ProMeister

User Guide

Advanced Multimeter

Art. Nr: PT8115

RVNR-01

Introduction

This is a low power consumption, high accuracy and stable hand held 6000 counts multimeter; with special designed IC to support true RMS measurement. It performs measurements of DC voltage/current, true RMS AC voltage/current, resistance, capacitance, frequency, diode, continuity, temperature and non-contact voltage sensing.

Safety

The multimeter was designed in compliance with IEC/EN safety requirements, please read the safety instruction before any operation.

1. Please check the insulation, conductivity, and connection of the multimeter and test probe before any measurement.
2. Please do not perform any measurements exceeding the specified limitation, otherwise it may damage the instrument and endanger the user.
3. Please operate the instrument with caution to avoid the hazards when measuring the voltage over 60V DC and 40V AC.
4. Please make sure right function has been selected before any measurement.
5. Please disconnect the test probe from the testing point before switching the function.
6. Do not measure the voltage when test probe is connecting with the current measurement terminal.
7. Do not modify the circuit of the multimeter, otherwise it may damage and endanger the user.
8. Do not perform measurement in wet environment.
9. Do not perform measurement in the presence of explosive gas and combustible or in dusty environment.
10. Do not take any measurement whenever anomalous conditions occur such as deformation, break, leakage and blind display … etc.

Specifications

1. General Specification

Display:	LCD
Maximum Resolution:	6000 counts (Frequency and Capacitance is 9999)
Range:	Auto/Manual
Data Refresh Rate:	3 times/sec
Low Power Indication:	when appears
Working Temperature:	0~50°C (32~122°F)
Storage Temperature:	-10~60°C (14~140°F)
Humidity:	<80% RH
Power Source:	9V 6F22 Battery
Rating:	AC 0~750V DC 0~1000V AC 0~10A DC 0~10A Ω 0~60M TEM -200°C~1300°C (-328~2372°F) CAP 0~9.999mF Hz 0~9.999MHz
CAT Category:	CAT IV 600V CAT III 1000V
Certificated & Approved:	EMC: EN 61326-1, EN 61326-2-2 GS: EN 61010-1, EN 61010-031, EN 61010-2-030, EN 61010-2-033
Pollution Degree:	2

Specifications

2. Accuracy

2.1 DC Voltage (DCV)

2.1.1 DCmV

Range	Accuracy	Resolution
60.00mV	±1% ±2 digits	0.01mV
600.0mV		0.1mV

2.1.2 DCV

Range	Accuracy	Resolution
6.000V	±1% ±2 digits	1mV
60.00V		10mV
600.0V		100mV
1000V		1V

2.2 True RMS AC Voltage (ACV)

2.2.1 ACmV

Range	Accuracy	Resolution
60.00mV	±1% ±2 digits	0.01mV
600.0mV		0.1mV

2.2.2 ACV

Range	Accuracy	Resolution
6.000V	±1% ±2 digits	1mV
60.00V		10mV
600.0V		100mV
750V		1V

2.3 Capacitance (F)

Range	Accuracy	Resolution
9.99nF	± (2%+10)	0.001nF
99.99nF	± (1%+3)	0.01nF
999.9nF		0.1nF
9.99uF	±(1.5%+3)	1nF
99.99uF		10nF
999.9uF	± (2%+3)	100nF
9.999mF	± (3%+3)	1muF

2.4 Resistance (Ω)

Range	Accuracy	Resolution
600.0Ω	±1%±3 digits	0.1Ω
6.000k		1Ω
60.00k	±1%±1 digits	10Ω
600.0k		100Ω
6.000M		1kΩ
60.00M	±2%±3 digits	10kΩ

Specifications

⚠ CAUTION: For measurement of range 600Ω, please short the two probes to obtain the resistance between two probes prior to the measurement. User will need to subtract this value in order to get a more accurate reading during the measurement.

2.5 Diode and Continuity

Range	Display Value
	Diode forward voltage drop: 0~1.5V
	Buzzer will buzz when the resistance between two points is <50 ohm. "OL" will be displayed when the resistance between two points is >600 ohm.

2.6 Frequency

Peak Voltage for frequency measurement is ±600mV

Range	Accuracy	Resolution
9.999Hz	±1%±3 digits	0.001Hz
99.99Hz		0.01Hz
999.9Hz		0.1Hz
9.999KHz		1Hz
99.99KHz		10Hz
999.9KHz		100Hz
9.999MHz		1KHz

2.7 Temperature

Range	Accuracy	Resolution
-200°C~399°C (-328°F~750°F)	±2%±3 digits	1°C (1°F)
400°C~1300°C (752°F~2372°F)	±2%±5digits	1°C (1°F)

⚠ CAUTION: The table indicates the maximum reading range of the meter, user has to select corresponding K-type thermocouple for different temperature measurement.

2.8 DC Current

Range	Accuracy	Resolution
600.0uA	±1.5%±6 digits	0.1uA
6000uA		1uA
60.00mA		10uA
600.0mA		100uA
10.00A	±2%±10 digits	10mA

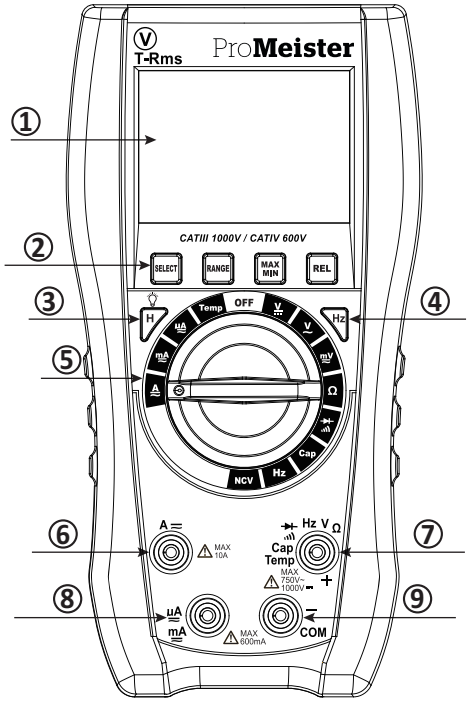
⚠ CAUTION: Do not measure maximum current 10A for more than 10 seconds!

2.9 AC Current

Range	Accuracy	Resolution
600.0uA	±1%±6 digits	0.1uA
6000uA		1uA
60.00mA		10uA
600.0mA		100uA
10.00A	±2%±6 digits	10mA

⚠ CAUTION: Do not measure maximum current 10A for more than 10 seconds!

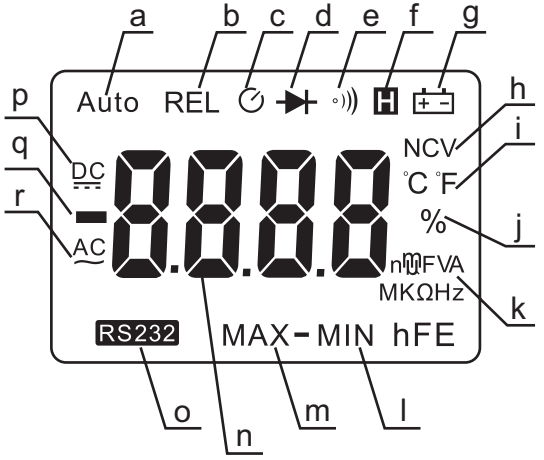
Operation



(1) LCD Display
(2) Function Switches
(3) Short press for value holding
Long press for background light
(4) Hz
(5) Rotation Switch for Measured Function
(6) 10A Current Measured Terminal
(7) Measured Terminal of Voltage, Resistance, Capacitance, Frequency, Temperature, Continuity and Diode
(8) <600mA Current Measured Terminal
(9) Common Ground Terminal

1. PANEL DESCRIPTION

(1) LCD Display: Measured value and unit display.



a. Auto Range
b. Relative Value Measurement
c. Auto Power-off
d. Diode Measurement
e. Continuity Measurement
f. HOLD
g. Low Battery Power Indication
h. Non-Contact Voltage Sensing
i. Temperature Units
j. Duty Cycle Unit
k. Other Units
l. Minimum Indication
m. Maximum Indication
n. Measured Value
o. Bluetooth on/off flag
p. (This only works for 7117A)
q. DC Indication
r. Negative Polarity Indication
s. AC Indication

(2) Function Switches

(2-1) SELECT

- Switch between DCmV/ACmV at mV measurement.
- Switch between diode/continuity measurement at measurement.
- Change the temperature unit at temperature measurement.
- Switch between DC / AC current at µA, mA and A measurement.
- Cancel the **Auto Shut Down** function by pressing and hold the switch, then turn on the power; the buzzer will buzz.

(2-2) RANGE

Switch between Auto/Manual range. The initial condition will be **AUTO** range. Press this switch will be able to define the range manually. Press and hold this switch for more than 2 seconds will return to **AUTO** range. This switch only works for µA, mA, A, V, V, and Ω measurements.

(2-3) REL

Press this switch to activate the **Relative Value Measurement**; the range will switch from **AUTO** to **MANUAL**. This function works for voltage, current, and resistance.

When the REL button is pressed, **REL** appears on the screen, the measuring range will be fixed, and the reading on the LCD (reference value) will be initialized as 0.

In this mode, **REL (current reading) = input value - reference value.**

For instance, if the stored value is 20.0V and the present measurement value is 22.0V, the reading would be 2.0V.

If a new measured value is equal to the initialized value, then the reading will be 0.0V.

a. REL measurement only works for Manual range.
b. Press REL again will deactivate the function when REL is activated.
c. Press REL when meter is under HOLD condition will deactivate HOLD, and the value will be the reference value.
d. Press RANGE, REL, or rotate the measurement switch will cancel the REL measurement (REL will disappear from the LCD).
e. Press and hold REL for more than 2 seconds, the meter will enter Bluetooth transmission mode, and RS232 will appear on LCD (This only works for 7117A).

(2-4) MAX/MIN

a. Press **MAX/MIN** once will enter maximum mode, **MAX** will appear on LCD. The reading will stay at maximum value that has been measured. Press **MAX/MIN** second time will enter minimum mode, **MIN** will appear on LCD. The minimum value that has been measured will be displayed. Press **MAX/MIN** third time, **MAX-MIN** will appear on LCD, and meter will display difference between maximum and minimum value. Keep pressing **MAX/MIN** will repeat the order.
b. **REL**, **HOLD** and **SELECT** will not function after enter MAX/MIN mode. Press **RANGE** will leave MAX/MIN mode.
c. Press and hold **MAX/MIN** for more than 2 seconds will leave the MAX/MIN mode.

(3) HOLD

a. Press this switch will hold the value that shows on LCD. When it is activated, **H** will be displayed on LCD. Press **HOLD** again will deactivate it.
b. Press **RANGE, MAX/MIN, REL**, or rotate the measurement switch will deactivate the **HOLD** condition.
c. Press **HOLD** for more than 2 seconds will switch on the background light; repeating the procedure will switch off the background light. The background light will switch off automatically after 30 seconds.

(4) Hz

This switch works for AC Voltage, Current measurement and Frequency measurement. Pressing this switch will change between frequency and duty cycle measurement.

(5) Rotation Switch for Measured Function
Rotate this switch to change the measured function.

(6) 10A Current Measured Terminal.

(7) Measurement Terminal of Voltage, Resistance, Capacitance, Frequency, Temperature, Continuity and Diode.

(8) <600mA Current Measured Terminal.

(9) Common Ground Terminal (COM)

2. DC VOLTAGE MEASUREMENT

2.1 Plug the black probe with **(9) COM** terminal, and red probe with **(7)** terminal.
2.2 Rotate the switch to V.
2.3 The initial range will be auto range, **AUTO** and **DC** will be displayed. User can press **RANGE** to change the range of 6.000V, 60.00V, 600.0V and 1000V manually.
2.4 Rotate the switch to mV, then press **SELECT** to select DC measurement (**DC** will be displayed).
2.5 The initial range will be auto range, user can press **RANGE** to change the range of 60.00mV or 600.0mV manually.
2.6 Contact the probes with the testing point, the polarity of the red probe will be displayed on the LCD.

⚠ **CAUTION:**
• If OL is displayed during measurement, it means the measured voltage is higher than specific range. Please increase the range level.
• Do not measure voltage higher than 1000V DC; otherwise the meter may be damaged.
• Avoid the direct contact with human body during the high voltage measurement.

3. AC VOLTAGE MEASUREMENT

3.1 Plug the black probe with **(9) COM** terminal, and red probe with **(7)** terminal.
3.2 Rotate the switch to V.
3.3 The initial range will be auto range, **AUTO** and **AC** will be displayed. User can press **RANGE** to change the range of 6.000V, 60.00V, 600.0V, and 750V manually.
3.4 Rotating the switch to mV, then press **SELECT** to select AC measurement (**AC** will be displayed).
3.5 The initial range will be auto range, user can press **RANGE** to change the range of 60.00mV, 600.0mV manually.
3.6 Contact the probes with the testing point, the polarity of the red probe will be displayed on the LCD.

⚠ **CAUTION:**
• If OL is displayed during measurement, it means the measured voltage is higher than specific range. Please increase the range level.
• Do not measure voltage higher than 750V AC; otherwise the meter may be damaged.
• Avoid the direct contact with human body during the high voltage measurement.

4. RESISTANCE MEASUREMENT

4.1 Plug the black probe with **(9) COM** terminal, and red probe with **(7)** terminal.
4.2 Rotate the switch to Ω, then contact the probes with the testing points.
4.3 Press **RANGE** to select the range.

⚠ **CAUTION:**
• If user does not have any idea of measured resistance during the Manual range, please start from the highest range.
• If OL is displayed during measurement, it means the measured resistance is higher than specific range. Please increase the range level.
• It will take few seconds for the reading to be stable when user measures resistance higher than 1M ohm.
• OL will be displayed when measured an open circuit.
• Please make sure all voltage has cut off and all capacitor has been discharged before any measurement.
• Do not feed any voltage into the probes during the resistance measurement.

5. DIODE/CONTINUITY MEASUREMENT

5.1 Plug the black probe with **(9) COM** terminal, and red probe with **(7)** terminal.

5.2 Rotate the switch to , then contact the probes with the testing points.

5.1 To perform diode measurement, please press **SELECT** unit displayed on the LCD.

5.2 Forward measurement: When contact the red probe with anode and black probe with cathode, the voltage value will be displayed on LCD.

5.1 Reverse measurement: When contact the red probe with cathode and black probe with anode, the **OL** will be displayed on LCD.

5.2 Complete measurement of diode includes both forward and reverse measurement. If any direction is not as above described, it means the diode may be damaged.

5.1 To perform continuity measurement, please press **SELECT** unit is displayed on the LCD.

5.2 Contact the probes with two sides of the circuit. If the resistance is smaller than 50 ohm, the buzzer will buzz.

⚠ **CAUTION:**

- **Do not feed any voltage into the probes during the continuity measurement.**

6. CAPACITANCE MEASUREMENT

6.1 Plug the black probe with **(9) COM** terminal, and red probe with **(7)** terminal.

6.1 Rotate the switch to **Cap** measurement.

6.2 Contact the capacitor with the testing probe, and the measured value will be displayed on the LCD.

6.3 To measure the 9.999mf capacitor, the meter needs about 30 seconds to get a stable reading.

7. FREQUENCY MEASUREMENT

7.1 Plug the black probe with **(9) COM** terminal, and red probe with **(7)** terminal.

7.1 Rotate the measurement switch to **Hz**, connecting the two probe or the shielded wire with the signal source or the load of the source.

7.1 Press **Hz** to switch between Frequency / Duty Cycle and the measured signal frequency or the duty cycle value will be display on LCD.

⚠ **CAUTION:**

- **Frequency measurement only works at auto ranging.**
- **Please use shielded wire to measure the small signal in noisy environment.**

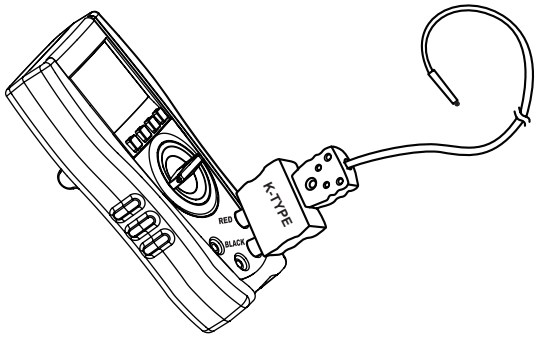
8. TEMPERATURE MEASUREMENT

8.1 Rotate the switch to **Temp**.

8.2 Connect the K-type thermocouple with the meter to perform the measurement.

8.3 Change temperature unit by pressing **SELECT**.

8.4 Temperature measurement needs the transfer connector and K-type thermocouple. The connection shows as below figure:



9. NON-CONTACT VOLTAGE SENSING

9.1 Rotate the switch to **NCV**, and **EF** will be displayed on the LCD

9.2 Approach the sensor to the target (sensor is locate on which **V** is printed on the instrument).

9.3 If the meter senses the voltage, "-" will be displayed on the LCD. The more closer to the voltage source, the more "-" will appear on the LCD.

9.4 The voltage sensing range is 80~1000VAC.

10. DC CURRENT MEASUREMENT

10.1 Plug the black probe with **(9) COM** terminal, and red probe with **uA**, **mA**, or **A** terminal (the maximum current is 6000uA for uA measurement, the maximum current is 600mA for mA measurement, and the maximum current is 10A for A measurement).

10.2 Rotating the switch to (uA mA A) , then press **SELECT** to select DC measurement (DC will be displayed).

10.3 Connect two probes with the testing points in serial; LCD will display the polarity of red probe.

⚠ **CAUTION:**

- **If user has no idea of the measured current range, please start the measurement from the highest range, and then decrease the range base on the measurement.**
- **If OL appears, it means the measured current is higher than range, please increase the range.**
- **Maximum input current is 600mA or 10A (depends on different terminal), over the current may damage the meter.**

11. AC CURRENT MEASUREMENT

11.1 Plug the black probe with **(9) COM** terminal, and red probe with **uA**, **mA**, or **A** terminal (the maximum current is 6000uA for uA terminal, the maximum current is 600mA for mA terminal, and the maximum current is 10A for A terminal).

11.2 Rotating the switch to (uA mA A) , then press **SELECT** to select AC measurement (AC will be displayed).

11.3 Connect two probes with the testing points in serial; LCD will display the polarity of red probe.

⚠ **CAUTION:**

- **If user has no idea of the measured current range, please start the measurement from the highest range, and then decrease the range base on the measurement.**
- **If OL appears, it means the measured current is higher than range, please increase the range.**
- **Maximum input current is 600mA or 10A (depends on different terminal), over the current may damage the meter.**

12. AUTO SHUTDOWN

12.1 Meter will power off automatically after 15 minutes. To restart the meter, please press any switch.

12.2 Press and hold **SELECT** button and then turn on the power will deactivate the **Auto Shut Down** function.

Maintenance

⚠ **CAUTION:**

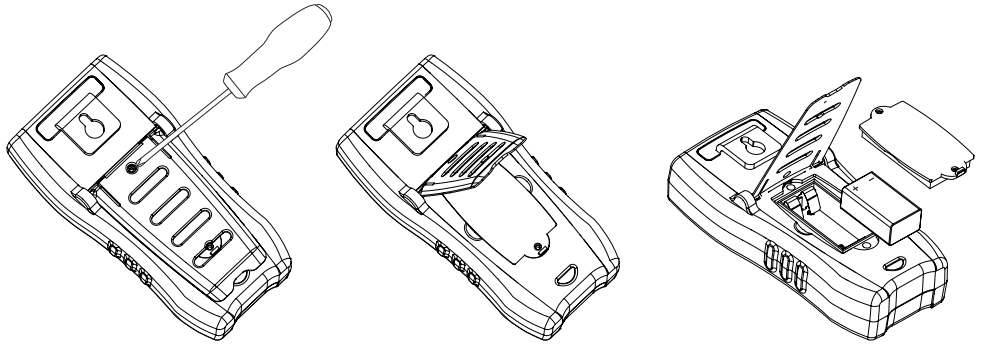
- This is a meter with precise design, please do not modify the circuit.
- Keep away from water, dust and fall down.
- Do not operate and store the meter in high temperature, high moisture, flammable, explosive and strong magnetic environment.
- Do not use abrasive, alcohol and solvent to clean the meter.
- Take off the battery if meter is going to store for a long period.

Maintenance

⚠ **CAUTION:**

- **Change the battery when 🔋 appears on LCD.**
- **Do not measure voltage higher than 1000V DC or 750V AC.**
- **Do not measure any voltage during current, resistance, diode, continuity, temperature and non-contact voltage sensing measurement.**
- **Do not use the meter if the battery or battery cover is not properly installed.**
- **Please move testing probes away from the testing point and switch off the meter during the battery replacement.**
- **Please use the original testing probes.**
- **Please recycle the battery by following the local regulation.**

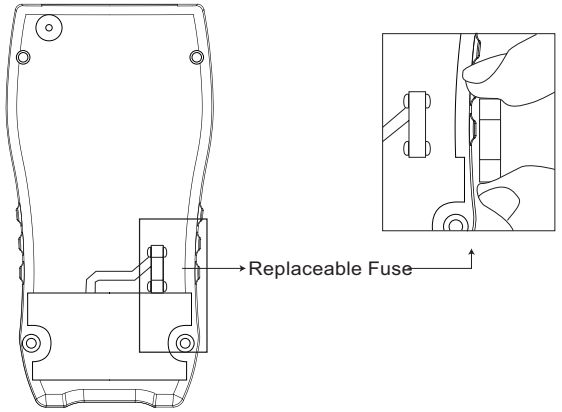
1. BATTERY REPLACEMENT



2. FUSE REPLACEMENT

The instrument uses one 10A/250V fuse. Please follow the instruction to replace the fuse:

1. Switch off the power and remove the probes.
2. Remove the protective cases and four screws on the back of the instrument and open the back cover. Please see following figure of fuse position and use the same type fuse.
3. Reinstall the back cover to its position, screw it completely and restore the protective case.
4. Please recycle the fuse by following the local regulation.



Maintenance

2. APPENDIX

If the meter cannot work properly, please try following solution.

If it doesn't help, please contact with the dealer or service center.

Phenomenon	Solution
No display	1. Check if the battery is properly installed. 2. Change the battery.
🔋 appears on LCD	Change the battery.
Value is not accurate	Change the battery.

- This manual is subject to change without notice.
- The content of this manual is considered correct; if the user find any errors, omissions, etc., please contact the manufacturer.
- The company does not assume any accidents and hazards caused by incorrect operation of the user.
- The functions described in this manual do not serve as a reason for the use of the product for special purposes.

Safety Symbols

Symbol	Description
CAT III	Category III is for measurements performed in the building installation.
CAT IV	Category IV is for measurements performed at the source of the low-voltage installation.
	• Do not dispose electrical appliances as unsorted municipal waste, use separate collection facilities. • Contact your local government for information regarding the collection systems available. • If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the ground water and get into the food chain, damaging your health and well-being. • When replacing old appliances with new ones, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.
⚠	WARNING. RISK OF DANGER
⚠	WARNING. HAZARDOUS VOLTAGE. Risk of electric shock.
~	AC (Alternating Current)
⎓	DC (Direct Current)
≂	Both direct and alternating current

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