

**TEAC**

**HANDY CALIBRATOR**

**CA-20**

**Instruction Manual**

Please read this manual before using the product  
and keep the manual handy.

Rev. D

# SAFETY INSTRUCTIONS

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## CAUTION:

- Read all of these Instructions.
- Save these Instructions for later use.
- Follow all Warnings and Instructions marked on the product.



- 1) Read instructions -- All the safety and operating instructions should be read before the product is operated.
- 2) Retain instructions -- The safety and operating instructions should be retained for future reference.
- 3) Heed Warnings -- All warnings on the product and in the operating instructions should be adhered to.
- 4) Follow instructions -- All operating and use instructions should be followed.
- 5) Cleaning -- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- 6) Attachments -- Do not use attachments not recommended by the product manufacturer as they may cause hazards.
- 7) Water and Moisture -- Do not use this product near water -- for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.
- 8) Accessories -- Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- 9) Ventilation -- Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- 10) Power Sources -- This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.
- 11) Grounding or Polarization -- This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
- 12) Power-Cord Protection -- Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.
- 13) Lightning -- For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.
- 14) Overloading -- Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in risk of fire or electric shock.
- 15) Object and Liquid Entry -- Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

# SAFETY INSTRUCTIONS

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16) Servicing -- Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

17) Damage Requiring Service -- Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- a) when the power-supply cord or plug is damaged.
- b) if liquid has been spilled, or objects have fallen into the product.
- c) if the product has been exposed to rain or water.
- d) if the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- e) if the product has been dropped or damaged in any way.
- f) when the product exhibits a distinct change in performance -- this indicates a need for service.

18) Replacement Parts -- When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

19) Safety Check -- Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

20) Heat -- The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

## **CE Marking:**

This device complies with the requirements of directive 2004/108/EC concerning electromagnetic compatibility and directive 2006/95/EC concerning low voltage.

# SAFETY INSTRUCTIONS

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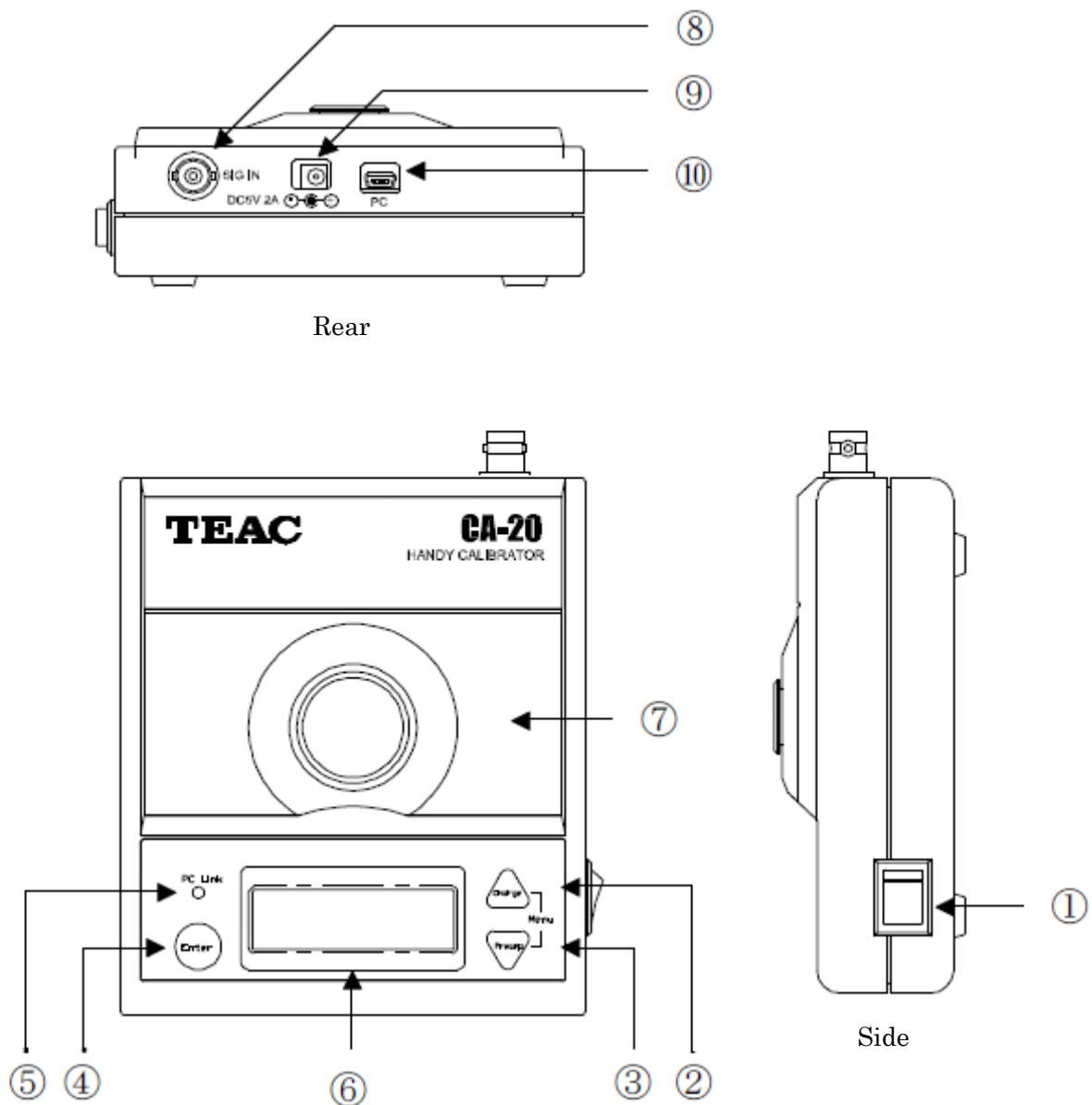
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## 1. Overview

CA-20 handy calibrator is a simple, portable calibrator for charge and IEPE, ICP® type accelerometers. The unit shakes the accelerometer, measures output signal from accelerometer, and calculates sensitivity.

\* CA-20 shakes accelerometer at 159.2 Hz to get sensitivity easily and simply in the field. It is not recommended for high-precision calibration for laboratory or institute use.

## 2. Names and Parts



1. Power switch
2. Select switch (UP)  
Change to charge mode. On menu mode, this works as UP key.
3. Select switch (DOWN)  
Change to IEPE, ICP® mode. On menu mode, this works as DOWN key.  
To get into menu mode, press both UP and DOWN key at once.
4. Enter key  
Store sensitivity data to PC or CA-20. On menu mode. this works as ENTER key.
5. PC Link  
Red : Communication mode is set to "Link"  
Blue : Communicating with PC  
Off : Communication mode is set to "Cut"
6. LCD Display  
Sensitivity, bias voltage, mode, etc. are displayed.
7. Shaker  
Base which accelerometer is connected to
8. Signal input connector (BNC)  
Output signal from accelerometer has to be connected to
9. DC input connector  
Connect DC power.
10. mini USB connector  
Connect USB cable from PC.



### 3. Menu items and settings

To get into menu mode, press both UP and DOWN key at once.

No	Item	Parameter	Note
1	Source Current	4mA/ <u>2mA</u> /0.5mA	Select constant current of ICP supply
2	Source Voltage	24V/ <u>15V</u>	Select bias voltage of ICP supply
3	PC Link	Link/ <u>Cut</u>	Communication mode with PC
4	Data List	Data list view	
5	Clear Data List	Clear/Cancel	Clear all data
6	Measure Mode	Single/ <u>Repeat</u>	Select measure mode
7	Auto Power off	ON(3min)/ <u>OFF</u>	Set auto power off
8	LCD illumination	ON/ <u>OFF</u>	Select LCD backlight setting
9	Date Time	Set Time Date	Set Time Date Month Year
10	Data Transmit	Transmit/Cancel	Transfer data to PC
	Return		Return

== : Factory settings

All settings are kept, even if CA-20 is turned off.

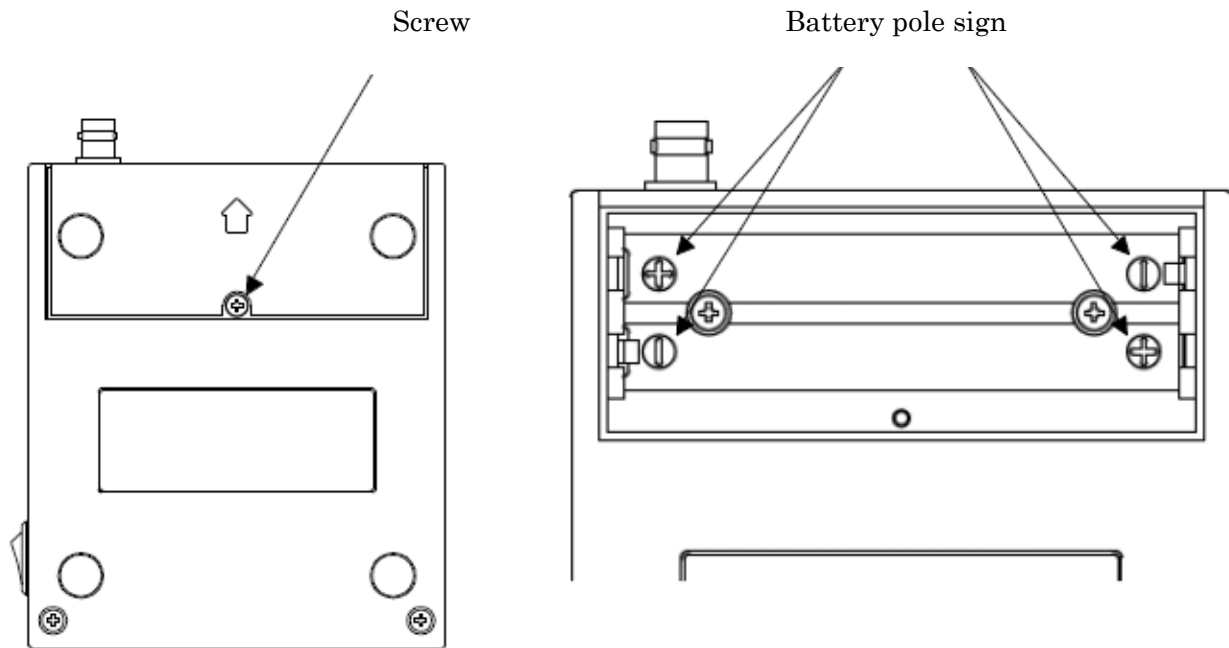
Typical PCB® accelerometer use 4 mA / 24 V. So please change source current to 4 mA and source voltage to 24 V.

## 4. Operations

### 4-1. Install batteries

When CA-20 is used under battery mode, install batteries to the case on bottom.

- Unfasten screw of battery case.
- Install four LR-6(AA) alkaline batteries to battery case.



Note:

- Operating time depends battery type.
- It works about one hour using alkaline batteries.
- Use AC/DC adapter when it's used for a long time.
- Remove batteries, if it's not used for a while.

### 4-2. Attach accelerometer

- Clean the base and remove dust
- If a accelerometer has a female screw, attach accelerometer using screw which supplied with accelerometer
- If a accelerometer has M6 male screw, it can be attached using male screw
- If a screw which accelerometer has is not M6, use conversion screw or conversion stud.

Note:

- Attach accelerometer less than 0.5 N-m ( 4.43 inch-lbf ) torque

### 4-3. Driving

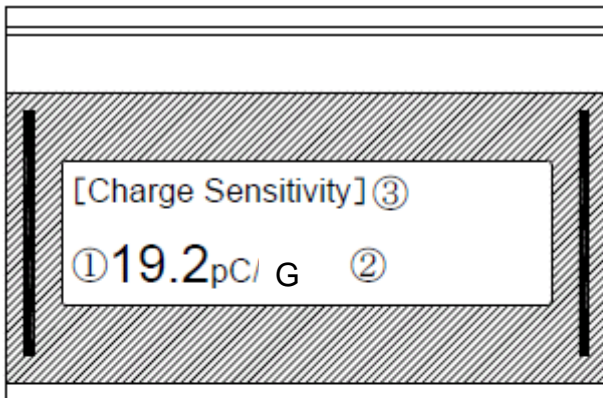
- CA-20 starts to shake the base and measure the sensitivity immediately, when turned ON
- In case of charge type accelerometer, push select switch  $\Delta$  to change charge mode.
- In case of IEPE , ICP® type accelerometer, push select switch  $\nabla$  to change ICP® mode  
And select power supply such as voltage and current for accelerometer

Note:

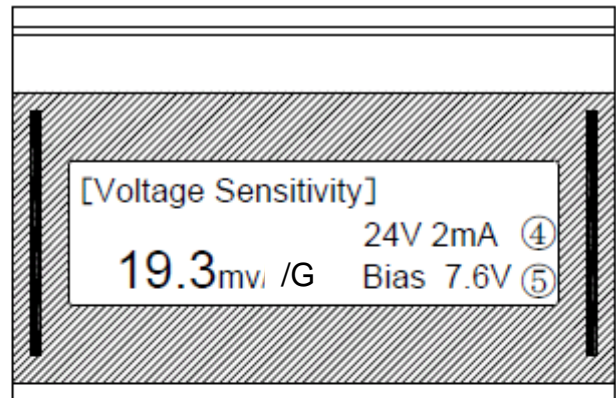
- Make sure power supply such as voltage and current for accelerometer. If these are too high, accelerometer might get damaged.

#### 4-4. Measure

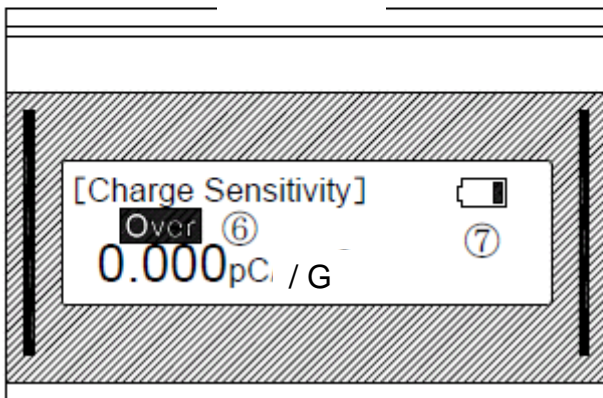
Charge mode



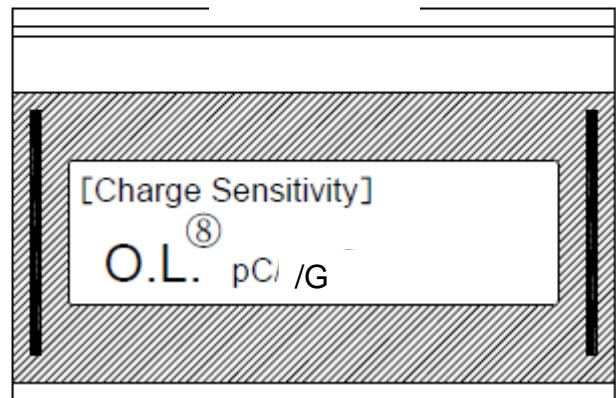
ICP® mode



Alarm



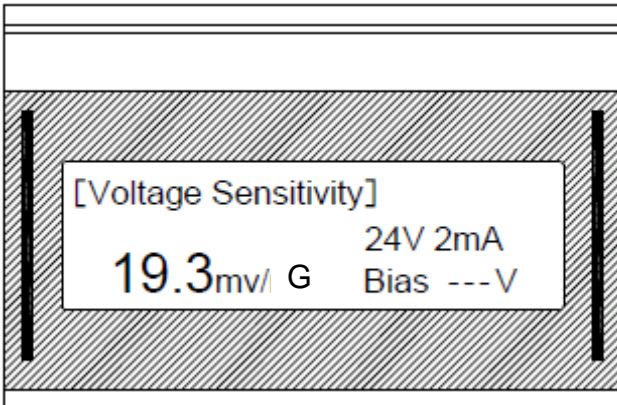
Overload



1. Sensitivity  
Calculated sensitivity is displayed.
2. Unit  
pC/G (Charge mode), mV/G (IEPE, ICP® mode)
3. Accelerometer type (Charge / Voltage (ICP®) )  
Charge (Charge mode), Voltage (IEPE, ICP® mode)
4. Supply voltage, current  
ICP supply voltage, current

5. DC bias voltage

DC bias voltage on IEPE, ICP® mode



6. Overload alarm

Overload or overweight ( accelerometer is too heavy to calibrate)

If this alarm appears, calibrator stops to shake.

7. Low battery alarm

Installed batteries voltage are low, change batteries or connect AC/DC adapter,

8. Over range

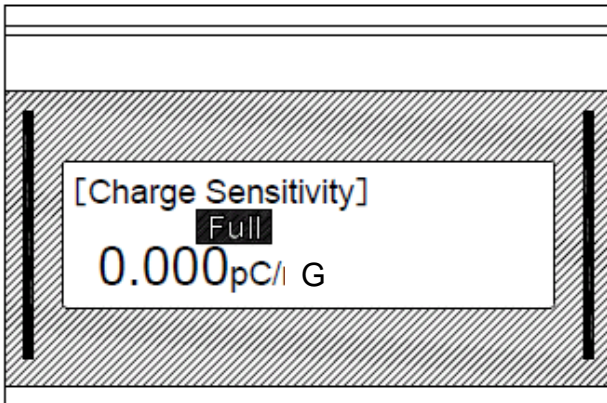
Sensitivity is too high (maximum sensitivity which CA-20 can calibrate is 196 pC/G or 196 mV/G)

\* Minimum sensitivity which CA-20 can calibrate is 0.255 pC/G or 0.255 mV/G

## 5. Function

### 5-1. Storing Data to CA-20

- Set to "Cut" on PC Link menu and measure the sensitivity.
- Push Enter key to store the measured sensitivity. Up to 100 data can be stored to CA-20 unit.



During "Full" is displayed, storing data is not available. In this case, delete stored data on CA-20. Possible to delete stored data on "Clear Data List" menu.

### 5-2. Data List

- Display stored data on CA-20
- "Number, Sensitivity, DC bias voltage" are displayed. In case of transferring data to PC, Date and Time information also transferred with above information.

### 5-3. Measurement Mode

- Two measurement mode "Single" and "Repeat" are available. "Single" means single shot measurement.
- After measured sensitivity being stable, CA-20 stops to shake base.
- Push select switch bit longer to measure sensitivity again.
- "Repeat" means continuous measurement. CA-20 doesn't stop to measure sensitivity.
- Use "Repeat" mode in case of measuring low sensitivity accelerometer.

### 5-4. Auto Power Off

- In case of "Auto Power Off" is set, CA-20 power turns off after three(3) minutes from last operation.
- Turn off and turn on to start again

### 5-5. Time Setting

- Possible to set date and time on "Date Time" menu.
- Date time format is "YYYY.MM.DD HH:MM". Up Down key allow to change each parameter and push Enter key to determine parameter.

## 5-6. Storing Data to PC

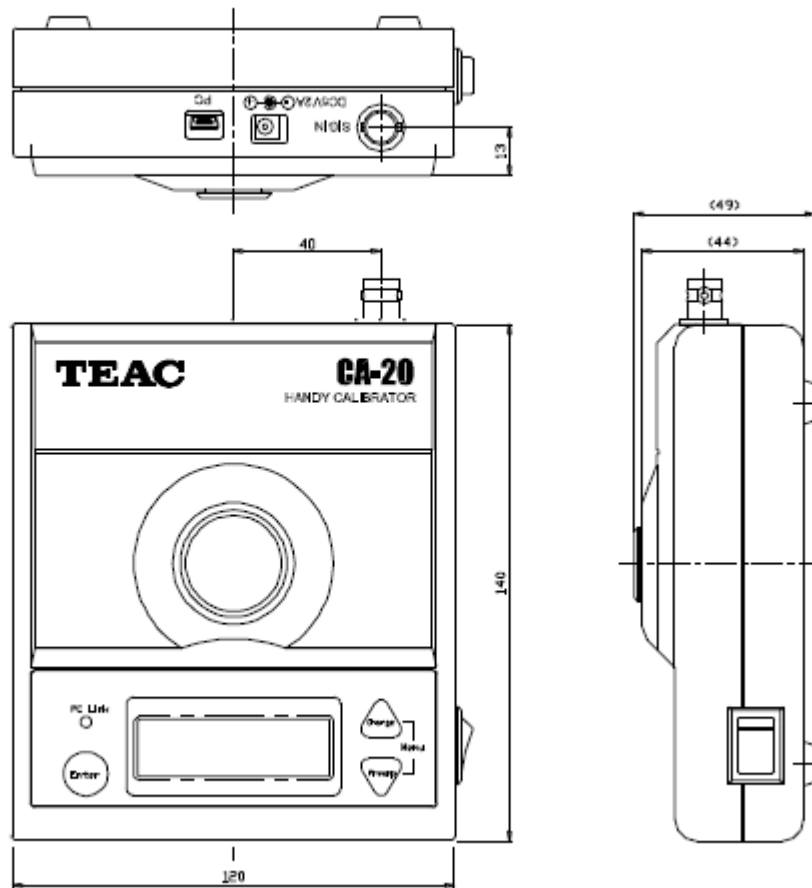
- CA-20 can store measured sensitivity data to pc using data transfer application supplied with CA-20.
- Please refer to application manual for the details.

## 6. Specification

Calibration range	Charge type accelerometers 0.255 to 196 pC/G
	IEPE type accelerometers 0.255 to 196 mV/G
Calibratable sensor weight	Approx. 100g or less
Calibration accuracy	$\pm(3\%+2\text{digit})(23\pm5^{\circ}\text{C})$
Exciter vibration acceleration	1G(rms) $\pm 3\%(23\pm 5^{\circ}\text{C})$
Exciter vibration frequency	159.2Hz $\pm 2\%$
Sensor attachment	M6 female, depth of 6.5 mm
Operating temperature range	10°C to 40°C
Storage temperature range	-10°C to 50°C
Operating Altitude	Max.2000 meters
Batteries	LR-6 x 4 batteries (5V DC, 0.75A )
Battery life	Continuous use: approx. 1 hours
	(Calibration sensor weight: approx 25g )
	(LCD ON)
Power supply for accelerometer	Selectable DC 24 / 15 V, 0.5 / 2 / 4mA Constant current supply
Power supply for unit	AC Adapter (AC100-240V 50/60Hz 0.3A)
	To be used attached AC Adapter with CE Marking
Dimensions(W×H×D)	Approx. 120 mm × 50 mm × 140 mm
Weight	Approx. 1 kg (Including batteries)
Accessories Included Cable	LN-030 0.5m Miniature-BNC 1
Conversion studs	M6-M3, M6-10-32, M6-flat, M6 standard stud (one each)
Packing box	1
Instruction manual	1

## 7. Dimension

CA-20





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