

DCL30DR

DIGITAL CLAMP METER

INSTRUCTION MANUAL

Thank you for your selection of the digital clamp meter DCL30DR. This is an RMS value response type clamp meter special for current (AC/DC) designed for IEC measurement category CAT. III 300 V.

Before use, please read this manual thoroughly to ensure correct and safe use. After reading it, keep it together with the product.

The product specifications described in this manual and its appearance are subject to change without notice for improvement.



[1] SAFETY PRECAUTIONS - Before use, read the manual thoroughly. -

This product has been designed and manufactured in accordance with the safety standards applicable to IEC 61010-01 Electronic Measuring Equipment and has passed the inspection. The instructions given under the heading of "WARNING" and "CAUTION" must be followed to prevent accidents.

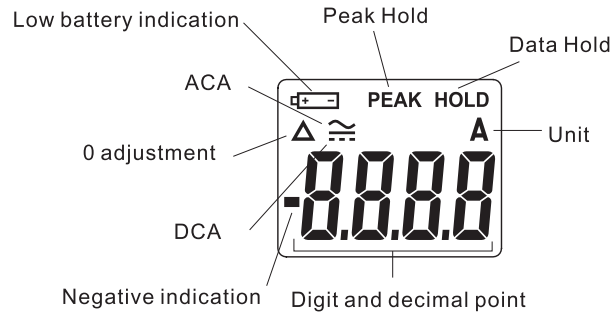
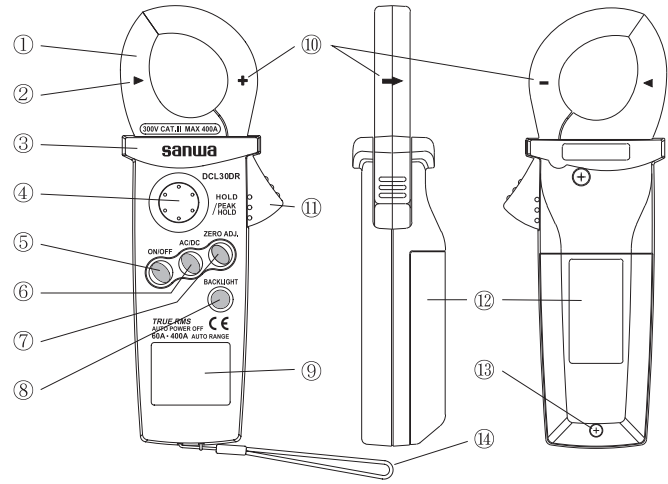
- WARNING:** Intended to prevent personal injury such as burn and electric shock and other serious accidents.
- CAUTION:** Intended to prevent misuse that could result in personal injury and damage to equipment including this instrument.

- ⚠ WARNING**
1. This is a clamp meter for low-voltage circuits. Never use it on the power line that exceeds 600VAC to ground. The measurement classification category of this instrument is 300 V (CAT. III), 600 V (CAT. II).
 2. Use the meter only as described in this manual.
 3. Do not apply more than the rated maximum input (400VAC).
 4. Pay special attention to voltages above 33VAC(46.7 Vpeak) and 70VDC that are hazardous to the human body.
 5. Do not use the meter if it is damaged or broken.
 6. Do not use the meter with the battery lid or rear case removed.
 7. During measurement, keep your fingers behind the finger guard.
 8. When measuring un-insulated conductors, be careful not to touch them. Otherwise you will suffer electric shock.
 9. Do not use the meter near flammable gases or solvents.
 10. Do not use the meter with wet hands or in a damp environment.
 11. Do not disassemble or modify the meter nor use components not specified by the manufacturer.
 12. The meter is for indoor use.

- ⚠ CAUTION**
1. Do not leave the meter under direct sunlight or in hot (inside the automobile in hot days, near soldering iron, etc.), humid or watery places or where condensation is anticipated.
 2. During transportation, storage and handling, exercise care so as not to give shock to the meter due to vibration or drop.
 3. Do not use abrasives or organic solvent, but use dry cloth to clean the meter.
 4. Check the appearance and calibrate indicated values at least once a year.
 5. When the mark appears in the display (LCD), it means the battery has been discharged. Replace it with a new one as soon as possible.

Explanation of Symbols:
 : Attention! Refer to operation instructions
 : Double insulation or reinforced insulation :DC :AC

[2] NAME AND FUNCTIONS



①	Trans core (CT)	A sensor to clamp a conductor to measure current.
②	Guide points for current calibration	Center of the CT Clamp the conductor through which the standard current is flowing at this point to calibration.
③	Barrier	A convex part to prevent fingers from touching the conductor to measure.
④	Data hold (HOLD) & Peak hold (PEAK) BUTTON	Used to hold data (HOLD) and peak data (PEAK). Refer to article [4].
⑤	Power ON/OFF button	When this is pressed once, the power will be turned on and when pressed again, the power will be turned off.
⑥	AC/DC select button	A button to select either the ACA~ function or the DCA= function. Each time this button is pressed, the selection changes.
⑦	0 adjustment button (ZERO ADJ)	Used only for the DCA= function. When the button is pressed, the reading will become 0.00 to 0.005, then measure DCA. This does not work in the ACA function.
⑧	Backlight button (BACKLIGHT)	When this button is pressed once, the backlight will be turned on and when pressed again, the backlight will be turned off. The backlight will automatically turn off 10 seconds after it was turned on.
⑨	Display	An LCD to show reading, etc.
⑩	Current polarity mark + - →	The marks to indicated the direction of current to measure during DCA measurement. Current flowing from the + mark to the - mark (direction of the → mark on the right side face of the CT is "+" (positive) polarity and current flowing in an opposite direction is "-" (negative) polarity. Reading is displayed with "-" when negative DCA.
⑪	Trigger	A trigger to open and close the trans core (CT).
⑫	Battery lid	A lid of the battery compartment. Remove this lid to replace the battery.
⑬	Battery lid mounting screw	A screw to secure the battery lid.
⑭	Hand strap	A strap to hold to prevent the meter from falling.

[3] SPECIFICATIONS

- 3-1 General Specification**
- Current : Trans core (CT)
 - Digital Display : 6000 count LCD
 - Measuring method : ACA: True RMS AC coupling
 - Max. clamp conductor diameter : φ24.5 mm
 - Sampling Rate : Approx. 2 times/sec
 - Peak hold sampling rate : Approx. 10ms
 - Over Load : "OL" indication with buzzer at max allowable input 420A.
- Data hold** : "HOLD" is shown in the data hold mode. (Refer to article [4])
- Peak hold** : "PEAK" is shown in the peak hold mode. (Refer to article [4])
- Range shift** : Auto Range, range shifts when the reading is in between approx. 55 ~ 60A
- Low battery Indication** : When the battery is below approx. 2.5V, symbol will appear on the LCD display.
- Auto Power Off** : Power will be automatically turned off 30 minutes after it was turned on.
- Display backlight** : The backlight will automatically turn off 10 seconds after it was turned on.
- Approvals** : IEC61010-2-032:2002 CAT. III 300V, CAT. II 600V
EMC: IEC61326:1997+A1: 1998+A2:2001
- Environmental conditions** : Altitude up to 2000 meters, indoor use, pollution degree 2
- Withstand voltage : AC3.7kV(50/60Hz) for a minute.
 - Max. allowable input : 420A
 - Accuracy guarantee temperature/humidity : 23°C± 5°C , 80%RH max, No condensation
 - Operating temperature : 5°C ~ 40°C, <80% RH, No condensation
 - Storage temperature : -10°C ~ 40°C, < 80% RH, No condensation
 - 40°C ~ 50°C, < 70% RH, No condensation
- Power Source** : LR03 (1.5V battery) x 2 pcs.
- Consumption** : 22mA at DCA (typical)
- Battery Life** : Approx. 30 hr (Backlight off)
- Dimension (L x W x H)** : 145x54x28mm
- Weight** : Approx. 120g (battery included)
- Accessories** : Instruction Manual, Carrying Pouch, Hand Strap, Battery for monitor(built-in) 1.5Vx2

3-2. Measurement Range and Accuracy

Accuracy assurance range: 23°C± 5°C, 80%RH max. No condensation.

3-2-1 ACA~ (True RMS, AC coupling)

RANGE	Accuracy (Sine wave)	
	50/60Hz	45 ~ 400Hz
60.00A	3A ~ 7A	± (2.5%rdg + 10dgt)
400.0A	7A ~ 300A	± (2.0%rdg + 5dgt)
(Auto range)	300A ~ 400A	± (2.5%rdg + 5dgt)

Note
 True RMS for accuracy are specified from 5% to 100% of range.
 Crest Factor (CF) CF<3 at full scale & CF<6 at half scale.
 Max. overload protection: 420Arms

3-2-2 DCA=

RANGE	Accuracy
60.00A	0 ~ 7A ± (3.0%rdg + 10dgt)
400.0A	7A ~ 300A ± (2.5%rdg + 5dgt)
(Auto range)	300A ~ 400A ± (3.0%rdg + 5dgt)

Note
 Max. overload protection: 420A

* rdg = reading, dgt = digit
 Accuracy calculation Example:
 Reading is DC10.00A (Range is 60.00A),
 Accuracy is ± (2.5%rdg + 5dgt)

Error counts = ± (10.00A X 2.5% + 0.01A X 5) = ± 0.30A
 Real Value = Between 9.70A and 10.30A

[4] DESCRIPTION OF FUNCTIONS

DATA HOLD
 When the HOLD/PEAK HOLD button is pressed, the measured value will be held in the display and the "HOLD" symbol will light. In this state, the indicated value will not change if the input fluctuates. When this button is pressed again, the data hold will be canceled and the meter will return to the normal measuring mode. ("HOLD" will disappear.)

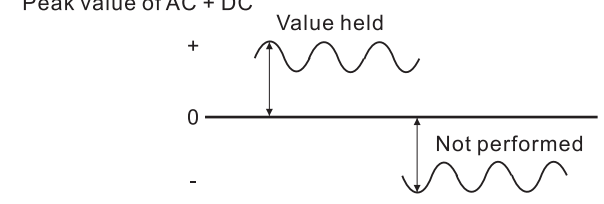
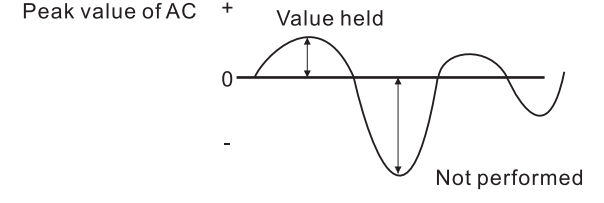
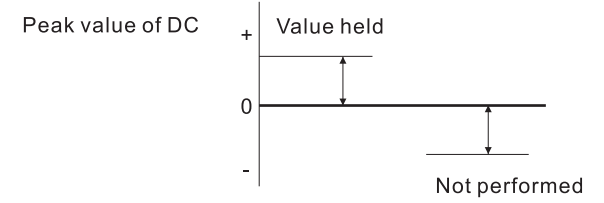
BACK LIGHT
 When the BACK LIGHT button is pressed, the backlight will be turned on and when the button is pressed again, it will go out. The backlight will automatically turn off about 10 seconds after it was turned on.

AUTO POWER OFF
 The power will be turned off about 30 minutes after it was turned on. To cancel this function, while holding the HOLD/PEAK HOLD button pressed, press the power switch.

PEAK HOLD
 When the HOLD/PEAK HOLD button is held pressed for about 2 seconds or longer, the display will show "PEAK" and the meter will enter the peak hold mode (standby waiting for peak value detection). The range will automatically be fixed to the 400.0A range. When there is a current input, the peak value be indicated in the display. If a bigger peak value is input, the peak value will be updated and indicated in the display.

When this button is held pressed for 2 seconds or longer again, the meter will return to the normal measuring mode. ("PEAK" will disappear.)

- Notes:
- ***Sampling rate is 10ms.**
 - *When this button is pressed shortly again, both "PEAK" and "HOLD" will light in the display and the indicated peak value will be frozen (data hold). During this data hold state, The peak value detection continues.
 - *About the same peak values will be indicated for both the AC and DC functions.
 - *Both the AC and DC functions do not work on negative current.
 - *This function will not work for current less than about 5 A.
 - *Peak hold only show + polarity. When measuring - polarity, reverse the direction of measuring CT to the cable to be measured.

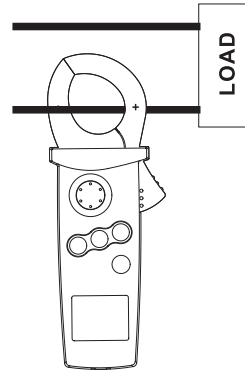


[5] MEASURING METHOD

⚠ CAUTION

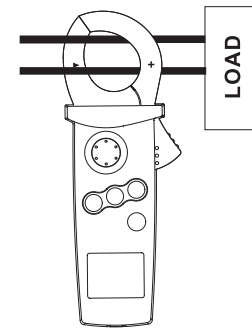
1. Clamp the conductor (cable) to measure at the center of the trans core (CT).
2. Clamp only one cable. If several cables are clamped together or 2-core or 3-core cords or cables are clamped, current cannot be measured accurately.
3. The meter may malfunction in places where a strong magnetic field is present.
4. When the DCA function is used, the indication of "0.00" may fluctuate (0.00 ~ 0.05) after zero adjustment (ZERO ADJ) for the reasons stated below. In this case, adjust "0.00" with the ZERO ADJ button again.
 - When the orientation of the meter is changed largely. (Influence of terrestrial magnetism)
 - When there is the severe temperature change

○ CORRECT

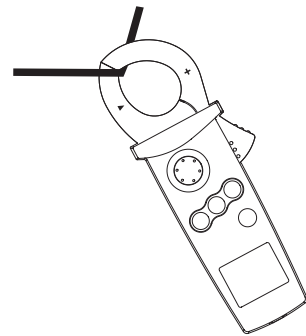


Clamp a wire at the center of the trans core(CT)

✗ INCORRECT



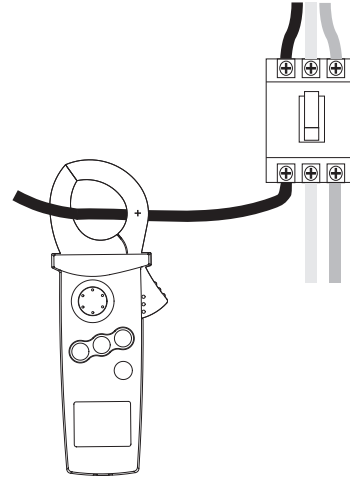
Clamp two or more wires



Clamp and pull the wire by trans core(CT)

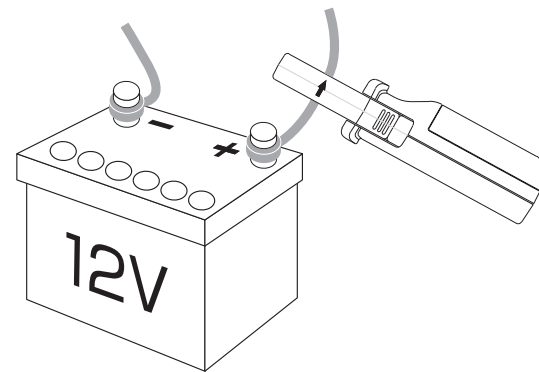
5-1 ACA ~ Measurement

1. Press the power ON/OFF switch. It takes ten or more seconds to become "0.00" reading. It is no problem to start measurement before the reading becomes "0.00". (refer to CAUTION No. 5).
2. Open and clamp a wire. Make sure that a set of trans core (CT) is closed completely.
3. Read the value in the display.
4. Open the trans core (CT) and remove the measured wire, and then press the power ON/OFF switch to turn off the meter.



5-2 DCA ~ Measurement

1. Press the power ON/OFF switch.
2. Press the AC/DC select button to select DCA function.
3. Press the ZERO ADJ button to adjust the zero point. If the zero adjustment is not conducted, measurement error may occur. The value may not become zero in some cases (refer to CAUTION No. 4).
4. Open and clamp a wire. Make sure that trans core (CT) is closed completely.
5. Read the value in the display.
6. Open the trans core (CT) and remove the measured wire, and then press the power ON/OFF switch to turn off the meter.



[6] MAINTENANCE

⚠ CAUTION

1. The following instructions are very important for safety. Read this manual thoroughly to ensure correct maintenance.
2. Calibrate and inspect the meter at least once a year to ensure safety and maintain its accuracy.

6-1 Maintenance and Inspection

Appearance: Is the meter not damaged due to falling or other cause? If any of the above problem exists, stop using the meter and request for repair.

6-2 Calibration and Inspection

For more information, please contact your dealer or Sanwa agent.

6-3 Storage

⚠ CAUTION

1. The panel and case are not resistant to volatile solvent and must not be cleaned with thinner or alcohol.
2. The panel and case are not resistant to heat. Do not place the meter near heat-generating devices.
3. Do not store the meter in a place where it may be subjected to vibration or from where it may fall.
4. Do not store the meter in places under direct sunlight, or hot, cold or humid places or places where condensation is anticipated.
5. If the meter will not be used for a long time, remove the battery.

6-4 Battery Replacement

Battery when the meter is shipped:

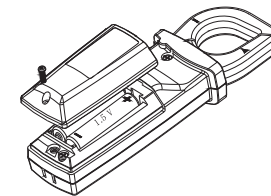
A battery for monitor has been installed prior to shipment from the factory. It may be discharged before the expiration of the described battery life.

*The battery for monitor is a battery used to check the functions and performance of the product.

⚠ WARNING

If the rear case is removed with an input being applied to the measuring terminals, you may suffer electric shock. Before starting replacement, always make sure no input is being applied and the function switch is OFF.

1. Turn OFF the power switch.
2. Remove the battery lid fixing screw.
3. Remove the battery lid.
4. Remove the discharged batteries and set new batteries (2 pcs) in the correct polarity.
5. The batteries are R03 manganese batteries.
6. Set the battery lid as before and secure it with the screw.



Per IEC61010 OVERVOLTAGE INSTALLATION CATEGORY

OVERVOLTAGE CATEGORY II
Equipment of OVERVOLTAGE CATEGORY II is energy-consuming equipment to be supplied from the fixed installation.

OVERVOLTAGE CATEGORY III
Equipment of OVERVOLTAGE CATEGORY III is equipment in fixed installations.
Note Examples include switches in the fixed installation and some equipment for industrial use with permanent connection to the fixed

[7] After-Sale Service

7-1 Warranty and Provision

Sanwa offers comprehensive warranty services to its end-users and to its product resellers. Under Sanwa's general warranty policy, each instrument is warranted to be free from defects in workmanship or material under normal use for the period of one (1) year from the date of purchase.

This warranty policy is valid within the country of purchase only, and applied only to the product purchased from Sanwa authorized agent or distributor.

Sanwa reserves the right to inspect all warranty claims to determine the extent to which the warranty policy shall apply. This warranty shall not apply to fuses, disposables batteries, or any product or parts, which have been subject to one of the following causes:

1. A failure due to improper handling or use that deviates from the instruction manual.
2. A failure due to inadequate repair or modification by people other than Sanwa service personnel.
3. A failure due to causes not attributable to this product such as fire, flood and other natural disaster.
4. Non-operation due to a discharged battery.
5. A failure or damage due to transportation, relocation or dropping after the purchase.

7-2 Repair

Customers are asked to provide the following information when requesting services:

1. Customer name, address, and contact information
2. Description of problem
3. Description of product configuration
4. Model Number
5. Product Serial Number
6. Proof of Date-of-Purchase
7. Where you purchased the product

Please contact Sanwa authorized agent / distributor / service provider, listed in our website, in your country with above information. An instrument sent to Sanwa / agent / distributor without those information will be returned to the customer.

Note :

- 1) Prior to requesting repair, please check the following:
 - Capacity of the built-in battery, polarity of installation
- 2) Repair during the warranty period:
 - The failed meter will be repaired in accordance with the conditions stipulated in 7-1 Warranty and Provision.
- 3) Repair after the warranty period has expired:
 - In some cases, repair and transportation cost may become higher than the price of the product. Please contact Sanwa authorized agent / service provider in advance. The minimum retention period of service functional parts is 6 years after the discontinuation of manufacture. This retention period is the repair warranty period. Please note, however, if such functional parts become unavailable for reasons of discontinuation of manufacture, etc., the retention period may become shorter accordingly.
- 4) Precautions when sending the product to be repaired. To ensure the safety of the product during transportation, place the product in a box that is larger than the product 5 times or more in volume and fill cushion materials fully and then clearly mark "Repair Product Enclosed" on the box surface. The cost of sending and returning the product shall be borne by the customer.

7-3 SANWA web site <http://www.sanwa-meter.co.jp>

E-mail: exp_sales@sanwa-meter.co.jp