

Instruction Manual

Charged Plate Monitor ARC-P102ZA



% Read this instruction manual before using the product in order to achieve maximum performance.

X Keep this manual within your reach after reading so that it can be used at any time.

% Warranty is on the last page of this manual. Please read the contents and keep it carefully.

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1. Product features

Welcome to become a customer of DIT.

Electrostatic Eliminators(Ionizers) are used to reduce an error rate from static electricity in various industries.

Electrostatic Eliminators require periodical maintenance and performance monitoring due to its operation method. CPM(Charged Plate Monitor) is necessary to monitoring ionizer's performance exactly.

Our CPM, "ARC-P102ZA" is easy to use with its compact and portable design.

Measurement of Ion-Balance and Decay-time

- Measurement of Ion-balance

This mode measures the balance of (+) ions and (-) ions.

When Ion-Balance is biased to either (+) polarity or (-) polarity, the capacity to remove the biased polarity is decreased. In case of serious bias, it can be charged inversely.

- Measurement of Decay-time

This mode measures the time for elimination of the applied voltage on the plate. As the time is short, static-electricity is eliminated at high speed. Upon ANSI, decay time is measured by falling under 10% of the initial voltage.

[EX. When the initial voltage is 1000V, Decay time is measured by falling under 100V.

Portable and Durable CPM with its handle structure and protection function for broken wire of the plate

ARC-P102ZA has the handle structure to improve portability and measure in various application easily.

Also, in case of general CPM products, the wire of the plate can be broken easily. ARC-P102ZA has protection function for broken wire of the plate.

▶ Real-time monitoring system on PC (Monitoring program provided)

User can check and save fluctuations of ion balance and decay time with real-time graph using provided program.



2. Product specification

Controller-Dimension		63mm(H) x 125mm(W) x 154mm(D)		
Controller-Weight		<1.2Kg		
Plate-Dimension		150mm x 150mm (Height : 43.0mm)		
Plate-Capacitance		20pF±2pF		
Plate-Weight		<0.8Kg		
Sensing-method		Oscillating Chopper Type (DIT)		
Input-Voltage		12Vdc ± 10%		
Input-Current		1A		
Battery-Specificatio	n	NiMH 7.2V 6Pack		
Battery Charging Ti	ime	3hrs(Until Full charge)		
Battery Use Time		8hrs(Full charge statement)		
	Range	0 to ±1100V DC or Peack AC		
Float Mode	Stability	< 10% of Initial Voltage with 5minutes [40% RH at 25℃]		
	Start/Stop Accuracy	Within ±1V from setting value		
Decay-time	Time Resolution	0.1sec(0.1~999.9sec)		
	Range	Start Voltage : $\pm 1 \sim \pm 1000$ V / 1V unit adjustable Stop Voltage : 0 ~ ± 999 V / 1V unit adjustable		
NA de de la l	Controller	SUS 1.2T		
Material	Plate	SUS 1.2T		
Function		(+)Decay-time, (-)Decay-time, Reset		
Display		FND 2 set(Plate-Voltage, Decay-time)		
Communication		USB Communication		
Ambient Temperature		5°C ~ 35°C		
Ambient Humidity		Under RH 80% (No-Condensation)		
Storage Temperature		0°C ~ 50°C		
Storage Humidity		Under RH 80% (No-Condensation)		

* Specification can be changed without notice for performance improvement.

* When keeping the product out of ambient temperature, operate after keeping at room temperature over 2 hrs.

3. Package contents

Please check the package contents before use.

1 ARC-P102ZA Controller	1EA
2 ARC-P102ZA Plate	1EA
③ USB CABLE(1m)	1EA
④ Earth CABLE(3m)	1EA
(5) 12V Adapter	1EA
 6 7.2V Battery Pack ※ Built-in Controller 	1EA

Caution!!

When ARC-P102ZA first operates, it cannot be turned on or work properly because of the discharged battery-pack. Please operate the product after connecting 12V adapter when it first operates.



4. Parts name and function

< Parts name and function >

< Controller (Front) >



NO	Name	Description
1	Polarity LED	Show (+)/(-) polarity of voltage on the plate
2	Volt FND	Show voltage level on the plate
3	Decay-time FND	Show measured value(in seconds) on (+)/(-) Decay-time mode
(4)	Battery Condition LED	Show the charging condition of battery
5	(+) Decay Button	Button for measuring (+) Decay-time applying +1,000V on a plate
6	(-) Decay Button	Button for measuring (-) Decay-time applying -1,000V on a plate
7	Reset Button / Zero setting	Return to the initial status/Set up to zero point pushing over 2s.
8	Handle	Handle for carrying the product

4. Parts name and function

< Parts name and function >

< Controller (Rear) >



NO	Name	Description
1	GND Connector	Connector for connecting to GND
2	USB Connector	Connector for USB communication
3	Plate Connector	Connector for connecting the plate
4	Power Switch	Switch for applying power
5	Adapter Connector	Connector for 12V adapter

4. Parts name and function

< Parts name and function >

< Plate >



NO	Name	Description
1	Plate	Plate applied voltage for measurement
2	Handle	Handle for carrying the plate

5. Dimensions

< Controller >

<Front View>



<Top View >







<Side View >



< Plate >









6. Connection and Operation

ARC-P102ZA is a charged plate monitor(CPM), which measures the performance of ionizers. CPM is sensitive to the operating environment, so please read the instructions and cautions below when installation and use.

6.1 Connection

- 1) Controller, Plate, GND Cable, Adapter and all parts are packed individually
- 2) Connect each part to the port of controller

Caution!!

Check the each proper port to avoid wrong connection.

3) Connect GND Cable to field ground or ionizer's ground

6.2 Power Supply [Battery Charging / Adapter connection]

- 1) Battery pack is built in the controller
- On first use, it cannot be turned on or work properly because of the discharged battery-pack.
 Please operate the product after connecting 12V adapter on first use.
- 3) Connect 12V adapter to the adapter connector of the controller.
- 4) When connecting the adapter, Battery Condition LED **blinks on and off with green light**.
- 5) When the battery is charged fully, Battery Condition LED lights with green light.
- 6) Push Power Switch after disconnecting the adapter.
- 7) In case of operation connecting the adapter, push Power Switch without waiting for fully charge. In this case, Battery Condition LED blinks on and off or light on with green light.

6. Connection and Operation

6.3 Measurement Set-up (Zero Setting)

- 1) Check the "VOLT" FND which displays the voltage level on the plate when supplying power.
- 2) When there isn't 0V but other value on the FND, remove the charged ions by bringing into GND cables or metals.
- 3) Check to keep 0V on the "VOLT" FND.It is normal condition with ±10V level of on Measurement Error
- 4) If it is out of 0V even after connecting the plate to GND, set up to zero point.
- 5) For setting up to zero point, hold "RESET" button over 2 seconds when connecting the plate to GND. Then "ZSET" is displayed on the "VOLT" FND.

6.4 Measurement of Ion-Balance from Ionizers

- 1) Place the plate at the effective range of ionizers.
- 2) Push "RESET" button once.
- 3) Check the voltage value on the "VOLT" FND.

Caution!!

If "Err2" is displayed on the FND during setting zero, it should be calibrated. Please inquire of DIT or calibration institutions about the calibration.

6. Connection and Operation

6.5 Measurement of (+)/(-) Decay-time from Ionizer

- 1) Place the plate at the effective range of ionizers.
- 2) Push "(+) Decay " or "(-) Decay" button once.
- 3) Check the plate voltage over -1,000V on "VOLT" FND.

Caution!!

When charging the plate, please remove any conductive objects, which cause malfunction of the product.

Caution!!

If the battery is not charged enough on battery mode, the voltage cannot be applied on the plate. Please connect 12V adapter or use after charging the battery fully.

- 4) When the voltage of the plate becomes under \pm 1000V, CPM starts timing. It is able to check an increase of decay time on "DECAY TIME" FND.
- 5) When the voltage of the plate becomes under \pm 100V, CPM stops counting. Measured decay time is displayed on "DECAY TIME" FND.

6.6 Cancellation of (+)/(-) Decay-time mode & Return to Ion-balance mode

- 1) When the measurement of decay time should be canceled due to unforeseen circumstances, push "RESET" button.
- 2) After pushing "RESET" button, the measurement of decay time is stopped and it is changed to "lon-balance" mode which measures the voltage applied on the plate.
- 3) Because a residual voltage can remain on the plate after measuring decay time, make sure to contact a ground wire or metal objects to the plate and set 0V on the plate, and then start to measure again.

7. Monitoring setting with a monitoring program

7.1 How to install the monitoring program (Download & Port set-up)

- Please download a monitoring program and USB DRIVER on our web site. [Access to <u>"www.dit-ind.com</u>" : Product – Ionizers – Measuring Instruments -Charge Plate Monitor ARC-P102ZA : Download Technical Data for free]
- 2) Install the USB DRIVER(FT232RL) to PC
- 3) Connect ARC-P102ZA to PC with USB cable
- 4) Check the port number of the USB DRIVER [available on Microsoft Management Console : ex. COM8]

** In case that a monitoring program is not connected

- 1) Check the connection state of USB cable between ARC-P102ZA and PC
- 2) Check that the port number of USB DRIVER and the port number of monitoring program match exactly
- 3) Check to set the communication speed at 115,200 on the monitoring program
- 4) Check if the measured value is over the range of the graph(voltage/time-axis) [If yes, increase the range in the voltage-axis and time-axis of the graph]

Caution!!

The monitoring program is provided for free. DIT dose not have any responsibility for damage by user, and customizing this program is not allowed.

7.2 How to set the monitoring program (Initial connection)

👫 Charge Analyzer 🛛 💶 🗙	🎫 Charge Analyzer			- = x
		PORT	COM10 *	Disconnect
DONG & TECHNOLOGY LTD. 2 BAUD 115200 _ EXIT	DONG IL TECHNOLOGY LTD.	BAUD	115200 -	EXIT
ION BALANCE	ION BALANCE			
VOLTAGE			VOLTAGE	
+0014			$+00^{2}$	14
DECAY	DECAY			

- ① Set the same "PORT" number as the port number of USB DRIVER
- 2 Set the communication speed at 115,200 [default setting]
- ③ When clicking "CONNECT" button, "ION BALANCE" button and "DECAY" button are activated and the value on "VOLTAGE" is shown.

7. Monitoring setting with a monitoring program



7.2 How to set the monitoring program (ION BALANCE)

- ① Set up the range of the MAX, MIN voltage value on the Y-axis of the graph
- ② Set up the display time on the X-axis of the graph
- ③ Escape from "ION BALANCE" mode
- ④ Start/Stop measuring "ION BALANCE"
- (5) Set the measuring time for ION BALANCE
- ⑥ Display the Max, Min, and Average value during the measuring time for ION BALANCE
- ⑦ Set ZERO point (same function as "RESET" button on the controller
- (8) Set up to save DATA log. DATA is saved in Excel file format on "SAVE ON" mode
- (9) Save the image of graph (saved at Monitoring Program folder)

7. Monitoring setting with a monitoring program



7.2 How to set the monitoring program (DECAY)

- ① Set up the range of the MAX, MIN voltage value on the Y-axis of the graph
- 2 Set up the display time on the X-axis of the graph
- ③ Escape from "DECAY" mode
- ④ Start/Stop measuring "DECAY TIME"
- (5) Select (+) DECAY TIME Mode or (-) DECAY TIME Mode
- 6 Set start/stop voltage of Decay time (ex. measuring time to decrease from -1,000V to -100V)
- ⑦ Save the image of graph (saved at Monitoring Program folder)
- (8) Display the measured value in real time
- In Set repeat count and term for measuring DECAY TIME
- 10 Set ZERO point (same function as "RESET" button on the controller
- (1) Set up to save DATA log. DATA is saved in Excel file format on "SAVE ON" mode

8. Attention

Please be well informed of the attentions below before use.

Non-observance in this manual may lead to malfunction of the product. Also it is subject to restriction for exchanging or repairing the products.

- 1) Read this instruction manual before using the product and operate properly.
- 2) To avoid malfunction, keep the product away from wet/oily/powdery materials.
- 3) Do not operate the product in a place surrounded with corrosive gas such as acid, alkali and chlorine gas.
- 4) Do not drop the product and avoid strong shock on the product. Especially it may cause serious damage on the plate because the plate has sensitive parts.
- 5) Please do not leave the electromagnetism and magnetic object near the sensor. Otherwise, malfunction and damages for a internal device and chip could be happened.
- 6) Please do not leave the electromagnetism and magnetic object near the sensor. Otherwise, malfunction and damages for a internal device and chip could be happened.
- 7) Before measurement, make sure to ground the product with a ground cable.
- 8) Make sure that the plate should not be touched to the human body or metal objects because high voltages apply on the plate for measuring DECAY TIME.
- 9) There should not be condensation on the plate.
- 10) Make sure that the plate is not polluted by particle and dust.
- 11) Be careful not to be loaded with the excessive weight on the plate
- 12) Do not push the buttons on the controller with excessive force.
- 13) Keep/operate the product under ambient humidity(60%RH). [Recommended to use desiccators/plastic bags/desiccants]
- 14) The plate should be insulated. Otherwise, the measured values cannot be guaranteed. Please check insulating properties of the plate periodically referring the following steps.

<How to check insulating properties of the plate>

After charging 1,000V on the plate, check the speed of decreasing the voltage naturally. The faster the speed of decreasing the voltage is, the less insulation resistance is.

15) When malfunction, do not disassembly and re-assembly, and call the customer center. Otherwise, it could not be warranted and replaced.

9. Trouble shooting

Problem	Inspection
Power is not supplied	 Check the charging condition of battery(Battery Condition LED) If the battery is flat, charge the battery by using 12V adapter. If there is no problems above, contact to manufacturer or sales agents.
Unusual display data	 Check that ground cable is connected properly Check if the mode is set correctly.
Error is bigger than real electro-static level	 Check the insulating properties of the plate/natural discharge time. Check if there is metal objects or strong magnetic field. If there is no problems above, contact to manufacturer or sales agents.
Malfunction of FND/LED/Button on the controller	1) Contact to manufacturer or sales agents
Burning smell during operation	 Disconnect from power supply and contact to manufacturer or sales agents.
Damage of the plate from impact or drop	 Compare an existing data and new measured data In case of a wide margin of error, contact to manufacturer or sales agents.
Etc.	1) Contact to manufacturer or sales agents.

※ If you cannot solve the problem with the above solution or if you have other problems not described above, please call manufacturer or leave a message on our website.
 ☞ DIT Quality Assurance Team TEL) +82-31-299-5464

Warranty

We, Dong II Technology Ltd. Manufactured this product under a strict quality control system and warrants it for1 year of period from the shipment date

However, we don't have any responsibility for

1) Any damage if the product is used in a way different from that is explained in this manual or remade by users arbitrarily.

2) Any damage led by improper usage. We recommend the installation circumstances in this manual, but that is just a recommendation and users are responsible for understanding the product's specification and judgment of suitability of usage.

3) Direct or indirect damage led by the product malfunction.