

# Clamp Sensors

## What is Clamp Sensor?

A clamp sensor allows the measurement of AC and DC current and fine AC current of milliampere level (leakage current) by connecting to a DMM without connecting a wire as in the case of a clamp meter. Its combined use with DMM of PC series connectable to a PC allows the recording and monitoring of the measurements on a PC of consumption current for home electric appliances and leakage current running through an earthing wire.

**Measurable current differs by models. Check it before use.**

ACA ..... **CL-20AD, CL-22AD, CL124, CL140**

DCA ..... **CL-22AD, CL33DC**

AC Leak current ..... **CL124, CL140**

## Prior to making a measurement

The following description is given on a digital multimeter of 5000-count display type (PC520M), but it also applies to 1999-count and 3999-count display types. Check a DMM compatibly used with a clamp sensor (Refer to the information of compatible models of each product in p. 12, 13). Values are indicated in mV, which should be read in mA by multiplying a factor for each product. Models RD700 and RD701 have a separate fixed range of 400.0mV AC / DC (high impedance 1000MΩ) for exclusive use with an adaptor probe to give clear viewing of milli-volt display.

### e.g. When PC520M is used with CL-22AD

Fix the range at 500mV and set the clamp probe at 20~200A range. In this case, the measured value is obtained by multiplying the indicated value of the multimeter by the factor given below.

### e.g. When CL-22AD is used

DCA measurement → DC500mV range

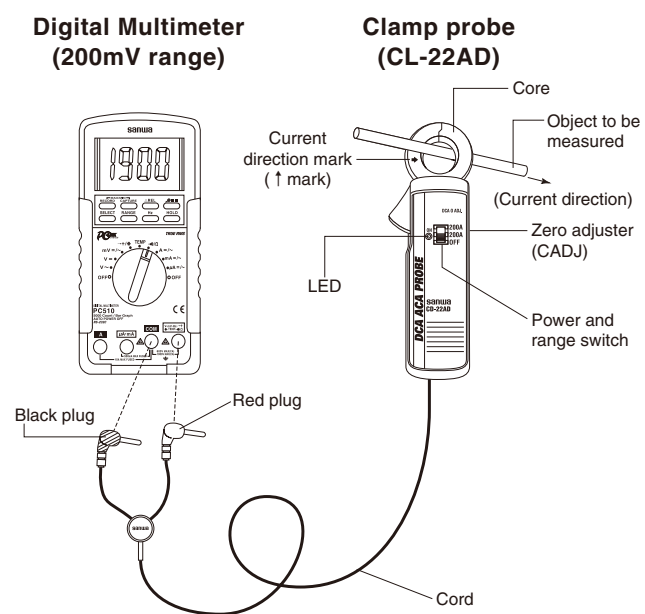
ACA measurement → AC500mV range

20A range...Reading×0.1

200A range...Reading×1

When CL-22AD is set to the 20A range, it will be measured as 1.900A if the DMM indicates 19.00mV (19.00×0.1).

## Connecting DMM and CL-22AD



## Clamp Sensor

### CL124 (with case)

Micro / leak current (AC)

■ No battery Length : 2m

| Range                         | 1A   | Applicable digital multimeter              |
|-------------------------------|--|--|
| Resolution                    | 1mA  | PC5000 PC520M PC510 PC500 PC20 RD701 RD700 |
| Measuring range               | 0~1000mA (1A)  |  |
| Accuracy / Frequency range    | ± (1.0%rdg+0.1mV) / (50Hz/60Hz)<br>± (2.0%rdg+0.1mV) / (40Hz~1kHz) |  |
| Maximum allowable input*      | 100A continuous (50/60Hz)  |  |
| Output impedance              | Approx. 180Ω   |  |
| Core diameter                 | Approx. φ24mm max.   |  |
| Size / Weight                 | H100×W60×D26mm/approx. 150g  |  |
| Standard accessories included | Carrying case (C-CL140), Instruction manual                        |  |

\* Allowable limit value in case of making an operational error, and output accuracy is not under warranty. Output voltage : AC100mV when measuring max. current.



LEAK

## Clamp Sensor



### CL140 (with case)

Micro / leak current (AC)

■ No battery Length : 2m

| Range                         | 1A   | Applicable digital multimeter              |
|-------------------------------|--|--|
| Resolution                    | 1mA  | PC5000 PC520M PC510 PC500 PC20 RD701 RD700 |
| Measuring range               | 0~1000mA (1A)  |  |
| Accuracy / Frequency range    | ± (1.0%rdg+0.1mV) / (50Hz/60Hz)<br>± (2.0%rdg+0.1mV) / (40Hz~1kHz) |  |
| Maximum allowable input*      | 200A continuous (50/60Hz)  |  |
| Output impedance              | Approx. 200Ω   |  |
| Core diameter                 | Approx. φ40mm max.   |  |
| Size / Weight                 | H128×W81×D36mm/approx. 240g  |  |
| Standard accessories included | Carrying case (C-CL140), Instruction manual                        |  |

\* Allowable limit value in case of making an operational error, and output accuracy is not under warranty. Output voltage : AC100mV when measuring max. current.

### CL33DC (with case)

DC current

■ R03X2 Length : 1.8m Battery life : approx. 70H

| Range                         | DC300A                                   | DC30A      | Applicable digital multimeter   |
|-------------------------------|--|------------|---|
| Resolution                    | 0.1A                                     | 0.01A      | PC5000 PC520M PC510 PC500 PC20 RD701 RD700 DA-50C CD772 CD771 CD770 CD750P CD731a |
| Minimum scale                 | 5A<br>10A                                | 0.5A<br>1A | TA55 (Analog)   |
| Standard accessories included | Carrying case (C-CL), Instruction manual |            |   |

Resolution of TA55 (Analog) on 1999 display when measuring 199A max. at 300A range and 19A max. at 30A range. Resolution is one digit bigger at the upper range. Output voltage : DC300mV when measuring max. current at each range.



### CL-22AD (with case)

DC / AC current

■ R03X2 Length : 1.8m Battery life : approx. 70H

| Range                         | DC200A                                   | DC20A | AC200A | AC20A | Applicable digital multimeter  |
|-------------------------------|--|-------|--------|-------|--|
| Resolution                    | 0.1A                                     | 0.01A | 0.1A   | 0.01A | PC5000 PC520M PC510 PC500 PC20 RD701 RD700 DA-50C PC20 CD772 CD771 CD770 CD750P CD731a |
| Standard accessories included | Carrying case (C-CL), Instruction manual |       |        |       |  |

Output voltage : DC200mV/AC200mV (0~400Hz) when measuring max. current at each range. Waveform measurement by oscilloscope is impractical.



### CL-20D

AC current

■ No battery Length : 1.8m

| Range                         | AC200A             | AC20A | Applicable digital multimeter   |
|-------------------------------|--------------------|-------|---|
| Resolution                    | 0.1A               | 0.01A | PC5000 PC520M PC510 PC500 PC20 RD701 RD700 DA-50C CD772 CD771 CD770 CD750P CD731a |
| Standard accessories included | Instruction manual |       |   |

Output voltage : AC2V (AC200A (50~400Hz), AC20A (50/60Hz) when measuring max. current at each range.)

### Optional accessories

Carrying case : C-CL



## Line separator



### LS-10

- Suitable for measuring consumption current of house hold appliances
- Detection range scaling factor = 1 time / 10 times
- Rated voltage = AC125V
- Rated current = AC12A
- Core diameter = φ32mm
- H165×W65×D20mm / 110g

