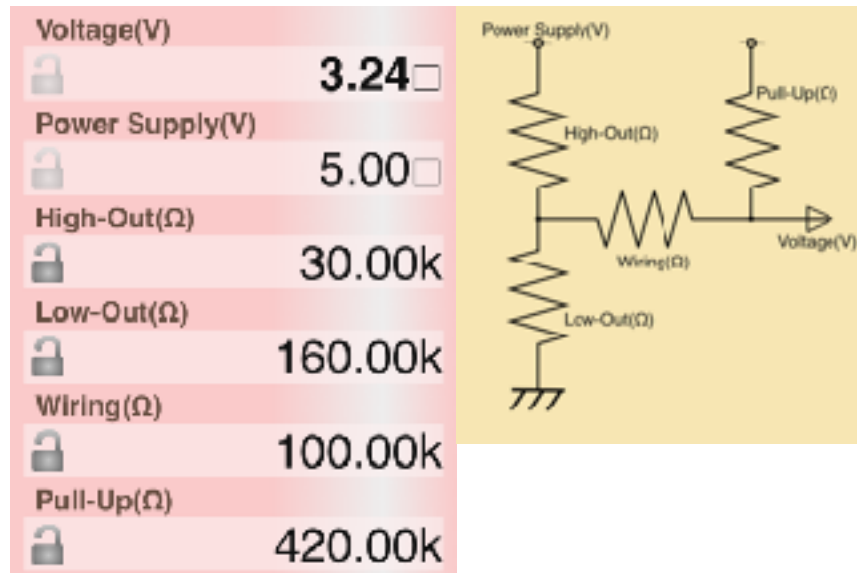
Resistor Typ.(Ω)	Resistor Min.(Ω)
240.00k	216.00k
Resistor Tol.(%)	Resistor Max.(Ω)
-10.00~ 10.00	264.00k
Current Typ.(A)	Current Min.(A)
21.00µ	20.79µ
Current Tol.(%)	Current Max.(A)
-1.00~ 1.00	21.21µ
Voltage* Typ.(V)	Voltage* Min.(V)
5.04□	4.49□
Voltage* Tol.(%)	Voltage* Max.(V)
-10.90~ 11.10	5.60□
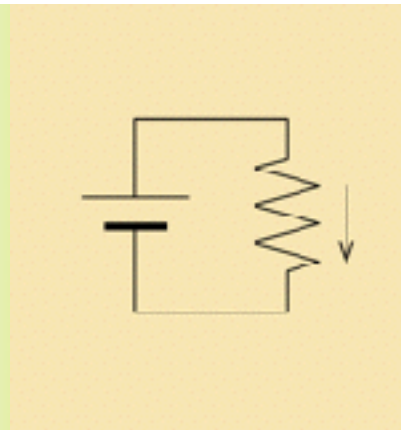
Resistor Typ.(Ω)	Resistor Min.(Ω)
240.00k	216.00k
Resistor Tol.(%)	Resistor Max.(Ω)
-10.00~ 10.00	264.00k
Current' Typ.(A)	Current' Min.(A)
21.00µ	18.90µ
Current' Tol.(%)	Current' Max.(A)
-10.00~ 12.22	23.57µ
Voltage Typ.(V)	Voltage Min.(V)
5.04□	4.99□
Voltage Tol.(%)	Voltage Max.(V)
-1.00~ 1.00	5.09□

Yellow and green pair sheets calculations are chosen from 1. 2. items.

3. Input voltage calculation by the real circuit resistance from digital output, through wiring, to digital input

Voltage(V)	3.24
Power Supply(V)	5.00
High-Out(Ω)	30.00k
Low-Out(Ω)	160.00k
Wiring(Ω)	100.00k
Pull-Up(Ω)	420.00k

Voltage(V)	4.39
Power Supply(V)	5.00
High-Out(Ω)	30.00k
Low-Out(Ω)	160.00k
Wiring(Ω)	100.00k
Pull-Down(Ω)	420.00k

4. Curved level calculation of digital wave by the real circuit capacitance and resistance

Voltage(V)	3.44
Power Supply(V)	5.00
Percent(%)	68.86
Resistor(Ω)	450.00k
Capacitor(F)	120.00p
Charge Time(sec)	63.00μ

Voltage(V)	1.56
Power Supply(V)	5.00
Percent(%)	31.14
Resistor(Ω)	450.00k
Capacitor(F)	120.00p
Discharge Time(sec)	63.00μ
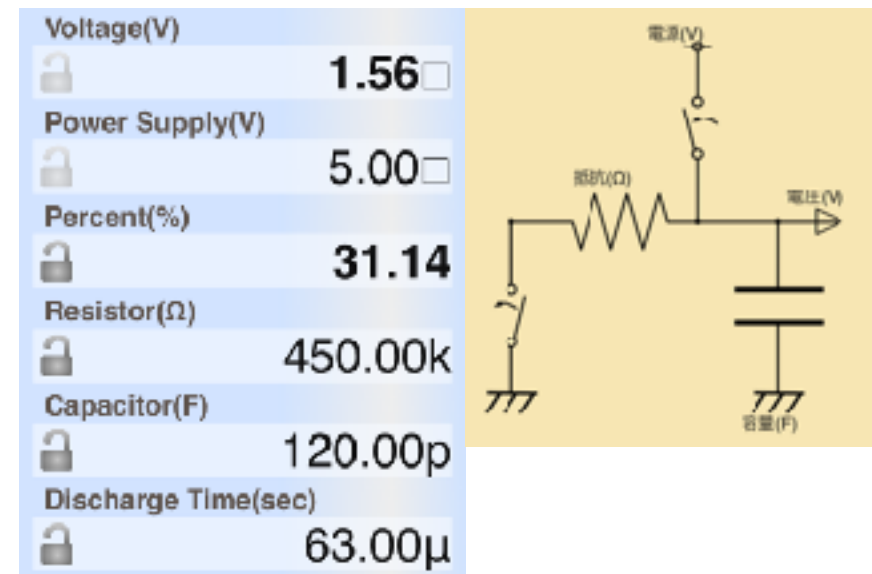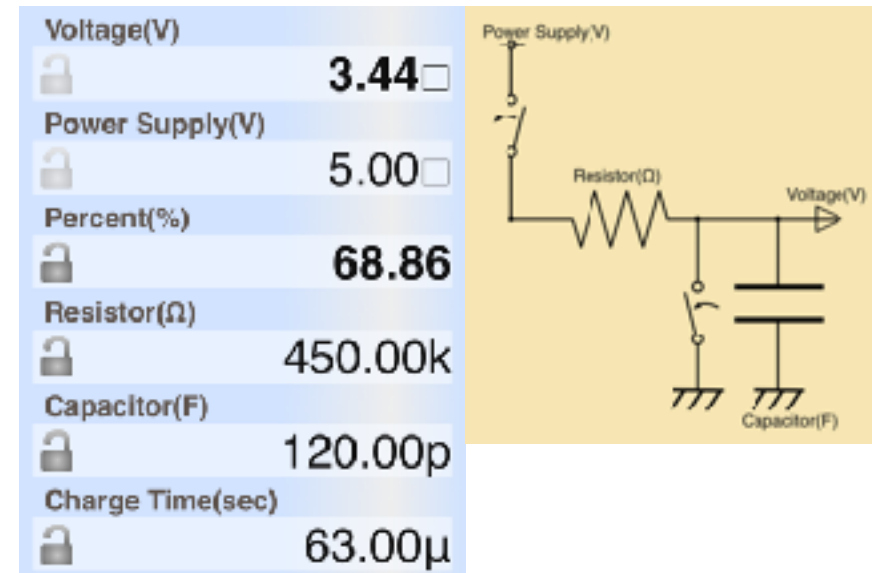
Modification history

Modifications ➡ Ver1.1

- Show the range result, even if it is impossible. (It was error in previous version.)
- Delete twitter button because iOS11 or after doesn't support it.
- iPhoneX/XR/XS display.
- Delete plus/minus switching by touch.
- Bug fix of pico unavailable touch modification.