

Handy Nadescorder

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MDM22 -M01A

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Instruction Manual

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# ----- Important -----

Please read this instruction manual before starting to use your device. You may risk accidents if you use it without observing the instructions in the manual.

Safety instructions in this manual are presented with the following marks according to the degree and kind of danger involved:

## DANGER

Failure to observe the warning with this mark greatly increases the possibilities of accidents that can result in death or serious injury.


## WARNING

Failure to observe the warning with this mark may present the possibilities of accidents that can result in death or serious injury.

## CAUTION

Failure to observe the caution with this mark may result in injuries or physical damage.


 This mark indicates that improper handling may create shock hazards.


 This mark indicates that improper handling may lead to troubles caused by poisonous substance.


 This mark indicates that improper handling may cause injury or other troubles.


 This mark indicates that improper handling may create fire hazards


 This mark indicates that improper handling may lead to an explosion.

 This mark indicates that improper handling may lead to troubles due to high temperatures.

 This mark indicates that use in a shower or outdoor use in the rain is forbidden.

 This mark indicates that disassembly or remodeling is forbidden.

 This mark indicates that the power plug must be disconnected from the wall outlet.

 This mark indicates cautions other than the above.

# Read First For Your Safety

In case you use it in order to have you use it safely, be careful of the following things.

Failure to observe the safety precautions can cause accidents that may damage the equipment or inflict injuries or death on the user or people around.

## DANGER

1. Avoid damaging cords and cables by leading them under the machine or getting them caught between objects. Otherwise the electric wire may short-circuit to cause electric shock, leak or fire.



When disconnecting a cord or cable, be sure to do so by holding the plug or connector. Otherwise the cord or cable may have a break, which will eventually develop into functional failure, overheating or fire.
















2. Be sure to use the charging AC adapter supplied with the equipment. Use of another AC adapter may not only lead to failure of the equipment but also cause fire or explosion due to abnormal heating.



3. Take special care during charging when both the equipment and the AC adapter heat up. Never place paper or cloth on the equipment and AC adapter during charging. To prevent fire, be sure to charge the equipment in a cool, well-ventilated place.



# WARNING

1. Give adequate care to safety in wiring the cables. Be sure to install them where they will not interfere with robot operation or the movement of workers. 
2. Be sure to use the cables supplied with the equipment for connection with other equipment such as a printer. Otherwise faulty operation or functional failure may occur. 
3. For use and storage of this equipment, avoid locations where it can be exposed to sunshine, dust, rain water or excessive humidity. 
4. Place the equipment on a stable floor. Locating it at an elevated or unstable place can result in injuries from the drop of the equipment. 
5. A battery pack should not carry out decomposition and reconstruction. If it decomposes and converts, it may generate heat, ignite or explode.  
6. Please do not add a strong shock to a battery pack. Moreover, please charge by the method of handling description specification. If a shock is added or it charges by methods other than specification, it may generate heat, ignite or explode.  
7. Please do not put in a battery pack into fire. If it puts in into fire or heats, it may explode or explode.  
8. Changes or modifications not expressly approved by the manufacturer for compliance could void the user's authority to operate the equipment. 
9. In order to comply with FCC radio-frequency radiation exposure guidelines for an uncontrolled exposure, this device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. 
10. The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met. 

"Operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device."

"The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website [www.hc-sc.gc.ca/rpb](http://www.hc-sc.gc.ca/rpb)"

# CAUTION

1. The product that you have purchased contain a rechargeble battery.  
The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.



So please consult your NADEX dealer about the way you dispose of used batteries.

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2. For a long period of disuse, store the equipment with the charging AC adapter and other appendent units disconnected from it.



3. Never engage in disassembly, remodeling or unwarranted adjustment of this equipment. Tinkering with this equipment may cause equipment failure or malfunction.



4. Do not use a volatile fluid, such as benzene or thinner, when wiping the equipment clean. Use of such a fluid can cause the deformation or discoloration of the casing.



5. Do not use this equipment for purposes other than as a welding current meter. NADEX does not hold itself responsible for any equipment failure resulting from use for purposes other than specified.



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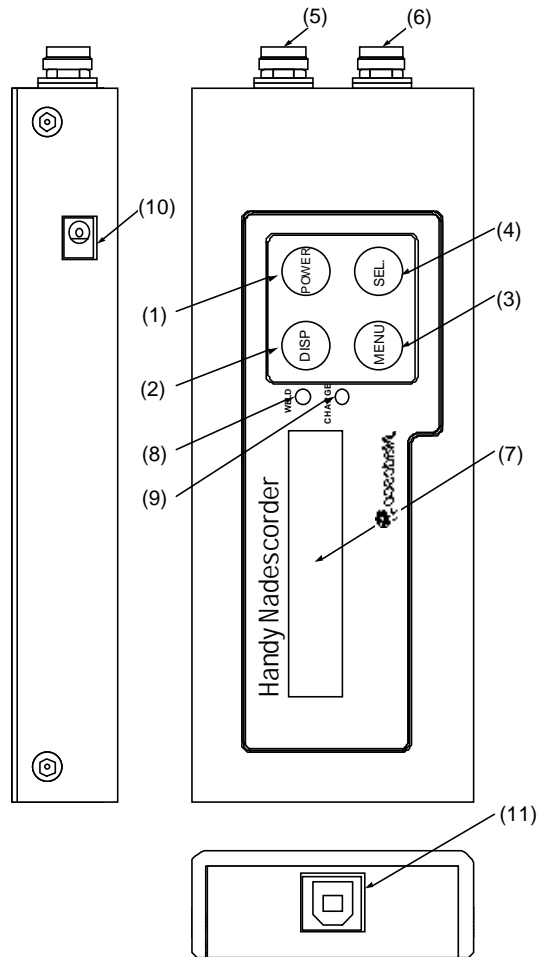
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## 1. Outline

This machine is a welding current meter capable of measuring the welding current, welding cycle and tip voltage of resistance welders and displaying measured values on the liquid crystal display. The device presents the following features:

- 1) The equipment is small and lightweight, so that it can be easily carried around within the factory premises.
- 2) A large capacity memory allows storage of up to 10000 average data, 20 each cycle / each msec data and 1 newest waveform data.
- 3) Data is transmitted to a personal computer and data processing is possible with a personal computer. (The exclusive software for personal computers is required)
- 4) Since the charge battery is built in, it is cordless and can be used.
- 5) Collection of the data in remoteness is possible by radio communications (Bluetooth).
- 6) The connectors for the cables used are all easy-to-use "one-touch" connectors.
- 7) There are two measuring ranges, namely, Lo:2.50 to 19.99kA and 10.00 to 49.99kA. You can select a range best suited to the current levels you are going to measure.
- 8) The WELD lamp lights up when welding is being detected. Therefore, measuring condition can be monitored even when you are away from the welding machine.
- 9) The equipment can be used not only with AC welder but also with DC welder, inverter controlled welder, and AC inverter controlled welder.
- 10) Current consumption is minimized by the auto power-off function, in which power is turned off automatically when there is no key operation, welding.  
( [ 10 minutes ], [ 30 minutes ], [ 60 minutes ], and auto-power-off function (OFF))

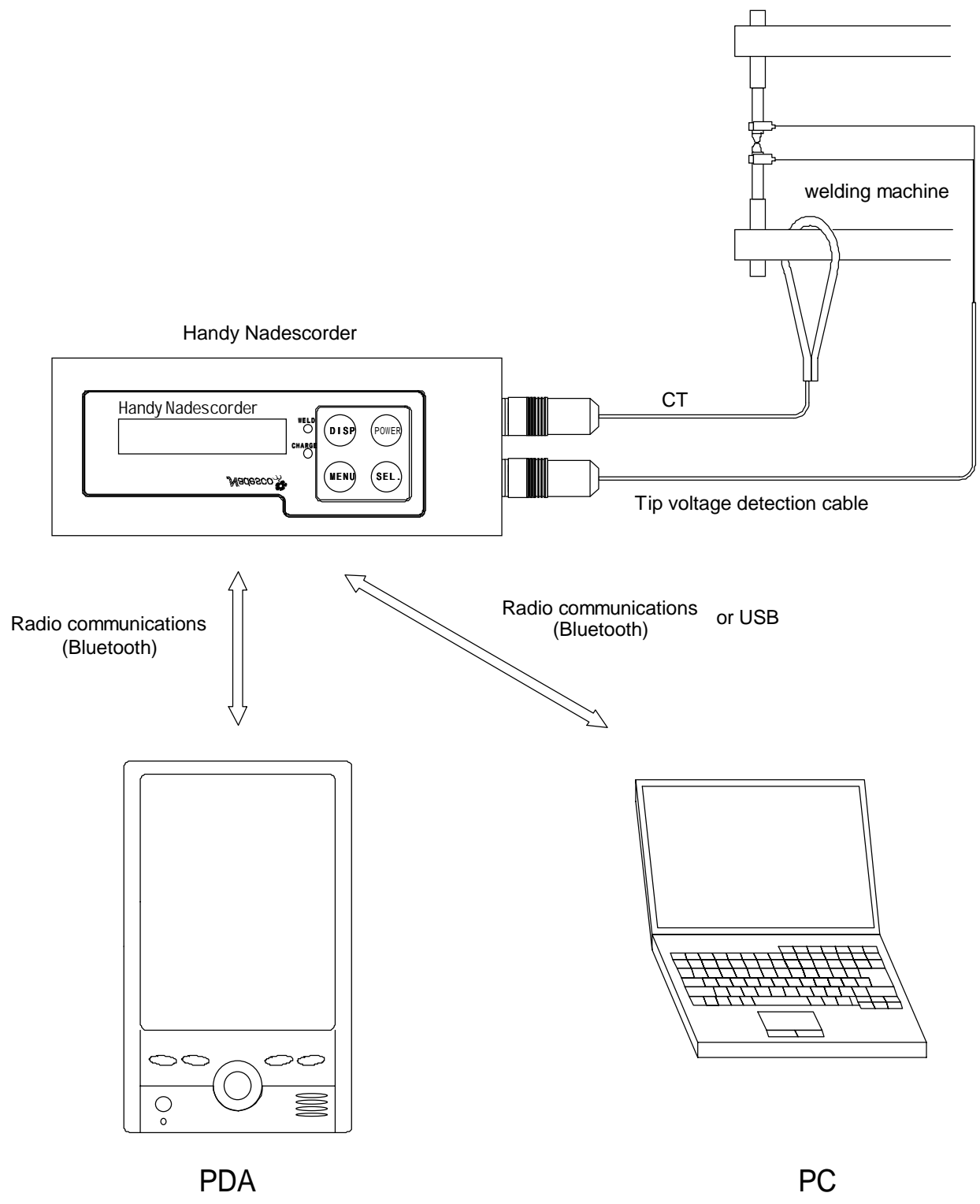
**2. Names and Functions of Components**





- (1) [POWER] key  
Turns power on and off.
- (2) [DISP] key  
Operate this key when changing displays or when switching from menu mode to measurement mode.
- (3) [MENU] key  
Operate this key when changing menu items or when switching from measurement mode to menu mode.
- (4) [SEL.] key  
Use this key for setting change of menu item.  
The lighting for LCD turns on at the time of a measured value display.
- (5) The connector for current measurement  
Connect the appendant CT cable.
- (6) The connector of voltage between tips  
Connect the appendant tip voltage cable.
- (7) Liquid crystal display  
Measured value is displayed in measurement mode.  
The contents of a menu are displayed in menu mode.
- (8) WELD lamp  
Lights up when welding is being done and goes out when it is completed.
- (9) CHARGE lamp  
Lights up during charging. 7. Refer to the Charge Method.
- (10) Power supply jack  
Connect the supplied AC adapter when charging.
- (11) USB connector  
Connect the USB cable when performing cable communications.

### 3. Composition



## 4. Measuring Method

### 4-1. Measurement Operation Procedure

(1) Attach the supplied CT coil to the secondary conductor of the welding machine, and connect the cable to the connector on this device.

(2) Turn on power by operating the [POWER] key.

(Initial screen)

0 . 0 C Y	0 . 0 0 k A
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It is in the state which can be measured.

(3) Refer to 5. Selection of Menu Function when measuring conditions must be set or changed.

(4) In order to measure after a setting end, please press the [DISP] key and make it an initial screen.

(5) When you measure the tips voltage , please connect the tip voltage detection cable.

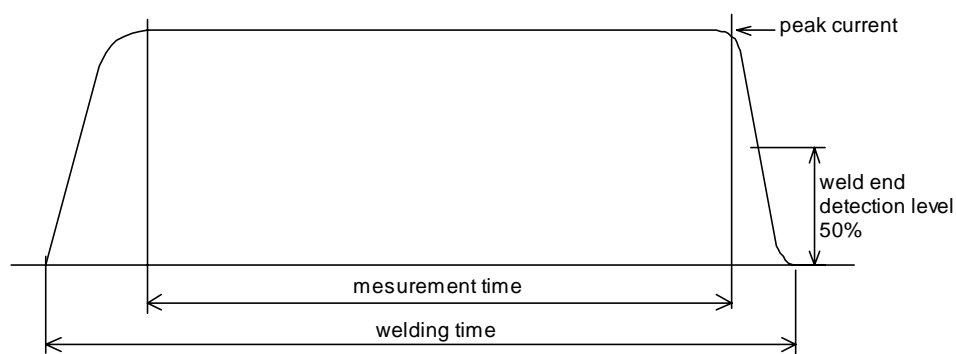
### Notes on measurement

- If you connect the connector with the power on, the trigger may work and a measurement will be made. But the data from this measurement are invalid.

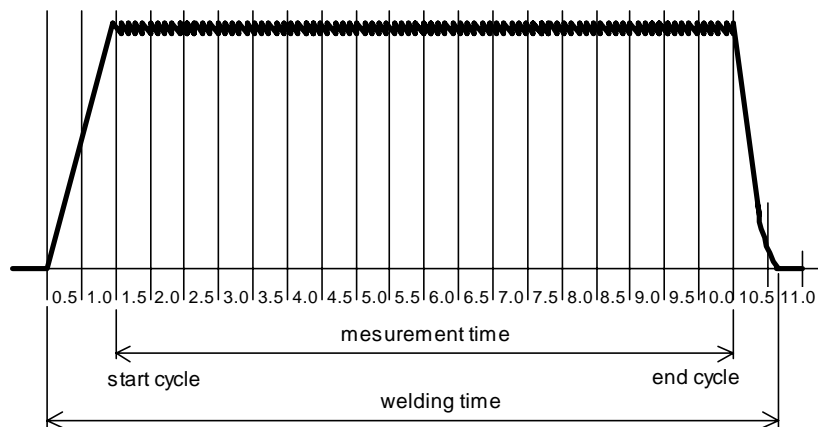
Be sure therefore to turn off power before connecting or disconnecting the connector.

- Since it will be regarded as a weld end if it becomes 50% of peak current in a measurement period when measuring an inverter welding machine etc., a measurement cycle may become long.

Moreover, measured value will become small if weld which became long is included in measurement.



In the case of the following figure, regular current can be measured, supposing it sets a start cycle as 1.5cyc and sets an end cycle as 10.0cyc for the measurement section.



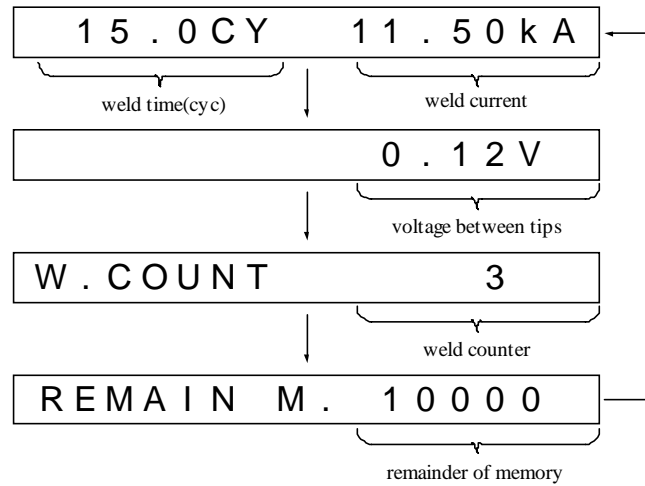
- When the crest value of measured current is extremely large, current overflow may occur even if the current is within the measuring range.
- When measuring an inverter welding machine etc., and the load by the side of secondary is extremely large, it may be unable to measure.
- Measurement of the tip voltage cannot be performed only by the tip voltage detection cable. Please also connect CT cable simultaneously.
- When you connect the tip voltage detection cable, please do not connect AC adapter and a USB cable. It cannot measure correctly.
- When it becomes an unusual welding form in AC measurement, it cannot measure correctly.
- Measurement data may be unable to be saved when a measurement interval is very short.
- Tip voltage of AC inverter welding machine cannot be measured.
- In DC measurement, the tip voltage cannot be measured correctly in the sections (positive going transition of current, negative going transition of current, a rise slope, down slope, etc.) which have change of current in a half-cycle.

4-2. The display of a liquid crystal display

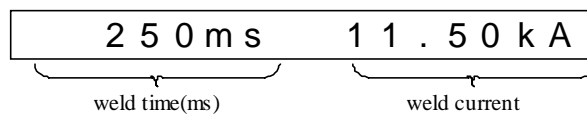
If welding is performed, measured value will be displayed as follows. Moreover, the switch of a display can be performed by the [DISP] key.

Whenever it presses the [DISP] key, switching display of weld time , weld current , tip voltage , weld counter , and remain of memory.

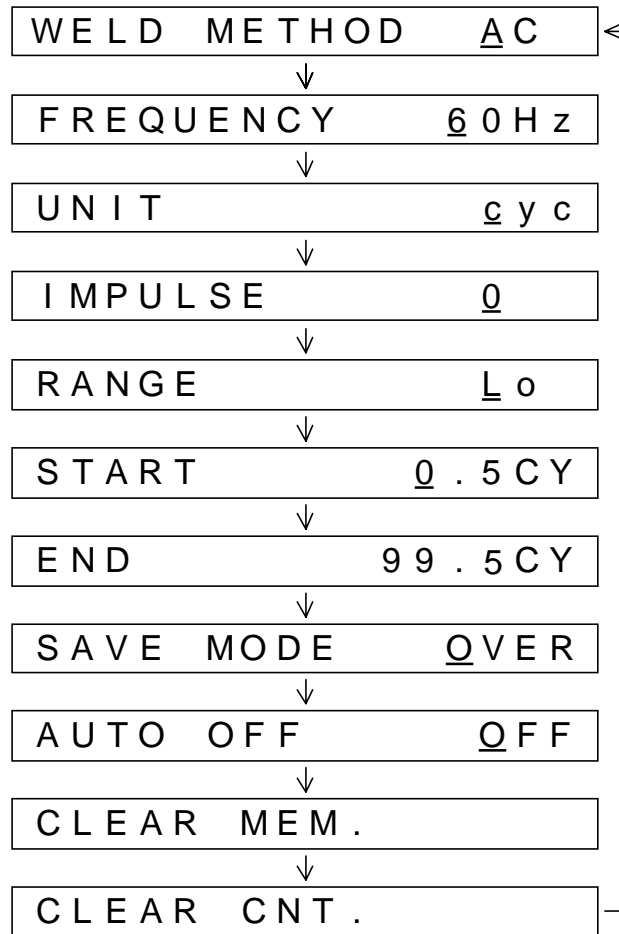
(Example of a display)



The following is displayed when ms is chosen.

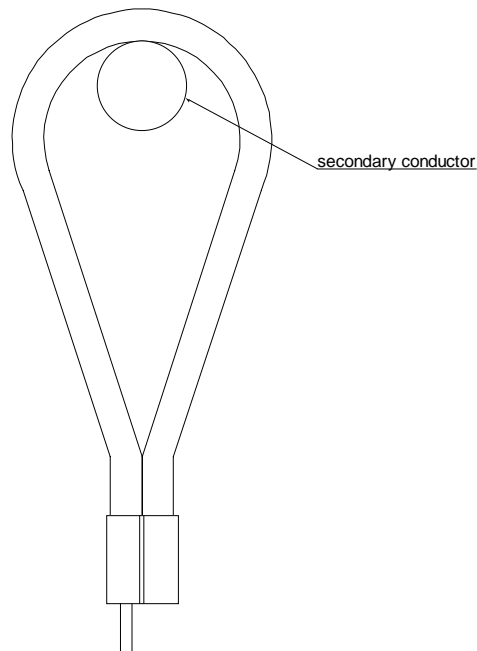


The display of a menu function is displayed as follows.  
 Whenever it presses the [MENU] key, an item changes.  
 (Example of a display)

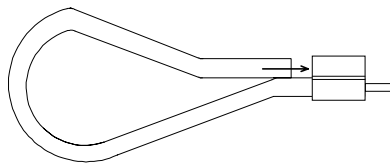


## 4-3. Notes on the Use of CT Coil

- Attach the secondary conductor to the position of the CT coil. Adjustments have been made so that correct values can be obtained when measured in this position.
- Please fix to secondary conductor so that CT does not move during measurement.



- In case you attach CT, please insert the tip of CT firmly to the back of a case.

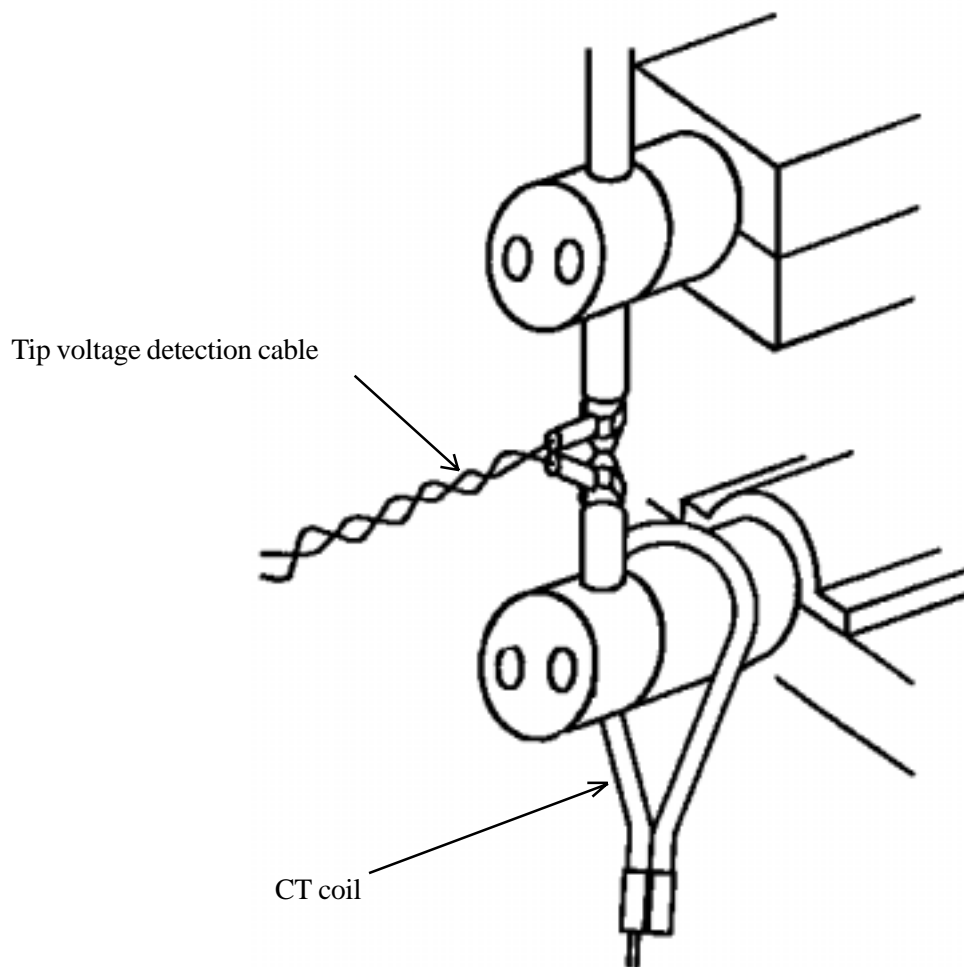


## Danger

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- Use extreme caution not to hurt your hand when hooking up the CT coil to the gun for the welding machine.

#### 4-4. Note on the Use of Tip Voltage Detection Cable

Since induced electromotive force by welding current generates induction by the tip voltage detection cable when measuring the tip voltage, as shown in the following figure, please make connection of the tip voltage detection cable. When especially a lead is made to gather and is attached, induced electromotive force becomes small and the tip voltage can measure correctly.





## 5. Selection of Menu Function

### 5-1. How to select

(1) Press the [MENU] key to switch measuring mode to menu mode, and the following display will appear:

W E L D M E T H O D <u>A</u> C
--------------------------------

(Example of a display)

(2) To change the item, press the [MENU] key to go on to the next item.

(3) After selecting the item to be set, move the cursor to the desired setting value by the [SEL.] key.

(4) For further setting of other items, repeat (2) to (3).

(5) On completion of setting all the necessary items, press the [DISP] key to switch menu mode to measurement mode and start measurement. It cannot measure in menu mode.

### 5-2. Selection Menu Items

#### (1) Selection of welding method

There are two welding methods to select from, namely, AC welding, DC welding .

AC : When measurement is made with a single-phase AC welder.

DC :When measurement is made with inverter controlled welder and AC inverter controlled welder.

W E L D M E T H O D <u>D</u> C
--------------------------------

(Example of a display)

## Caution

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- The tip voltage of AC inverter welding machine cannot be measured.

#### (2) Selection of frequency

The local power frequency must be selected.

There are two frequency to select from, namely, 50Hz and 60Hz .

F R E Q U E N C Y <u>6</u> 0 H z
----------------------------------

(Example of a display)

## Caution

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- When this setup is changed, all the measurement data memorized by the memory is eliminated

- In cyc measurement, any frequency other than 50Hz and 60Hz cannot be measured.

(3) Selection of Unit of measurement time

There are two unit of measurement time to select from, namely, cyc and ms.  
ms can set up only at the time of DC welding.

(Example of a display)



### Caution

- When this setup is changed, all the measurement data memorized by the memory is eliminated

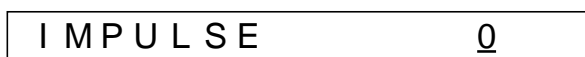
(4) Setting for impulse No.

Setting ranges are 0-9.

0 :measures and displays all welding.

1-9 :measure and display only the data of the specified number of impulses.

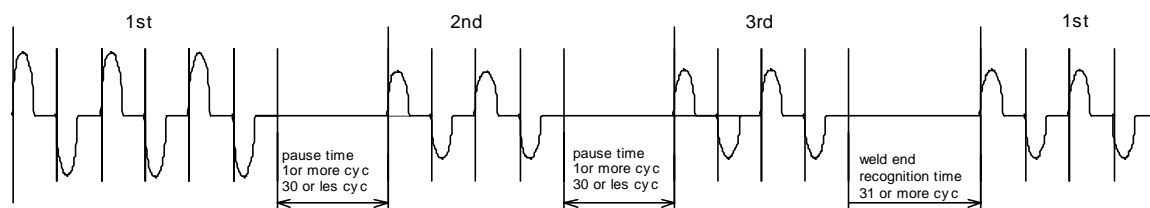
(Example of a display)



At the time of cycle measurement, it is regarded as an impulse by 1 or more cycle pause, and it is regarded as the welding end by 31 or more cycle pause.

At the time of msec measurement, it is regarded as an impulse by 13 or more msec pause, and it is regarded as the welding end by 101 or more ms pause.

If impulse No. is set as 2 in the case of the following figure, the 2nd step of welding will be measured. When there is no 31 or more cycles welding after a welding pause, a series of welding judge it as an end. Moreover, when a setup number of welding cannot be found, an impulse setting error is outputted.



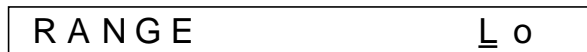
(5) Selection of measuring range

There are two measuring range to select from, namely, Lo and Hi .

Lo : 2.50kA to 19.99kA

Hi : 10.00kA to 49.99kA

(Example of a display)



**Caution**

- If average data is measurement within the limits even if the current value of each cycle is outside the measurement range, it can measure.

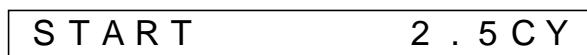
(6) Setting of measurement start cycle

A measurement start cycle is set up.

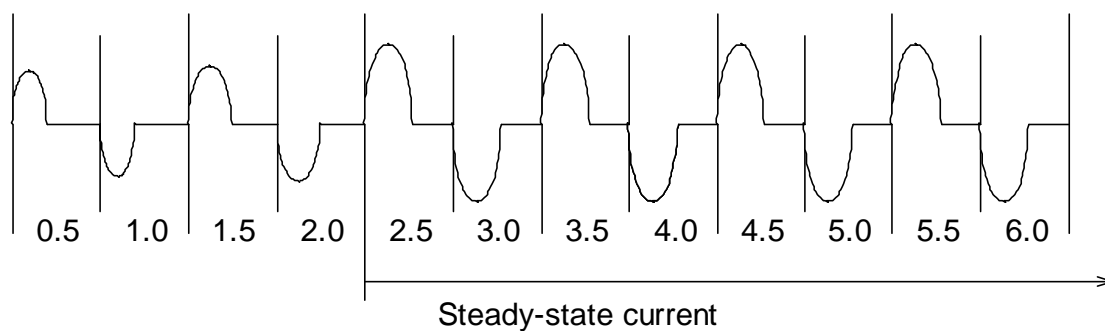
cyc: It can set up in the range of 0.5 - 9.5 cyc.

ms : It can set up in the range for 1 - 199ms. (at the time of DC welding)

(Example of a display)



When the up slope etc. is included in welding current control, steady-state current can be measured by specifying a measurement start cycle. In the case of a figure, a measurement start cycle is set as 2.5cyc.



(7) Setting of measurement end cycle

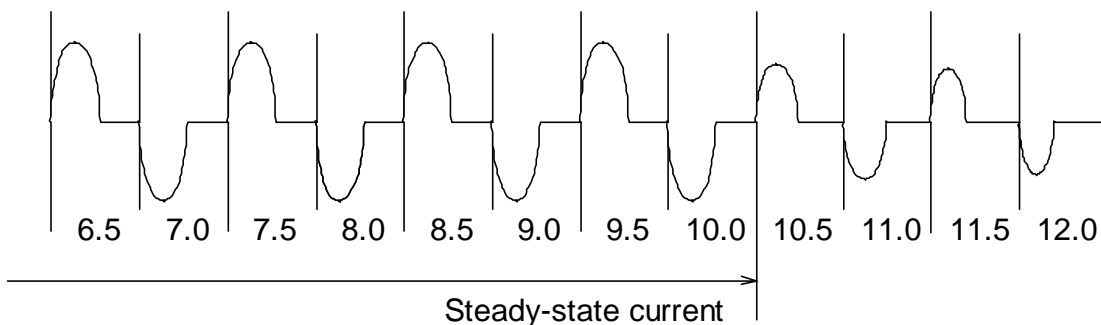
cyc : It can set up in the range of 0.5 - 99.5 cyc.

ms : It can set up in the range for 1 - 1999ms.

(Example of a display)

E N D	9 9 . 5 C Y
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When the down slope etc. is included in welding current control, steady-state current can be measured by specifying a measurement end cycle. In the case of a figure, a measurement end cycle is set as 10.0cyc.



(8) Setting of the data save method

The data saved is

- Average data : 10000 data
- Each cycle/msec data : 20 data
- Wave data : 1 newest data

OVER: The newest welding point in the range of the number of the maximum storage is saved.

LOCK: It is not saved after storage and it to the number of the maximum storage .

(Example of a display)

S A V E	M O D E	<u>O</u> V E R
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### Caution

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- Waveform data, this setup is invalid. The one newest data is saved.

## (9) Setting of auto-power-off

A setup -OFF / 10M / 30M / 60M can be performed.

OFF : A power supply is not turn off until the [POWER] key is pressed.

10M : If anything does not have key operation and welding for 10 minutes, a power supply will be turn off automatically.

(Example of a display)

A U T O   O F F	1 0 M
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## (10) Erase of an welding point counter

It chooses whether the welding counter currently recorded is eliminated.

(Display)

C L E A R   C N T .
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1. When [SEL.] key is pressed, it displays as follows.

C L E A R   C N T .   S U R E ?
---------------------------------

2. Press [SEL.] key and the data will be cleared.

Press [MENU] key and it cancels carrying out.

C L E A R   C N T .   D O N E !
---------------------------------

## (11) Erase of measurement data

It chooses whether the measurement data currently recorded on the memory is eliminated.

(Display)

C L E A R   M E M .
---------------------

1. When [SEL.] key is pressed, it displays as follows.

C L E A R   M E M .   S U R E ?
---------------------------------

2. Press [SEL.] key and the data will be cleared.

Press [MENU] key and it cancels carrying out.

C L E A R   M E M .   D O N E !
---------------------------------

## 6. Communication Method

### 6-1. In the Case of USB

1. Connect between personal computers with a main part by the USB cable.
2. Start the software of a personal computer. Please refer to the handling description of software about the communicative method.

### Danger

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- Be careful not to cover the bottom of a machine etc. with a cable, or to insert into a thing and not to give a crack. An inner electric wire short-circuits and it becomes the cause of an electric shock, a short circuit, and a fire.
- When you extract a cable, please have and be sure to extract a plug and a connector. It becomes the cause of failure, generation of heat, and a fire by disconnection etc.

### 6-2. In the case of radio communications (Bluetooth)

1. There is especially no setup of a main part.
2. Start the software of a personal computer or PDA.

Please refer to the handling description of software about the communicative method.

### Caution

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- Please do not perform USB communication and radio communications (Bluetooth) simultaneously. Data is not compensated when it connects simultaneously.
- The communication distance in radio communications (Bluetooth) is less than 10m. However, it may become short according to a surrounding electric wave situation, an obstacle, and installation environment. Moreover, when communication is intercepted on the way depending on an electric wave situation, it is.

### Caution

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#### About apparatus authorization

This product has received technical standard conformity proof as radio equipment of the radio station of the power-saving data-communications system based on Wireless Telegraph Law.

Therefore, when using this product, the diploma of a radio station is not required.

Therefore, it may be punished by law when the following items are performed.

- Disassemble and remodel this product.
- Remove the seal which erases each proof number on this back of a product and with which it reaches and the proof number is indicated.

#### Attention about an electric wave

This product contains the 2.4GHz belt highly advanced power-saving data-communications system.

This product is radio equipment which uses a 2.4GHz belt, and cannot avoid the zone of move object discernment equipment.

The modulation system introduced "FF-SS" and the distance which give interference assumed is 10m or less.

In the use frequency band of this equipment, the premises radio station (radio station which requires license) and the specific power-saving radio station (radio station which does not require license) for move object discernment which are used with the manufacture line of a factory besides industry, science, and medical apparatus, such as a microwave oven, etc. are employed.

1. Please check in near that the premises radio station and specific power saving for move object discernment are not employed before using this product.

2. When the example of electric wave interference occurs from this product to the premises radio station for move object discernment, please stop use of this product promptly.

3. In addition, when the example of electric wave interference occurs from this product to the specific power-saving radio station for move object discernment and what something is troubled for occurs, please ask to our company.

This product has received authorization of Wireless Telegraph Law in Japan, and it may be punished by the law of the country if used in countries other than Japan.

## 7. How to Charge

Attached AC adapter performs charge.

- (1) Please connect attached AC adapter to a power supply jack, and check lighting of a CHARGE lamp.
- (2) If it becomes -full charge, a CHARGE lamp will change to lighting slightly.
- (3) A CHARGE lamp puts out the light by charge end. The maximum charge time is required for about 5 hours.

Moreover, charge by USB bus power is also possible. Please connect a USB cable with a main part between PC. However, the software for PC is needed.

### Danger

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- AC adapter for charge should surely use the thing of main part attachment. If other AC adapters are diverted, there are a fire not only by failure of a main part but unusual generation of heat and danger of a burst.
- A main part and AC adapter generate heat during charge. Be careful of handling enough. Moreover, covering paper and cloth during charge should stop. Please be sure to charge in a cool place with sufficient ventilation. It may become the cause of a fire.
- Even if it connects AC adapter for charge, when a CHARGE lamp does not light up, the defect of a battery pack is considered. Please stop use immediately.

### Caution

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- Current cannot be measured when it is displayed on a liquid crystal display as "LOW BATTERY" by drop in voltage of a battery.  
Please connect AC adapter immediately and charge a battery.
- If charge is completed, please remove AC adapter.
- After a "LOW BATTERY" display does not charge, and if a battery is exhausted further, a power source will be turn off automatically.
- A power source may be turn off before displaying "LOW BATTERY" depending on the state of a battery.
- If it is left where a battery is exhausted, all the saved data will be lost. When displayed as "LOW BATTERY", or when a power supply is automatically turn off by consumption, please charge immediately.



## 8. Error Display

An error is shown when the following table is indicated to a liquid crystal display.

Item	Error Display	Name	Content
Weld Time	- - . - C Y	Measurement impossible error	When it is not able to measure by other items
	- - - - m s		
	! ! . ! C Y	Set up error	When a setup of measurement time is wrong
	! ! ! ! m s		
	? ? . ? C Y	Weld time overflow error	When welding time of 100 cycles or 2000msec or more cycles is carried out
? ? ? ? m s			
Weld Current	- - . - - k A	Measurement impossible error	When it is not able to measure by other items
	? ? . ? ? k A	Weld current overflow error	When larger current than a measurement range is measured
	. ? ? k A	Weld current underflow error	When current smaller than a measurement range is measured
Tip Voltage	- . - - V	Measurement impossible error	When it is not able to measure by other items
	? . ? ? V	Tip voltage overflow error	When larger voltage than the measurement range is measured
Impulse	# # . # C Y	Impulse set up error	When a setting value is not reached
	# # # # m s		
System	System Fault	System fault	When abnormalities are in equipment
Battery	Low Battery	Battery voltage go down	When a battery is exhausted
Memory	Memory Error	Memory data error	When memory data is destroyed

9. Troubleshooting

Condition	Cause	Measures
A power supply is not turned on.	The voltage of a battery is falling.	Please charge with reference to the charge method.
It cannot measure, even if it welding.	Isn't it menu mode?	Hit "DISP" key .Please change measurement mode.
Measurement of a current value cannot be performed.	Is CT coil attached correctly?	Please attach CT coil correctly.
	Is the cable of CT coil the breaking down of cable?	Please exchange CT coil.
	It is displayed as ".??kA."	It is a current under flow error. Please check a measurement range. If it is Hi range, please make a setting change at Lo range. If it is Lo range, it is outside the specification range.
	It is displayed as "???.??kA."	It is a current overflow error. Please check a measurement range. If it is Lo range, please make a setting change at Hi range. If it is Hi range, it is outside the specification range.
	It is displayed as "## . #CY" or "#####ms."	It is an impulse setting error. Please input the suitable value for which the number of setting impulses is not suitable.
	It is displayed as " !!!CY " or " !!!!ms ."	It is a cycle setting error. (1) Isn't the measurement start time of a setup longer than weld time? (2) Isn't the measurement end time longer than measurement start time at a setup? Please input a proper value.
	It is displayed as " - - .- - kA. "	It is a measurement impossible error. (1) Cycle overflow (2) Tip voltage overflow (3) Cycle setting error (4) Impulse setting error Has not error generated? An error should not occur.

Condition	Cause	Measures
Measurement of the tip voltage cannot be performed.	Is the tip voltage detection cable connected?	Please connect the voltage detection cable between tips.
	It is displayed as " ??? V ."	It is the tip voltage overflow error. It is outside the specification range (more than 5.00V). Please use it by specification within the limits.
	It is displayed as " - . - V ."	It is a measurement impossible error. (1) Cycle overflow (2) current value overflow (3) current value under flow (4) cycle setting error (5) impulse setting error Has not error generated? An error should not occur.
It is displayed as "Memory Error"	Setting data and measurement data are destroyed.	Please push any keys. A LCD display will be the initial screen "Data Initialize" ->"0.0CY 0.00kA" . A memory is reset compulsorily. Recovery of a memory cannot be performed.
It is displayed as "System Fault:14" or "System Fault:15" or "System Fault:16".	The system error has occurred.	Please contact our company.

## 10. Specification

### 1. Model MD22-M01A

### 2. Object of Measurement

- Welding current ,weld time of 50/60Hz AC resistance welding machine
- Welding current ,weld time of 50/60Hz DC resistance welding machine
- Welding current ,weld time of inverter resistance welding machine
- Tip voltage
- Tip resistance (Only at the time of PDA and PC connection)

### 3. Detection of welding current

Detection by the detection coil (CT) on the secondary side of the welding machine

### 4. Measurement of welding current

- Arithmetic means of effective value for each cycle during one welding
- The effective value of each cycle (It can be displayed only at the time of PDA and PC connection.)
- Waveform display (It can be displayed only at the time of PDA and PC connection.)

### 5. Measurement of tip voltage

- Arithmetic means of effective value for each cycle during one welding
- The effective value of each cycle

### 6. Measurement of welding range

Welding current	Lo : 2.50-19.99kA (Resolution : 0.1kA) Hi : 10.00-49.99kA (Resolution : 0.2kA)
Welding time	0.5 to 99.5 cycle (Resolution : 0.5 cycles) 1 - 1999ms (Resolution : 1ms)
Tip voltage	0.00-5.00V (Resolution : 0.01 V)
Tip resistance	1-2000 micro ohm (Resolution : 1 micro ohm)

### 7. Measurement accuracy

Welding current	+/-2%FS
Tip voltage	+/-5% FS
Tip resistance	+/-5%FS

### 8. Trigger for measurement start

Automatic trigger by detection of welding

### 9. Measurement cycle

Continuous current 0.5 to 99.5 cycle, or 1 - 1999ms can be set.

### 10. The Functional Setting Method

It sets up from the main part of a measuring instrument, and PDA and PC.

- (1) Welding method :AC/DC
- (2) Power supply frequency : 50/60Hz
- (3) Measurement unit : cyc/ms
- (4) Impulse : 0-9
- (5) Measurement range : Lo/Hi
- (6) Measurement start cycle : 0.5 to 9.5 cycle, or 1 - 199ms
- (7) Measurement end cycle : 0.5 to 99.5 cycle, or 1 - 1999ms
- (8) Data preservation mode : OVER / LOCK
- (9) Auto-power-off :OFF / 10M / 30M / 60M
- (10) Elimination of welding counter
- (11) Elimination of memory data

#### 11. The Display Method of Measurement Data

The average data of welding time, welding current, and the tip voltage is displayed as this device. Arithmetic means of effective value, effective value for each cycle, waveform of welding time, welding current, the tip voltage, and tip resistance are displayed as PDA or PC.

#### 12. Auto-power-off

After an external trigger and setting item change are lost, it is after 10 minutes, 30 minutes, and 60 minutes (selection). It power-supply-turns off.

#### 13. Preservation of Measurement Data

Measurement data is saved on the main part of a measuring instrument.

- (1) Average data : 10000 data
- (2) Each cycle/msec : 20 data
- (3) Wave data : 1 data

Preservation by the Comma Separated Value is possible at PC (edit is possible at Excel etc.).

14. External Output Radio communications (Bluetooth), USB

15. Power Supply Built-in rechargeable battery (Li-ion 780mAh)

16. Charge Time About 5 hours

17. Operation time Continuation 8 hours

#### 18. Power Consumption

During standing : 63 mA

During wireless communication : 115 mA

19. Overall dimensions 58(h) x155(w) x22(d)

20. Weight About 170g

21. Operation Temperature 0-40 degrees C

22. Operation Humidity 10 - 90% (No dew)

#### 23. Accessories

- CT coil
- Tip voltage detection cable
- AC adapter (AC100V/120V)

#### 24. Option

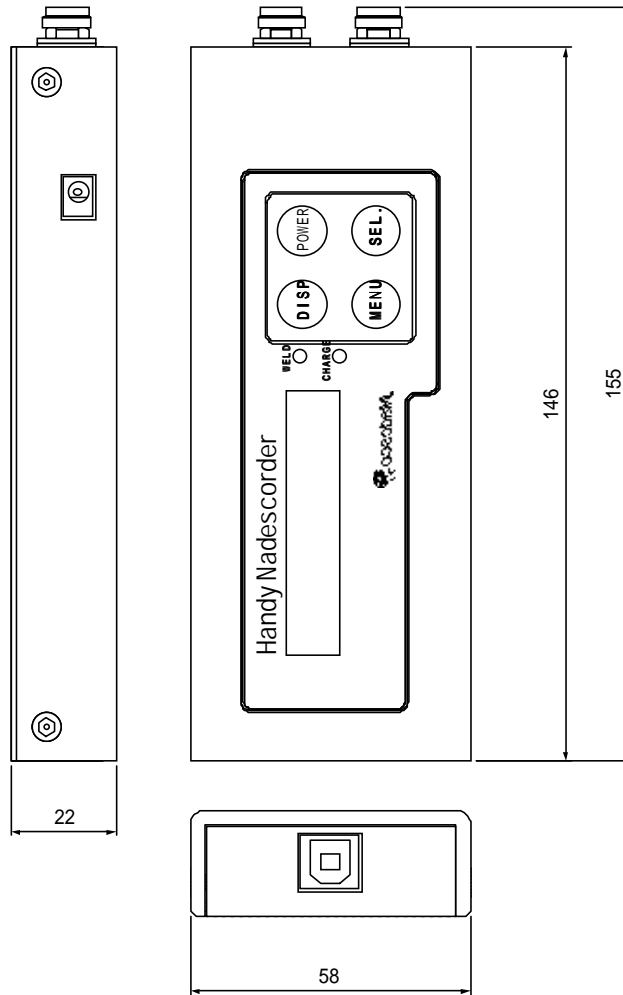
Software (for PC): Inspector.exe (Windows XP, 2000, ME correspondence)

Software (for PDA) :Pocket Inspector.exe (Windows CE3.0 correspondence)

A USB cable, CF card for Bluetooth, the USB adapter for Bluetooth

\* Specification may be changed without a preliminary announcement for improvement.

Outside figure



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Up Date  
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