



DCM3500T

SKU: KPSCM3500TCBINT

TRMS clamp meter 1000A AC with temperature



Instructions manual

EN

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We **MGL INTERNATIONAL** wants to thank you for choosing our product. Please thoroughly go through this quick guide before operation and keep it well for future reference.

The user manual can be found:

- On our website:
www.kps-intl.com
- Through the QR code below



1. Safety information

1.1 Preliminary

WARNING

Be extremely careful when using this meter. Improper use of this device can result in electric shock or destruction of the meter. Take all normal safety precautions and follow the safeguards suggested in this manual. To exploit full functionality of the meter and ensure safe operation, please read carefully and follow the indications in this manual. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

This meter is designed and manufactured according to safety requirements of EN 61010-1, EN 61010-2-032, EN 61010-2-033 concerning electronic measuring instruments with a measurement CAT III 1000V, CAT IV 600V and pollution degree 2 and safety requirements for hand-held clamps for electrical measurement and test.

- When using the meter, the user should comply with standards safety rules:
 - General shock protection
 - Prevent misusing the meter
- Please check for damage during the transportation after receiving the meter.
- If the meter is stored and shipped under hard conditions, please confirm if the meter is damaged.
- Probe should be in good conditions. Before use, please check whether the probe insulation is damaged and if the metal wire is bare.
- Use the probe table provided with the meter to ensure safety, if necessary, replace the probe with another identical probe or one with the same level of performance,

1.2 Usage

- When using, select the right function and measuring range.
- Don't measure by exceeding indication value stated in each measuring range.
- When measuring a circuit with the meter connected, do not contact with probe tip (metal part).
- When measuring, if the voltage to be measured is more than 60VDC or 30VAC (TRMS), always keep your fingers behind finger protection device.
- Do not measure voltage greater than 750Vac
- In the manual measuring range mode, when measuring an unknown value, select the highest measuring range first.
- Before rotating conversion switch to change measuring function, remove probe from the circuit to be measured.
- Don't measure resistor, capacitor, diode and circuit connected to power.
- During the test of currents, resistors, capacitors, diodes and circuit continuity, be careful to avoid connecting the meter to a voltage source.
- Do not measure capacitance before capacitor is discharged completely.
- Do not use the meter in explosive gas, vapor or dusty environments.
- If you find any abnormal phenomena or failure on the meter, stop using the meter.
- Unless the meter bottom case and the battery cover are completely fastened, do not use the meter.
- Don't store or use the meter in the conditions of direct sunlight, high temperature and high humidity.

2. List of components



Digital clamp meter



Silicone test leads 1,5m



Pouch



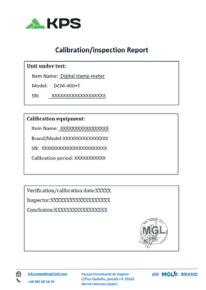
3xAAA 1.5V batteries



K-Type thermocouple



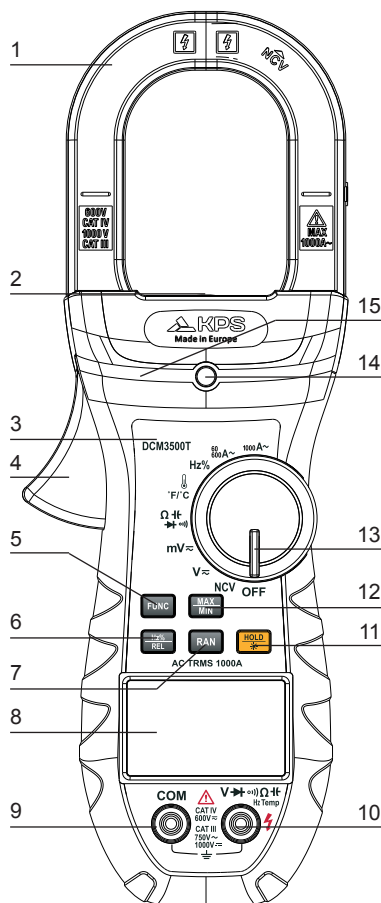
Instructions manual



Calibration guarantee

3. Description

3.1 Part name



(1) Current clamp head: used for current measurement.

(2) Clamp head light

(3) Panel

(4) Trigger

(5) Function choice button (FUNC)

(6) Relative measurement button and Hz/% function

(7) Range selection button

(8) LCD display

(9) Common end jack

(10) Resistance, capacitance, voltage, frequency, diode, continuity input jack and duty cycle.

(11) Reading hold/Back light button (B.L/ HOLD)

(12) Maximum/minimum choice button (MAX/MIN)

(13) Transfer switch

(14) NCV indicator

(15) Protective Barrier (to warn the operator of the limit of safe access)

3.2 Switch, buttons and input Jack description



Used for Reading hold or back light control



Used for switching manual measuring range state.



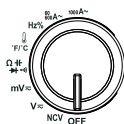
Used for entering relative Measurement state and Hz% function



Used for maximum/minimum Measurement function switch

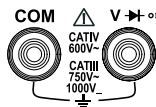


Used for measuring function switch



Transfer switch: used for selecting function and measuring range
OFF position used for shutting off the power.

NCV position used for Non-Contact Voltage detection



COM Jack: V, R, Hz, Duty cycle, Capacitance, Diode, circuit connection
common wire connecting terminal

INPUT Jack: C, R, Hz, Duty cycle, Capacitance, Diode, circuit connection
input wire connecting terminal

4. OPERATING GUIDANCE

4.1 Reading Hold

In the process of measurement, if reading hold is required, press “**HOLD/B.L**” key, the value on the display will be locked. Press “**HOLD/B.L**” key again to cancel reading hold state.

4.2 Manual Measuring Range

RAN key is automatic/manual measuring range key to trigger mode. The preset one is automatic measuring range. Press to switch to manual measuring range. In the manual measuring range mode, click once to change to upper range. Continue to the top range, then continue to press this key to change to the bottom range. If this key is pressed more than 2 sec, it will switch back to automatic measuring range state.

Note: in capacitance and frequency measurement function still can switch auto-range or manual range via press RAN key.

4.3 Frequency/Duty Ratio Switch

1) When the meter is in ACV or ACA measure function, if press and hold “Hz/%” button for 2S, the meter will enter Hz measure mode, and measure ACV or ACA signal frequency. Press “Hz/%” button again, the meter will enter duty cycle measure mode, and measure ACV or ACA signal duty ratio. If rotary is at HZ/DUTY position, pressing FUNC key will switch between HZ and DUTY by recycling.

2) Press and hold “Hz/%” key for 2S, the meter will return back to ACV or ACA measure mode.

Note: The meter is in the maximum/minimum value measurement state, it can't switch to frequency, duty ratio measurement mode.

4.4 Max/Min Measurement Choice

- 1) Press “MAX/MIN” key to enter MAX mode, and always keep measurement maximum value; press “MAX/MIN” key again, the meter will enter minimum value measurement state; press “MAX/MIN” key for the third time, the meter will display the difference of maximum and minimum value; press “MAX/MIN” key to repeat the above operations by recycling.
- 2) After entering MAX or MIN mode, it will automatically save the measured maximum or minimum value.
- 3) If the user presses “MAX/MIN” key more than 2 sec, the meter will restore normal measuring range.

Note:

- 1) For using the maximum/minimum value measurement mode, the manual range mode must be active.
- 2) When the meter is in the frequency, duty ratio measurement state, it can't switch to maximum/minimum value measurement mode.

4.5 Function Switch

- 1) In the resistance mode, press “FUNC” button, it will switch among resistance, diode and continuity detection by recycling.
- 2) In the voltage mode, press “FUNC” button to change the voltage mode AC/DC.
- 3) In temperature mode, press “FUNC” key to change the temperature unit °C/°F.




4.6 REL Measurement

- 1) REL button is relative value Measurement button. The current display value can be stored in the memory as reference value. When the user measures later, the display value is the difference for input value minus reference value. ie. $REL\Delta(\text{current reading}) = \text{Input value} - \text{Reference value}$.

4.7 Back Light And Clamp Head Light

- 1) In the process of measurement, if ambient light is too dark to read, press “B.L/HOLD” key for two seconds to turn on the display backlight and the clamp head light. Both lights will automatically turn off after about 30 seconds.
- 2) During this period, pressing “B.L/ HOLD” key for two seconds will turn off the display backlight and the clamp head light.



Note:

When battery voltage $\leq 3.6\text{V}$, the LCD displays “” (undervoltage) symbol. When the user uses the backlight, the battery voltage drops below 3.6V, due to high working current. The “” symbol may appear, and Measurement accuracy is not guaranteed. Continue to use the meter normally without using backlight. Do not replace the battery until “” symbol shows under normal conditions.

4.8 Automatic Power-Off

- 1) If there is no operation during any 30 minutes after turning the machine on, the meter will enter suspended stated, automatically powering off to save the battery.
- 2) After automatic power-off, press FUNC key, the meter will turn on again.
- 3) If the user holds any key when powering on, it will cancel automatic power-off function.

4.9 Measurement preparation

- 1) Turn the transfer switch to turn on the power. When battery voltage is low (about $\leq 3.6V$, LCD displays “” symbol, replace the battery.
- 2) “” symbol means that input voltage or current should not be more than the specified value, which is to protect the internal line from damage.
- 3) Place transfer switch to required measuring function and range.
- 4) When connecting line, first connect the common test line, then connect charged test line. When removing line, remove charged test line first.

4.10 Current measurement




WARNING

Electric shock Hazard.

Remove the probe from the meter before measuring with current clamp

- 1) Measuring switch is placed to position A. At this time, the meter is in AC current measurement state. Choose appropriate measuring range.
- 2) Hold the trigger, open clamp head, clip one lead of Measurement circuit to be tested in the clamp.
- 3) Read the current value on the LCD display.

Note:

- 1) Clamping two or more lines of circuit to be tested simultaneously will not get the correct measuring results
- 2) To get accurate Reading, connect the wire to be tested at the center of current clamp
- 3) “” symbol indicates that maximum input AC current is 1000A

4.11 Voltage measurement



WARNING

Electric shock hazard.

Pay special attention to avoid shock when measuring high voltage.


Don't input voltage more than 750Vac T-RMS.

- 1) Insert black probe to COM jack, insert red probe to INPUT jack, choose appropriated measuring range.
- 2) Place transfer switch to AC voltage **V \approx** or **mV \approx** position. At this time, the meter is in the DC voltage measurement state. To measure AC voltage, press FUNC button to enter AC voltage measurement state
- 3) Connect the probe with voltage source or both ends of load in parallel for measurement.
- 4) Read the voltage on the LCD.

Note:

- 1) In the small voltage measuring range, if the probe is not connected with the circuit to be tested, the meter may have fluctuating readings, which is normal and caused by the meter's high sensitivity. When the meter is connected with the circuit under test, you will get actual measured value
- 2) On the relative Measurement mode, automatic measuring range is invalid. Manual measuring

range must be selected.

- 3) “” symbol indicates that maximum input voltage is 1000VDC / 750VAC. Maximum input voltage at mV is 600mVac/dc
- 4) If the readings measured by the meter is more than 600VAC(RMS), it will be send out “beep” alarm.

4.12 Frequency And Duty Ratio Measurement

1) Clamp head measuring frequency (through AC current):


WARNING

Electric shock hazard.

Remove the probe from the meter before measuring with current clamp.

- 1) Measuring switch is placed to position A .
- 2) Hold the trigger, open clamp head, clip one lead of measurement circuit to be tested in the clamp.
- 3) Press Hz/% key during 2 seconds to switch to frequency measuring state.
- 4) Read the frequency value on the LCD display.
- 5) Pressing Hz/% again can enter duty ratio measuring state and press for 2 second can return back to ACA mode.

Note:

- 1) Clamping two or more leads of circuit to be tested simultaneously will not get the correct measuring results.
- 2) Frequency measurement range is 10Hz~1kHz the frequency to be tested is less than 10Hz, or if frequency is higher than 1 kHz, accuracy is not guarantee
- 3) Duty ratio measuring range is 10 ~ 95%.
- 4) “” means that maximum input current is 1000A AC (TRMS).

2) In Voltage Measurement Mode:

WARNING

Electric shock hazard.

Pay special attention to avoid shock when measuring high voltage.

Don't input voltage more than AC750 T-RMS.

- 1) Insert black probe to **COM** jack, insert red probe to **INPUT** jack.
- 2) Place transfer switch to **V \approx** or **mV \approx** position, press FUNC to enter AC voltage measurement state.
- 3) Press “Hz/%” key during 2 seconds to switch to frequency measuring state.
- 4) Connect the probe with signal or both ends of load in parallel for measurement.
- 5) Read on the LCD.
- 6) Pressing “Hz/%” again can enter duty ratio measurig state and press for 2 second can return back to ACA mode.

3) In HZ/DUTY Measurement Mode:

⚠ WARNING

Electric shock hazard.

Pay special attention to avoid shock when measuring high voltage.

Don't input voltage more than AC250 T-RMS.

- 1) Insert black probe to COM jack, insert red probe to INPUT jack.
- 2) Transfer switch is placed to position HZ/%.
- 3) Connect the probe with signal or both ends of load in parallel for measurement.
- 4) Read on the LCD.
- 5) Pressing the "FUNC" key again can enter duty ratio measuring state.

Note:

The range of Hz/% measure function can upper to 60kHz. When the frequency to be tested is more than 10Hz, the LCD will show "00.0" measuring frequency higher than 10 kHz is possible, but accuracy is not guarantee

4.13 Resistance Test

⚠ WARNING

Electric shock hazard.


When measuring circuit impedance, determine that the power supply is disconnected and the capacitor in the circuit is completely discharged.

- 1) Insert black probe to **COM** jack, insert red probe to **INPUT** jack.
- 2) Place measuring range switch to position "Ω". At this time, the meter is in the measurement state. Use the FUNC key to select the resistance measurement mode.
- 3) Connect the probe to the both ends of resistor or circuit to be tested for measurement.
- 4) LCD will show readings.

Note:

- 1) When the input end is open, LCD shows "OL" outrange state. .
- 2) When the resistance to be tested > 1M, the meter Reading will stabilize after a few seconds, which is normal for high resistance readings

4.14 Diode Test

- 1) Insert black probe to COM Jack, insert red probe to INPUT Jack
- 2) Measuring switch is placed to position . Use the FUNC key.
- 3) Connect the red probe to diode anode and connect the black probe to diode cathode to make test.
- 4) Read on the LCD

Note:

- 1) What the meter shows is approximation of diode forward voltage drop.
- 2) If the probe has reverse connection or the probe is open, the LCD will show "OL".

4.15 Circuit Continuity Test

WARNING

Electric shock hazard.

When measuring circuit continuity, determine that the power supply is disconnected and the capacitor in the circuit is completely discharged.

- 1) Insert black probe to COM Jack, insert the red probe to INPUT Jack
- 2) Measuring switch is placed to position **•|**). Use the FUNC key to select capacitance measure.
- 3) Connect the probe to the both ends of circuit to be tested for the Measurement
- 4) If the resistance of circuit under test is less than 50Ω, the meter's built-in buzzer may sound.
- 5) Read the circuit resistance value on the LCD

4.16 Capacitance Measurement

WARNING

Electric shock hazard.

When measuring circuit continuity, determine that the power supply is disconnected and the capacitor in the circuit is completely discharged.

- 1) Insert black probe to **COM** jack, insert red probe to **INPUT** jack.
- 2) Transfer switch is placed to position **•f**. Use the FUNC key to select capacitance measure.
- 3) After discharging capacitance completely, connect the probe to the both ends of capacitor to be tested for Measurement.
- 4) Read the capacitance value on the LCD.

Note:

To improve the accuracy below 10nF measuring value, subtract the distributed capacitance of meter and cable.

4.17 NCV Measurement

- 1) Turn the meter to NCV mode
- 2) Place the meter top close to the conductor. When test voltage is greater than 110Vac (T-RMS), the meter induction voltage indicator will turn on intermittently and the buzzer will give an alternating high-low alarm sound.

Note:

- 1) Even there is no indication, voltage may exist still. Don't use non-contact voltage detector to judge whether there is voltage in the wire. Detection operation could be affected by socket design, insulation thickness, type and other factors.
- 2) When inputting voltage on the meter input terminal, due to the existence of the induced voltage, voltage induction indicator also may light.
- 3) External sources of interference (such as flashlight, motor, etc.) may incorrectly trigger non-contact voltage detection.

4.18 Temperature Measurement


- 1) Connect the type k thermocouple on the jacks following the marks on the connector (COM/- and V/+)
- 2) Set the rotary switch to TEMP. Use the FUNC key to select the measurement unit, °C/°F.
- 3) LCD displays Ambient temperature.
- 4) Put the thermocouple lead on the Surface under measurement
- 5) The Measured value shows on the display.

5. MAINTENANCE

5.1 Replace Battery

 **WARNING**

To avoid electric shock, make sure that the test leads have been clearly move away from the circuit under measurement before opening the battery cover.

- 1) If the symbol "", it means that the batteries should be replaced.
- 2) Loosen the screw of the battery cover and remove it.
- 3) Replace the used battery with a new one.
- 4) Return the battery cover and tighten the screw.

Note: The battery polarity can't be reversed

5.2 Replace probe

Replace test lead if leads become damaged or worn.


 **WARNING**


Use meet EN 61010-031 standard, rated CAT IV600V, or better test leads

 **WARNING**

To avoid electric shock, make sure the probes are disconnected from the measured circuit before removing the rear cover. Make sure the rear cover is tightly screwed before using the instrument.

6. SPECIFICATIONS

	Measuring range	Resolution	Accuracy
AC CURRENT	60A	0.01A	$\pm(2.0\% \text{ reading} + 8 \text{ digits})$
	600A	0.1A	
	1000A	1A	
TEMPERATURE	-50°C ~ 599.9°C -58°F ~ 999.9°F	0.1 °C 0.1°F	$\pm (2.0\% \pm 3.0) \text{ }^\circ\text{C}$ $\pm (2.0\% \pm 5.4) \text{ }^\circ\text{F}$
	600°C ~ 760°C 1000°C ~ 1400°F	1 °C 1°F	$\pm (2.0\% \pm 5) \text{ }^\circ\text{C}$ $\pm (2.0\% \pm 9) \text{ }^\circ\text{F}$
DC VOLTAGE	60mV	0.01mV	$\pm(0.5\% \text{ reading} + 5 \text{ digits})$
	600mV	0.1mV	
	6V	0.001V	
	60V	0.01V	
	600V	0.1V	
	1000V	1V	
AC VOLTAGE	60mV	0.01mV	$\pm(0.6\% \text{ reading} + 5 \text{ digits})$
	600mV	0.1mV	
	6V	0.001V	
	60V	0.01V	
	600V	0.1V	
	750V	1V	
FREQUENCY (A mode)	59.99Hz	0.01Hz	$\pm(1.0\% + 5)$ (Sensitivity $\geq 1\text{A}$)
	599.9Hz	0.1Hz	
	5999Hz	1Hz	
	59.99KHz	0.01kHz	
FREQUENCY (V mode)	59.99Hz	0.01Hz	$\pm(1.0\% + 5)$ (Sensitivity $\geq 0.1\text{Vrms}$)
	599.9Hz	0.1Hz	
	5999Hz	1Hz	
	59.99KHz	0.01kHz	
FREQUENCY (Hz/Duty)	59.99Hz	0.001Hz	$\pm(1.0\% + 5)$
	599.9Hz	0.01Hz	
	5999Hz	0.1Hz	
	59.99KHz	0.001kHz	
DUTY ratio	1-99%	0.1%	$\pm(1.2\% + 2)$ (Sensitivity $\geq 3\text{Vpp rms}/1\text{A rms}$)
CONTINUITY		0.1Ω	If the resistance of the circuit under test is less than 50 Ω, the meter's built-in buzzer may sound

	Measuring range	Resolution	Accuracy
RESISTANCE	600Ω	0.1Ω	±(1.0% reading + 5 digits)
	6kΩ	0.001kΩ	
	60kΩ	0.01kΩ	
	600kΩ	0.1kΩ	
	6MΩ	0.001MΩ	
	20MΩ	0.01MΩ	±(1.2% reading + 3 digits)
CAPACITANCE	60.00nF	0.01nF	±(3.0% reading + 5 digits)
	600.0nF	0.1nF	
	6.000μF	0.001μF	
	60.00μF	0.01 μF	
	600.0μF	0.1 μF	
	6.000mF	0.001 mF	
DIODE		0.001V	Display approximate diode forward voltage value

Note: For more detailed specifications, please check the user manual (see the instructions to find it on page 16)