

# Intrinsically Safe Explosion-Proof High-Precision Tuning Fork Scale

FZ150K1GFEx  
FZ300K1GFEx

## Installation Manual

### IMPORTANT

- To ensure safe and proper use of the scale, please read this manual carefully.
- After reading this manual, store it in a safe place near the scale, so you can review it as needed.

SHINKO DENSHI CO., LTD.



# Preface

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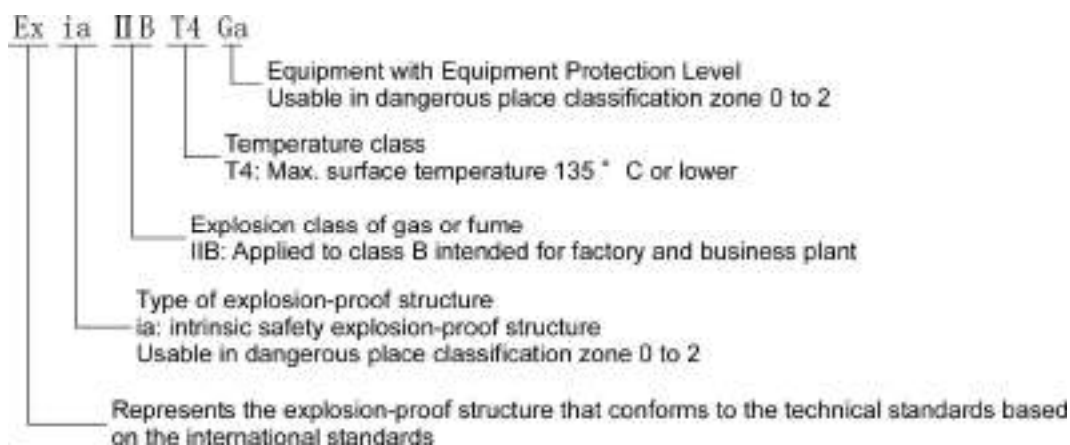
Thank you very much for having purchased a dust- and water-proof intrinsic safety explosion-proof structure electronic scale, FZ150K1GEx and FZ300K1GEx.

This document describes important items to use the device safely in the explosive atmosphere. Read this document carefully before use to correctly operate.

## ■ About the certified explosion-proof structure

This scale is an explosion-proof electronic scale that has been certified as an intrinsic safety explosion-proof structure electric device. It has been confirmed that the device does not explode due to the generation of electric sparks or temperature rise of a component not only during normal operation but also during abnormal operation (failure period) even when used in the atmosphere of explosive gas.

### Explosion-proof structure that has been certified

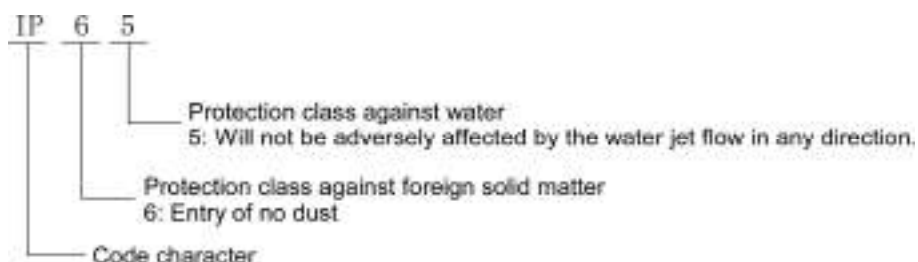


## ■ About the dust- and water-proof structure

This product except the power supply box has dust- and water-proof structure compliant with IP65.

(IP65 is maintained only when this scale is assembled, installed/cleaned in accordance with this manual.)

### Protection class of a dust- and water-proof structure



# IECEX CERTIFICATE/Korean Certificate Safety

- 1 Certificate No. IECEx DEK 15.0059X/16-KA4BO-0469X  
 2 Type of Protection ia  
 3 Marking Ex ia IIB T4 Ga/Ex ia IIB T4



- 4 STANDARDS IEC 60079-0:2017 Edition 7.0 (IECEX DEK 15.0059X)  
 IEC 60079-0:2011 Edition 6.0 (16-KA4BO-0469X)  
 IEC 60079-11:2011 Edition 6.0  
 5 POWER SUPPLY Maximum values

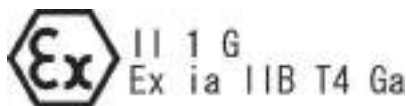
U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	L <sub>i</sub>
20[V]	139[mA]	0.46[W]	0.21[μF]	0[mH]

- 6 S/N XXXYYY where XX is last two digits of the year of manufacture.

7 **Symbol “X”** **The insulation between intrinsically safe circuit and the frame of the (electrical) apparatus is not guaranteed. Avoid excess voltage.**  
**From the safety point of view, the circuit is considered to be connected to earth. See 1-5-3 Grounding.**

# EU-TYPE EXAMINATION CERTIFICATE

- 1 Certificate No. DEKRA 15ATEX0072X  
 2 Marking II 1G Ex ia IIB T4 Ga



- 3 STANDARDS EN 60079-0:2018  
 EN 60079-11:2012

- 4 POWER SUPPLY Maximum values

U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	L <sub>i</sub>
20[V]	139[mA]	0.46[W]	0.21[μF]	0[mH]

5 **Symbol “X”:** **The insulation between an intrinsically safe circuit and the frame of the (electrical) apparatus is not guaranteed. Avoid excess voltage.**  
**From the safety point of view, the circuit is considered to be connected to earth. See 1-5-3 Grounding.**

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# Important Notice

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- It should be known that this product contains potential danger. And so please be sure to observe this document when installing, operating or servicing this product.
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- SHINKO DENSHI CO., LTD. will not take any responsibility for any injury or damage caused by the non-observance of this document or misuse or unauthorised modification of this product.





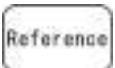




- Potential dangers are increasing in the industrial equipment industries due to the advent of new materials and processing methods, and speeding up of machines. It is impossible to foresee all situations related to these dangers. In addition, there are so many “impossible” and “don’ts” and so writing all of them in the operation manual is impossible. Therefore, it is safe to think that what is not written in the operation manual “cannot be performed” unless the operation manual positively writes “it is possible.” When performing installation, operation, maintenance or inspection of this product, not only observe what is written or indicated in this document or on the product surface but also pay adequate consideration to safety measures.
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- For any question or further information concerning this document, please contact the store where you purchased the product with its model (type) name and serial number informed.
- Manufacturer: SHINKO DENSHI CO., LTD.  
Address: 1-52-1 Itabashi, Itabashi-ku, Tokyo 173-0004 JAPAN

# How to use this document

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## ■ Symbols used in this document

Understand the meaning of the following symbols and observe the instructions of this document.

Symbols	Meaning
	Used for high-risk point concerning the operations that may lead to death or severe physical injury to persons if proper precautions are not taken.
	Used for warning concerning the operations that may lead to death or severe physical injury to persons, if proper precautions are not taken.
	Used for caution concerning operations that may lead to a light physical injury to persons if proper precautions are not taken.
	Used for notation concerning operations that may lead to damage of the products/facilities/data if proper precautions are not taken. Used for accurate weighing and appropriate usage of the equipment.
	Used for reference information
	Used for "Prohibition" items
	Used for "Mandatory" items requiring positive action
	Used for prohibition items to avoid "Electrical shock".
	This symbol indicates the operation/specification related to verified scale for legal metrology purpose.

## ■ About this document

This document explains assembling, installation, dismantling, maintenance, overhaul and repair of the power supply box, indicator section and weighing section of FZ150K1GFEx and FZ300K1GFEx (hereinafter referred to as “this product” or “the product”).

For how to install the interface option of the power supply box, please refer to the each option’s manual.

For how to operate the product, please refer to the “FZ-Ex Series Operation Manual”

## ■ About how to read this document

This document consists of the following contents:

1. Prior to use	Describes precautions, checking for articles contained in the box, the name and function of each section and the assembling and installation of the product. Before installing and using the scale for the first time, be sure to read this document.
2. How to carry the scale	Describes how to carry the scale safely.
3. Maintenance	Describes how to maintain this product.
4. Repair	Describes information on repair.
5. Taking out of service and dismantling	Describes information on taking out of service and dismantling.
Appendix	Provides necessary informations such as the specifications of this product.



# Contents

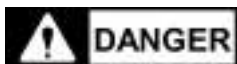
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Preface .....	i
IECEX CERTIFICATE/Korean Certificate Safety.....	ii
EU-TYPE EXAMINATION CERTIFICATE.....	ii
Important Notice .....	iv
How to use this document .....	v
Contents .....	vii
1 Prior to use .....	1
1-1 Precautions.....	1
1-2 For more accurate measurement .....	4
1-2-1 Precautions related to measuring environment.....	4
1-2-2 Precautions related to measuring table.....	5
1-2-3 Precautions related to a specimen .....	5
1-2-4 Precautions related to the main unit of a scale.....	6
1-3 Check for the articles contained in the box.....	7
1-4 Name and function of each section .....	8
1-5 Assembling and installation .....	9
1-5-1 Assembling of the scale.....	12
1-5-2 Installation of the power supply box .....	14
1-5-3 Grounding .....	19
1-5-4 Connecting to main power supply and starting up.....	20
2 How to carry the scale .....	21
3 Maintenance.....	22
3-1 Care and cleaning method.....	22
3-2 How to wash the weighing section and indicator section with water .....	22
3-3 How to replace the fuse .....	23
3-4 Maintenance of earth connection .....	23
3-5 Troubleshooting.....	24
4 Repair.....	25
5 Taking out of service and dismantling .....	25
Appendix.....	26
Appendix 1 Specification .....	26
Appendix 1-1 Metrological specification.....	26
Appendix 1-2 Common specification .....	26
Appendix 1-3 The combination of the interface option.....	27
Appendix 1-4 Outline drawing.....	28

(Memo)


# 1 Prior to use

## 1-1 Precautions





	<p>■ <b>No disassembling or modification.</b> Unless specifically stated in this document, disassembling or modification of this product, mounting or removal of an undesignated component no longer maintains the function of the safety structure or explosion-proof structure, leading to a serious accident or physical injury.</p>
	<p>■ <b>Battery replacement absolutely unacceptable.</b> Never replace the battery built in this product by any means. The function of the explosion-proof structure will be no longer maintained, leading to a serious accident or physical injury.</p>
	<p>■ <b>Install the power supply box in “non dangerous location”.</b> Installing the power supply box in a dangerous place will cause trouble such as an explosion or a fire.</p>
	<p>■ <b>Connect the grounding terminal and cables properly.</b> Improper connection of the grounding terminal and cables will cause trouble such as an explosion or a fire.</p>
	<p>■ <b>Keep Scale cable and DC power supply cable away from electromagnetic source.</b> It may generate dielectric EMF, which degrades the intrinsic safety explosion-proof property of the product and may lead to an explosion.</p>
	<p>■ <b>Install Scale cable and DC power supply cable properly so as to prevent dielectric EMF.</b> Improper installation of them may impair the intrinsic safety performance of the product due to the electrostatic induction, and electromagnetic induction and may lead to an explosion.</p>
	<p>■ <b>Do not replace fuse, optional slots of the power supply box or access to the AC power terminal when the AC power cord is connected to the mains power.</b> That may cause an electric shock, short-circuiting or failure. Make sure disconnect from the AC mains or shut down the AC mains before accessing to those parts.</p>
	<p>■ <b>Do not connect the cables to the power supply box with its connector or jack being wet.</b> That may cause an electric shock, short-circuiting or failure.</p>
	<p>■ <b>Do not wet the power supply box or handle it with wet hands.</b> That may cause an electric shock, short-circuiting or failure.</p>
	<p>■ <b>Do not expose the power supply box to dust.</b> That may cause an electric shock, short-circuiting or failure.</p>
	<p>■ <b>Do not open the AC connector cover unless the power supply box is installed as a built-in unit on a distribution board or other enclosure of which access is permitted to the trained and authorised persons only.</b> That may cause an electric shock, short-circuiting or failure.</p>



 **WARNING**

	<p>■ <b>Do not move the device with a sample to be loaded on the scale.</b> That may cause the sample to fall from the weighing pan, leading to a physical injury or destruction of the article.</p>
	<p>■ <b>Do not use the product on an unstable table or a place that is subject to vibration.</b> That may cause the article to fall from the weighing pan, leading to a physical injury or destruction of the article. Besides inaccurate weighing may result.</p>
	<p>■ <b>Do not place an unstable sample on the weighing pan.</b> The sample may fall down and cause injury. Put an unstable article in a container (tare) before weighing it.</p>
	<p>■ <b>Do not use the product with the enclosures, cables, connectors or any external parts being damaged.</b> If those parts have damaged, be sure to disconnect the power supply box from mains power supply, then ask the store where you purchased the product or our sales department for repair. Keeping using the product may result in an explosion or fire. In addition, do not ever try to repair it for yourself, or very dangerous situation is likely to occur.</p>
	<p>■ <b>Do not use the product in an abnormal condition.</b> If it should happen that an abnormal event such as smoking or unusual odor occurs, be sure to disconnect the power supply box from mains power supply, then ask the store where you purchased the product for repair. Keeping using the product may result in an explosion or fire. In addition, do not ever try to repair it for yourself, or very dangerous situation is likely to occur.</p>

 **CAUTION**

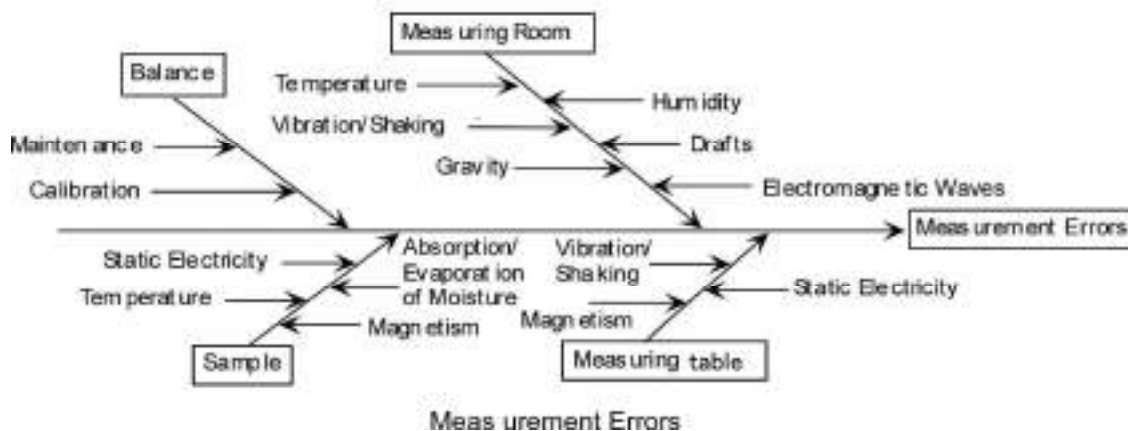
	<p>■ <b>Do not move the scale holding its weighing pan or pan base.</b> That may cause base unit to fall, leading to a physical injury or malfunction of the scale itself. Be sure to hold the base unit to move it.</p>
	<p>■ <b>Carry and install properly according to this manual.</b> This product is heavy, so improper carrying or installation may cause injury or failure.</p>

## Note

	<p>■ <b>Do not use the product where wind from an HVAC equipment directly applies.</b> Accurate weighing may be impeded due to the fluctuation of surrounding temperature.</p>
	<p>■ <b>Do not use the product where there is direct sun.</b> Accurate weighing may be impeded due to the rise of internal temperature.</p>
	<p>■ <b>Do not use the product where floor is soft.</b> Accurate weighing may be impeded due to the tilting of the weighing section when an object is placed on it.</p>
	<p>■ <b>Do not use the product where there is violent fluctuation of surrounding temperature or humidity.</b> Accurate weighing may possibly be impeded. Use within a temperature range of 5 to 40 °C and below a humidity of 85% RH.</p>
	<p>■ <b>Do not connect the DC power supply cable, scale cable, or communication cable to the scale with its connector or jack being wet.</b> That may cause short-circuiting or failure.</p>
	<p>■ <b>Do not give a shock to the scale.</b> It may cause breakage or failure. Place an article to be weighed softly.</p>
	<p>■ <b>Do not let an overload situation (o-Err indication) continue.</b> It may cause breakage or failure. Remove the article to be weighed immediately.</p>
	<p>■ <b>Be sure to make adjustment at the time of installation or changing a use place.</b> There occurs an error in measurement value. For the sake of accurate measurement, be sure to make adjustment.</p>
	<p>■ <b>Check for an error periodically.</b> Use environment and chronological change cause an error in measured value, leading to an inaccurate measurement.</p>
	<p>■ <b>Install and clean in accordance this manual to maintain IP65.</b> To prevent ingress of water or dust into this product, installation/cleaning shall be done in accordance with conditions described in this manual.</p>
	<p>■ <b>Align the level of the scale without fail before use.</b> Weighing with a slanted scale causes an error, leading to an inaccurate measurement. Put the scale on a robust place.</p>

## 1-2 For more accurate measurement

To make more accurate measurement, it is necessary to lessen error-causing factors in measurement to the extent possible. Error-causing factors include not only an instrument error and performance of the scale itself but also the nature and condition of a specimen, measuring environment (vibration, temperature, humidity, etc.) and the like. These factors will directly affect measurement result in the case of a scale with high resolution capability.



### 1-2-1 Precautions related to measuring environment

Temperature/humidity	→	Try to keep the room temperature constant to the extent possible in order to avoid condensation and indication drift due to change in temperature. → Low humidity is likely to cause generation of static electricity, resulting in inaccurate measurement.
Vibration/shaking	→	It is preferable to locate a measuring room on the first floor or the basement. The higher the room is, the larger the vibration and shaking become. Therefore a highly located room is not suitable for measurement. Rooms near the railway or road side should also be avoided.
Air draft	→	Places directly exposed to air current from an air-conditioner or to direct sun generate abrupt temperature change and resultantly cause unstable weight indication, and therefore, should be avoided.
Gravity	→	The latitude and altitude of a measuring location differentiate the gravity that affects a specimen, giving a different weight indication to the same specimen.
Electromagnetic wave	→	At a location where a strong electromagnetic wave generating object is in the proximity of a scale, the scale is affected by the electromagnetic wave, making the scale unable to indicate accurate weight, and therefore, such a location should be avoided.

### 1-2-2 Precautions related to measuring table

Vibration/shaking	→ Vibrations during measurement destabilises the indication of measurement value, leading to inability to make accurate measurement. And so use of a measurement table that is robust and hardly affected by vibration is required (a vibration-proof structured table or concrete or stone-made table is suitable). In addition, placing a sheet of soft cloth or paper under the scale causes shaking or makes keeping horizontal attitude difficult, and therefore should be avoided.
	→ The measurement table should be installed in a position free from vibration to the extent possible. A corner rather than the centre of a room is less affected by vibration and therefore more suitable for installation of the scale.
Magnetism/Static electricity	→ Use of the scale on the table that is subject to magnetism or static electricity should be avoided.

### 1-2-3 Precautions related to a specimen

Static electricity	→ In general, synthetic resin- and glass-made specimens are high in electric insulation, and so easily charged electrically. Weighing an electrically charged specimen makes the indication value unstable, reducing the reproducibility of the test result. Therefore, neutralise an electrically charged specimen before measurement.
Magnetism	→ Specimens affected by magnetism show different weight in a different position of the weighing pan, reducing the reproducibility. When weighing a magnetised specimen, either eliminate the magnetism from the specimen or place a setting plate on the weighing pan to distance the specimen from the weighing mechanism of the scale so that the mechanism may not be affected by the magnetism.
Moisture absorption/Evaporation	→ Measuring a moist or evaporating (vaporising) specimen increases or decreases the indication value of the scale continuously. When this is the case, put the specimen in a container equipped with a small mouth and closely seal the mouth before measurement.
Specimen temperature	→ Difference in temperature between the specimen and the windshield interior generates convection flow within the windshield, causing a measurement error. When the specimen temperature is excessively high or low, allow the specimen temperature to stabilise at the room temperature before measurement. Also, to prevent the convection flow from arising within the windshield, make the windshield interior temperature equal to the room temperature before measurement.
	→ Measurer's body temperature also affects measurement result. Handle a specimen with tweezers instead of directly holding it with fingers and refrain from putting your hands directly in the windshield during measuring operation.

#### 1-2-4 Precautions related to the main unit of a scale


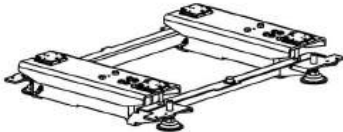

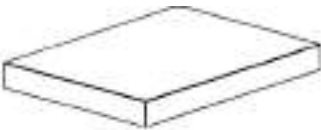
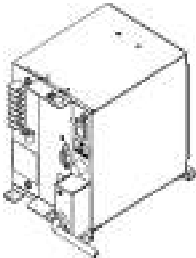

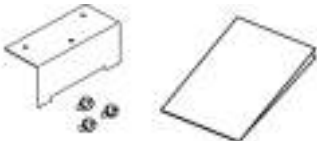
Operating precautions	→	For more stable measurement, it is recommended to energise the scale for longer than 30 minutes and load the scale a few times with a weight equivalent to the weighing capacity before measurement.
Adjustment	→	Calibrate the scale periodically with an external adjustment weight. For the sake of precise calibration, use an external adjustment weight weighing nearly equal to the weighing capacity of the scale.
	→	Energise the scale for longer than 30 minutes and load the scale a few times with a weight equivalent to the weighing capacity before measurement
	→	Adjustment is also needed in the following cases: When using the scale for the first time, When using the scale after a long period of non-use, When changing a place of installation, and When there was a large change in temperature, humidity or atmospheric pressure.
Maintenance	→	Attachment of dirt such as powder or liquid to the weighing pan or pan base will cause measurement error or unstable weight indication. For that reason, frequent cleaning of the scale is required. In cleaning the scale, take care for the dust or liquid not to enter into the scale (mechanism).



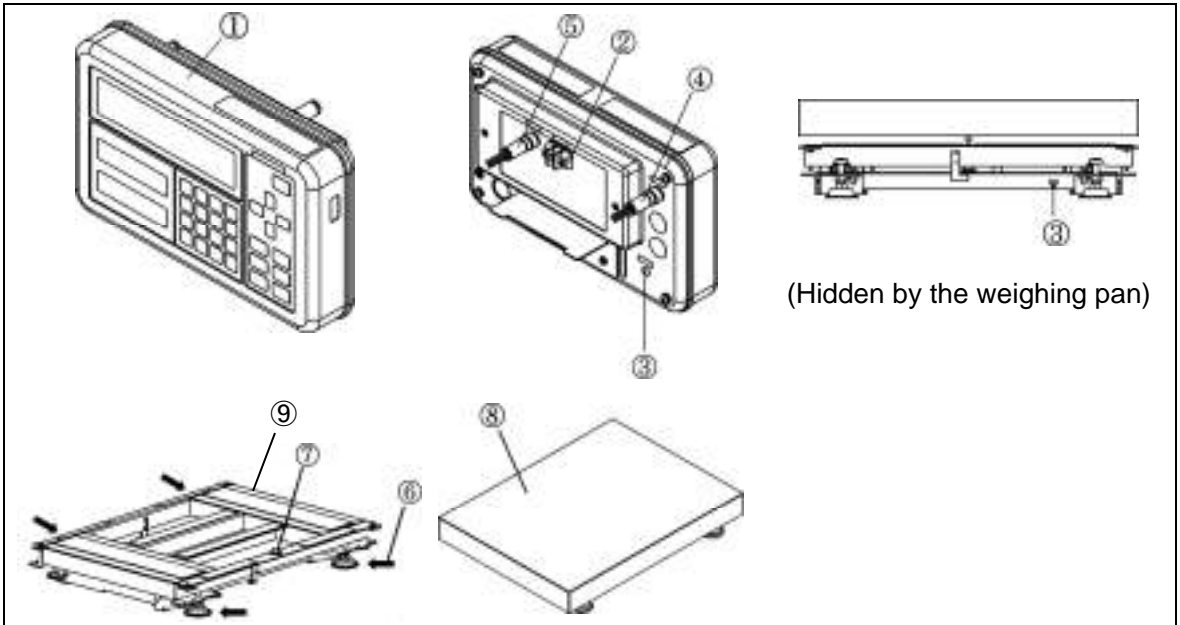
### 1-3 Check for the articles contained in the box

The package box contains the following;

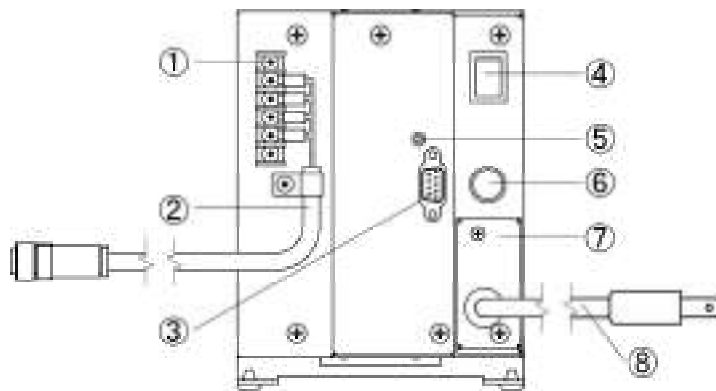
If anything missing or broken should be found, please inform the store where you purchased the product.

Part name	Q'ty	Part name	Q'ty
① Indicator 	1	② Base unit 	1
③ Pan base 	1	④ Weighing pan 	1
⑤ Power supply box, AC power cord 	1	⑥ DC power supply cable 	1
⑦ Accessories  <p>Indicator Stand fixing screw: 3pcs                      Indicator Stand: 1 pc                      Manual: 2pcs</p>			

## 1-4 Name and function of each section



- |                                |                                              |
|--------------------------------|----------------------------------------------|
| ① Indicator                    | ② Intrinsic safety grounding terminal E (IS) |
| ③ Enclosure grounding terminal | ④ Scale cable                                |
| ⑤ DC Power supply cable        | ⑥ Adjuster                                   |
| ⑦ Level                        | ⑧ Weighing pan                               |
| ⑨ Pan base                     |                                              |



- |                                                   |                               |
|---------------------------------------------------|-------------------------------|
| ① DC power supply cable connecting terminal block | ② DC Power supply cable       |
| ③ RS232C connector (D-sub 9 pin male)             | ④ Power switch                |
| ⑤ Communication confirmation LED                  | ⑥ Fuse holder (Fuse built-in) |
| ⑦ AC connector cover                              | ⑧ AC power cord               |

## 1-5 Assembling and installation



- Don't connect the power supply box to the mains power supply until all the other connections have been confirmed to be established correctly.
- The power supply box is not waterproof nor dustproof. Be sure to install the power supply box in a location where it will not be exposed to water or dust.



This product is heavy and requires two or more people to carry or install.  
Carry the pan, pan base and scale unit independently with care.

### Note

This product meets IP65 only when the scale cable, DC power supply cable, and if applicable, optional extension DC power supply cable is connected.

# 1 Installing condition

This product is a scale that can secure safety when in use even in an atmosphere of explosive gas. However, wrong installation and handling give rise to a serious danger. For safe use, refer to IEC/EN 60079-14 and IEC/EN 60079-25 to install the product properly and construct an intrinsically safe electrical system.



- DC power supply cable runs between dangerous section and non-dangerous section. Be sure to conduct the specified gas flow prevention construction for the cable pull-in section.
- Do not ever install the power supply box and the barrier in the dangerous section.
- Separate DC power supply cable and scale cable adequately from electromagnetic sources such as motors or motor power cables. Otherwise, the intrinsic safety performance may possibly be impaired due to the electrostatic induction and electromagnetic induction. Perform the wiring with sufficient clearance dimension provided.
- Install Scale cable and DC power supply cable properly so as to prevent electrostatic induction and electromagnetic induction. Do not roll them. Otherwise, the intrinsic safety performance may possibly be impaired.

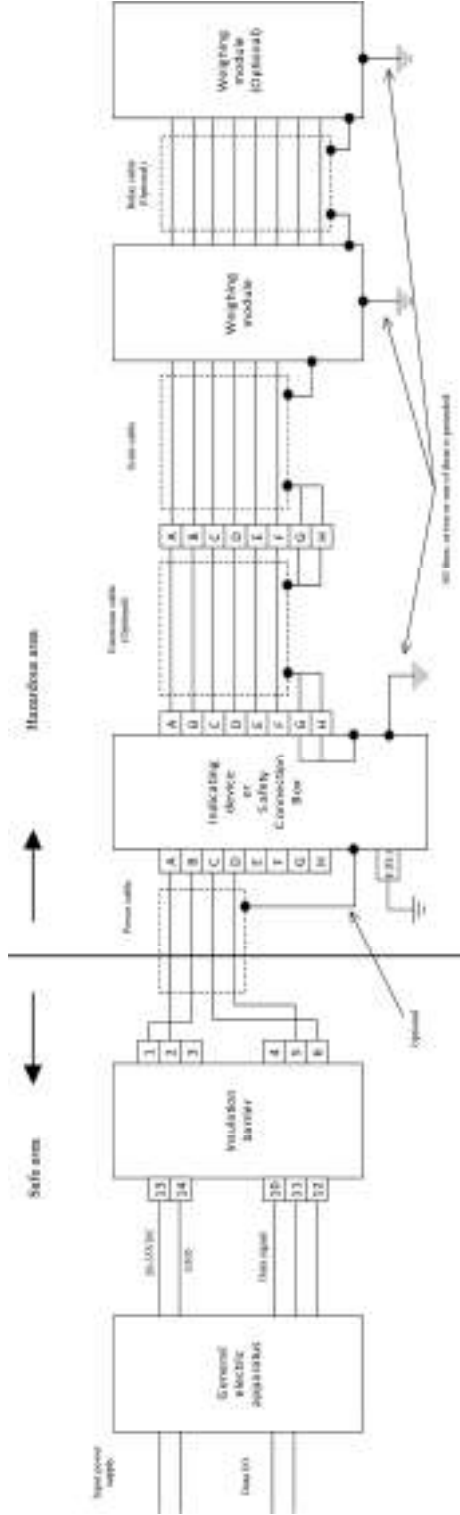


- A 5 m long DC power supply cable is included as a standard accessory. The DC power supply cable can be elongated in 5 m units on an option basis till 95 m at a maximum.



- Using other than Power supply box is not permitted for legal for trade purpose.

## ■ System construction diagram

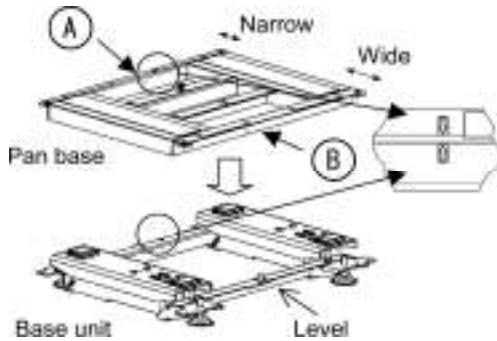


1. Insulation barrier, Indicator and Weighing Modules are to be consisted as shown in the figure above.
2. Supply circuit to the DC power supply cable (connector +DC, GND, TXD and RXD); in type of protection intrinsic safety Ex ia IIB, only for connection to a certified intrinsically safe circuit, with the following maximum values:
  - U<sub>i</sub> = 20 V, I<sub>i</sub> = 139 mA, P<sub>i</sub> = 0.46 W, C<sub>i</sub> = 0.21 μF, L<sub>i</sub> = 0.
  - Certified product as [Ex ia Ga] IIB or higher grade
  - Maximum load rating: Capacitance ≥ 1.41 μF, Inductance ≥ 1.77 mH
3. Conditions of the General Electric Apparatus:
  - \* The barrier built into the power supply box meets the above conditions.
  - \* The internal voltage of the device shall not be beyond 250 Vac, 50/60 Hz, 250Vdc at either normal or the abnormal condition.
  - \* The power supply box meets the above conditions.

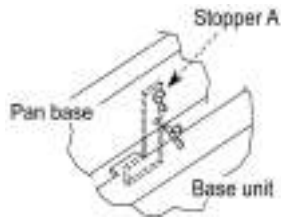
4. The intrinsically safe apparatus, related equipments and connecting wires should be installed appropriately so as not to impair the explosion proofness by electrostatic induction or electromagnetic induction.

## 1-5-1 Assembling of the scale

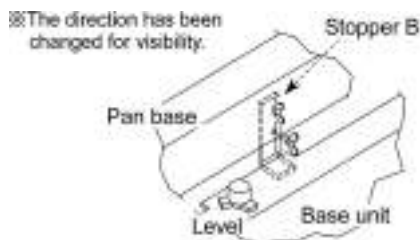
### 1 Attach the pan base to the base unit.



#### “A” Attaching stopper A



#### “B” Attaching stopper B



(1)

Remove the stopper A and B.

(2)

The reference to the figure on the life.

Place the pan base to the base portion to fit the label of the arrow.

(3)

Place the pan base on the base unit and lightly move it. If the play is about 1mm when you move it, has been fitted in place normally.

(4)

Install the stopper A and B.

(Stoppers prevent the weighing pan or pan base from jumping up if one side of the weighing pan is subjected to an extremely strong shock.)

(5)

Attach stopper A from the pan base and insert the tip of the stopper into the base unit.

(6)

Fix it in place with thumbscrews (two points).

(7)

Attach stopper B from the pan base and insert the tip of the stopper into the base unit.

(8)

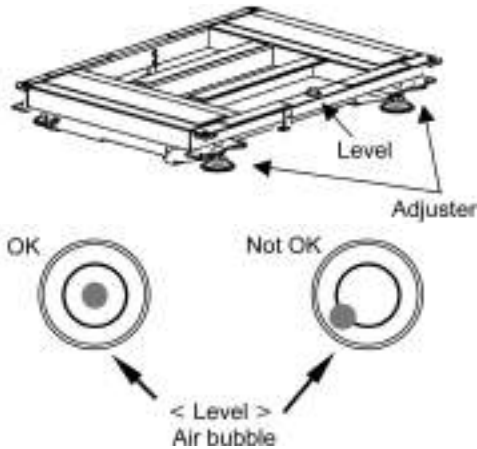
Fix it in place with thumbscrews (two points).



The base unit and pan base are heavy so handle them with care.

### 2 Place the scale on a flat surface.

### 3 Adjust the level.



(1)

Adjust the inclination of the weighing section using the adjusters. Move the adjusters until the air bubble in the level is within the circle. There are four adjusters (front, rear, left, and right).

(2)

Once the air bubble in the level is within the circle, lightly push the four corners of the scale to check that there is no play.

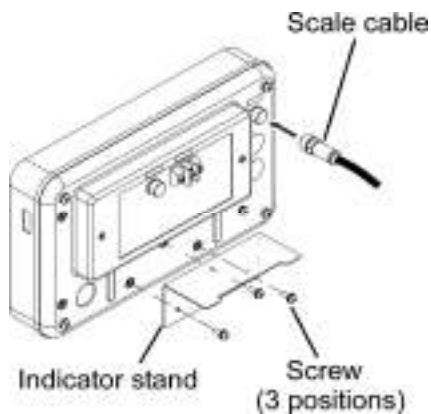
### 4 Place the weighing pan.



(1)

Place the weighing pan on the pan base.

### 5 Connection of scale cable and mounting of the indicator stand.



(1)

Mounting of the indicator stand.

(2)

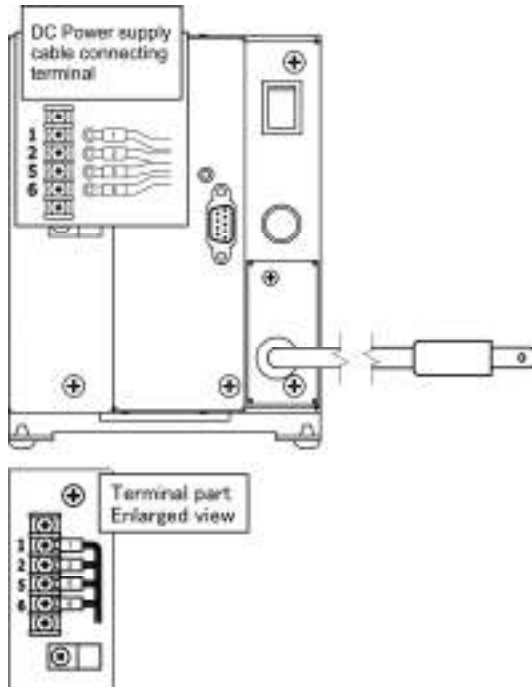
Connection scale cable.

#### Note

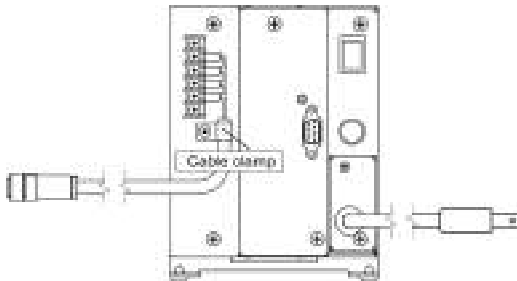
Secure the scale cable in place to prevent exposure to dust and water prevention.

## 1-5-2 Installation of the power supply box

### 1 Connect the DC power supply cable.



### Fix the DC power supply cable.



(1)  
Remove the screws with a Phillips-head screwdriver.

(2)  
Connect the DC power supply cable.

Power supply box marking	DC Power supply cable no.
1	1
2	2
5	5
6	6

(3)  
Tighten the screws to fix it.

(4)  
Fix the DC power supply cable on the cable clamp located under the DC power supply cable connecting terminal block.

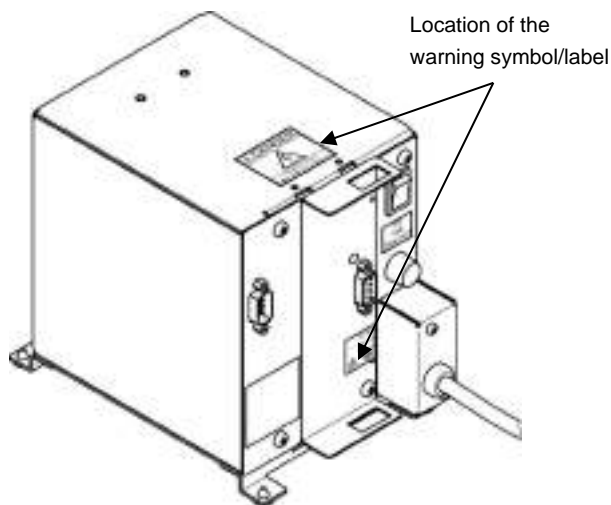


## 2 Install as a field wiring terminal box.

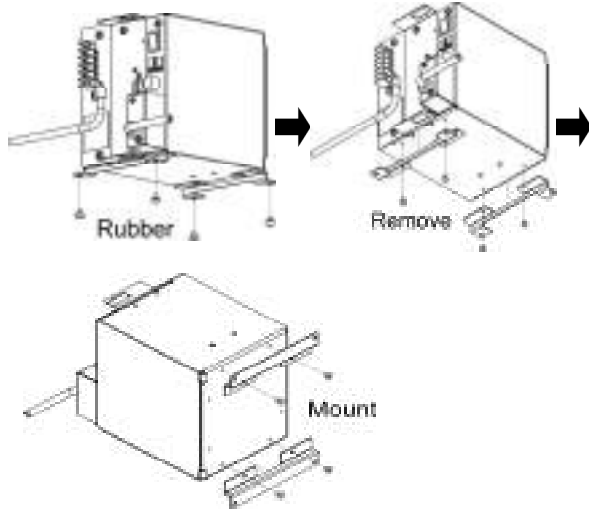


### HAZARDOUS VOLTAGE

- The power supply box also can be installed/accessed in following way only when it is installed as a built-in unit on a distribution board or other enclosure of which access is permitted to the trained and authorised persons only.
- Before beginning this operation, make sure to unplug the AC plug or shutdown the AC mains.
- Do not ever install the power supply box by this procedure if it is not protected nor accessibility is not limited.
- Be sure not to mistake the connection of AC N, L and ground.
- Secure insulation to the each line of the AC power cord to avoid short circuit or electric shock.
- Use the AC power cord of proper ratings.
- Install the unit in such a way that the AC plug of the AC power cord is not blocked so as to be able to access to shut off the power.



**Fix the power supply box on the board.**



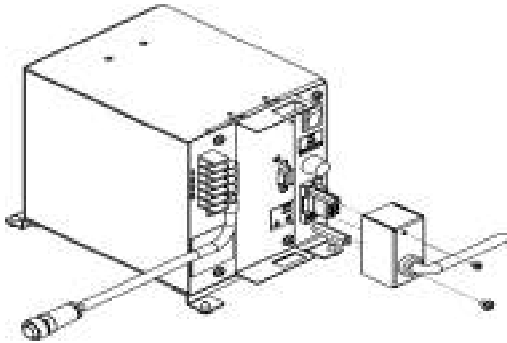
(1)

To fix the power supply box on the board, replace 4 rubber feet of the mounting leg with M4 screws or bolts.

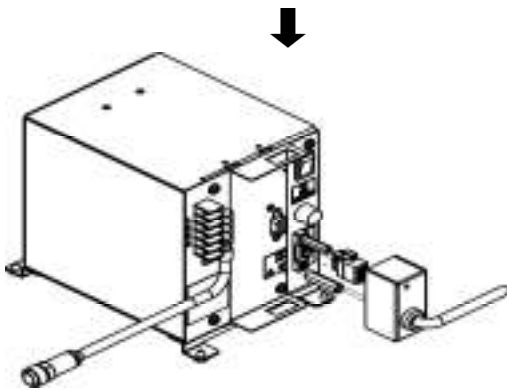
(2)

You can also change the mounting direction by shifting the mounting leg as shown in left.

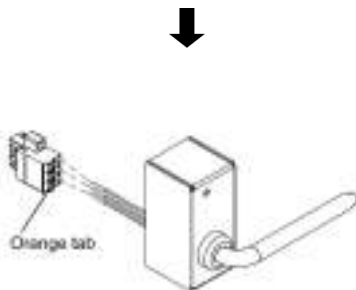
**Remove the AC connector cover and replace the AC power cord as needed.**



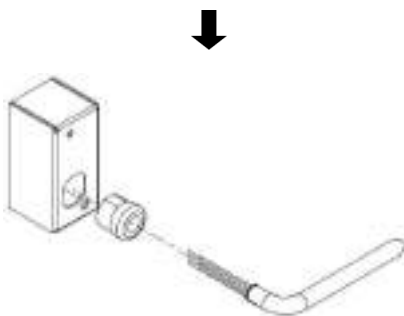
(1)  
Remove two screws of AC connector cover and lift the cover up.



(2)  
Loosen the 2 screws fixing the connector by flat-blade screwdriver and pull the connector.

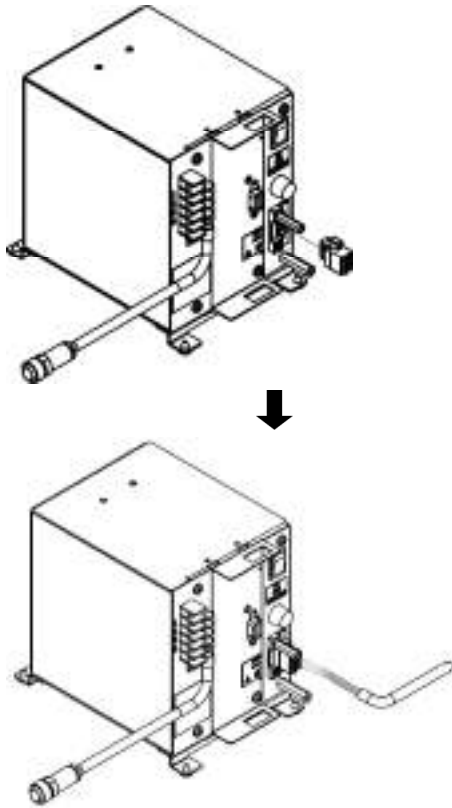


(3)  
Pull the cable out from the connector while pushing the orange tab by flat-blade screwdriver.



(4)  
To reuse the AC power cord, remove the cable bush on the AC connector cover by a plier and pull the cable out form the cover.

## Fix the AC power cord.



(1)  
Mount the connector on the Power supply box by tightening the 2 screws.

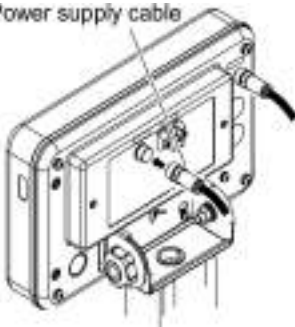
(2)  
Insert AC power cord all the way seated while pushing the orange tab of the connector by flat-blade screwdriver. When the cable end is treated with rod terminals, it can be inserted without pushing the tab.  
About the cable end treatment to insert to the connector, please refer to the website of the manufacturer of the connector or contact to your local dealer.

### Note

Manufacturer: PHOENIX CONTACT  
Model number:  
FKC 2,5/ 3-STF-5,08 1873210  
or  
FKCN 2,5/ 3-STF-5,08 1754801

## 3 Connect the DC power supply cable to the indicator.

DC Power supply cable



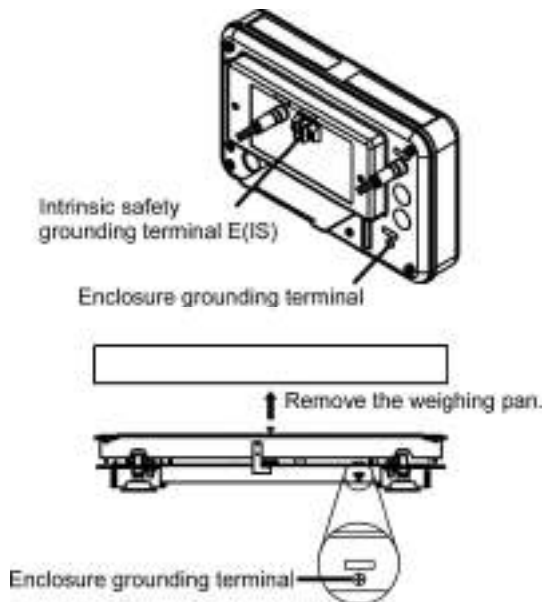
(1)  
Connect the DC power supply cable to the port at the back of the indicator and tighten the connector screw to fix the DC power supply cable.

### Note

Tighten the cable securely for protection against dust and water.

## 1-5-3 Grounding

### 1 Connect grounding terminals.



In this product the internal circuit is electrically connected with the enclosure.

#### **CAUTION**

For the purpose of safe use be sure to observe the following grounding conditions in grounding this product.

- (1) Ground the Intrinsic safety grounding terminal E(IS)
- (2) Ground the Enclosure grounding terminal(s) for the enclosure(s).

#### **CAUTION**

- Be sure to use a screw attached to the terminal.
- Be sure to ground at least one of the Enclosure grounding terminal.

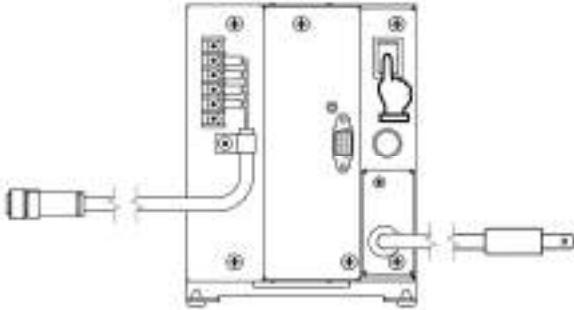
### 2 Check for grounding continuity.

Confirm that it is properly grounded by using earth tester.

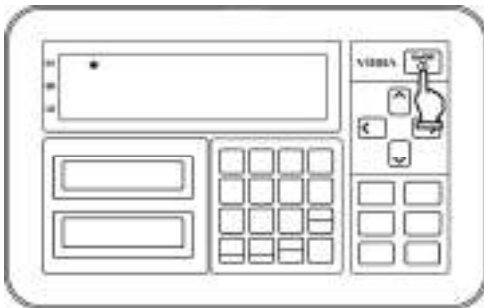
## 1-5-4 Connecting to main power supply and starting up

**1** Connect the AC power cord of the power supply box to main power supply.

**2** Turn on the Power switch of the power supply box



**3** Turn on the scale



- Confirm that all the other connection have established before connecting to main power supply.

Turn on the Power switch of the Power supply box.

The LED on the switch lights up.

A “\*” mark appears on the main display of the indicator and the scale goes into standby mode.

Press the [On/Off] key to turn on the scale. After self-check sequence, the scale starts up.

### Note

Do not press any key during the self-check.

## 2 How to carry the scale



- This product is heavy and require two or more people to carry or lift-up.
- Make sure not to carry the scale with the cable hanging.
- Make sure not to carry the scale with weighing object on the weighing pan.
- Wearing the safety shoes and work gloves is highly recommended.
- Using a hand truck trolley is highly recommended. When using it, lay cushioning material on it to prevent impact to the scale.

### Note

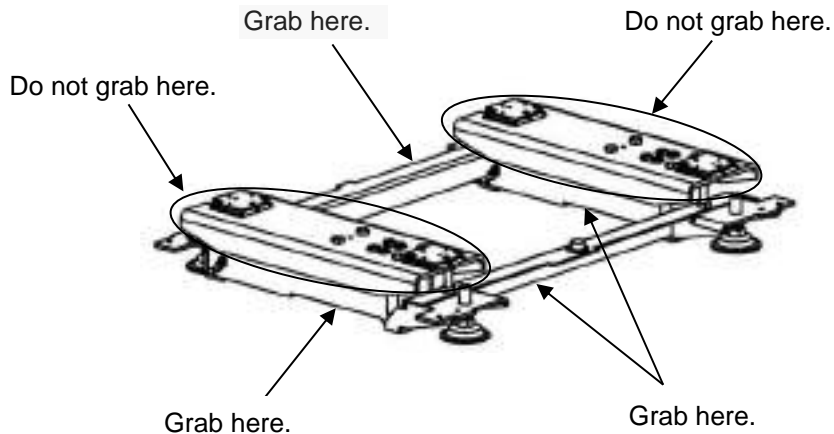
Be careful not to apply excessive force to or impact the scale.

This product is heavy and should be carried with care.

- Carry the weighing pan, pan base and base unit independently.

Refer to "1-5 Assembling and installation of the product" to remove the weighing pan and pan base.

- Holding position to lift up and carry: Bottom surface of the base unit.



# 3 Maintenance

Keep the following in mind in maintaining this product.



- Disconnect this product from mains power supply before disconnecting any parts or connectors in the hazardous area.
- The power supply box is not waterproof. Be sure not to get it wet.

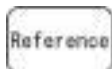
## Note

- (1) This product meets IP65 only when the scale cable, DC power supply cable, and if applicable, optional extension DC power supply cable is connected.
- (2) Do not scratch the resin parts of the product using a sharp object, hard brush, or other such hazardous tools.
- (3) Do not remove any parts other than those described in this chapter.
- (4) Do not use volatile solvents to resin parts of the balance. If volatile solvents are used to clean the metal parts, care should be taken to ensure that they never contact the resin parts.
- (5) Do not submerge the product in water.

## 3-1 Care and cleaning method

Wipe dirt with dry and soft cloth off the weighing section and the indicator section.

## 3-2 How to wash the weighing section and indicator section with water



In case of heavy soiling, neutral detergents can also be used for cleaning. If this is the case, the detergent should be wiped off with a damp cloth.

- 1** Disconnect the power supply box from AC mains.
- 2** Remove the weighing pan and pan base, then rinse off the dirt under a stream of water.
- 3** Wipe off any areas that have not been washed away with a soft cloth dampened with water.
- 4** Wipe the each parts with a soft, dry cloth and dry them thoroughly.

## Note

- Spilled liquids remained on the scale, weighing pan and pan base will affect the weighing accuracy.

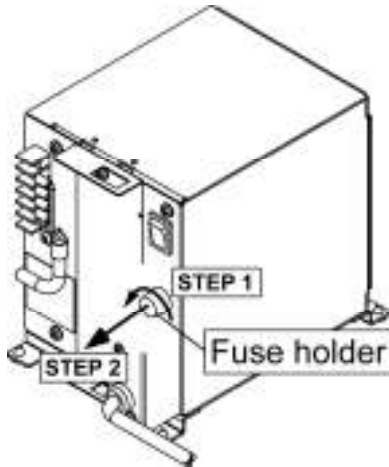


### 3-3 How to replace the fuse



Before beginning this operation, make sure to unplug the AC plug or shutdown the AC mains.

#### 1 Replace the fuse



- (1)  
Turn the fuse holder cap counterclockwise.
- (2)  
Replace to a new fuse and tighten the cap securely.



Do not use fuses other than those specified.

Fuse specifications:

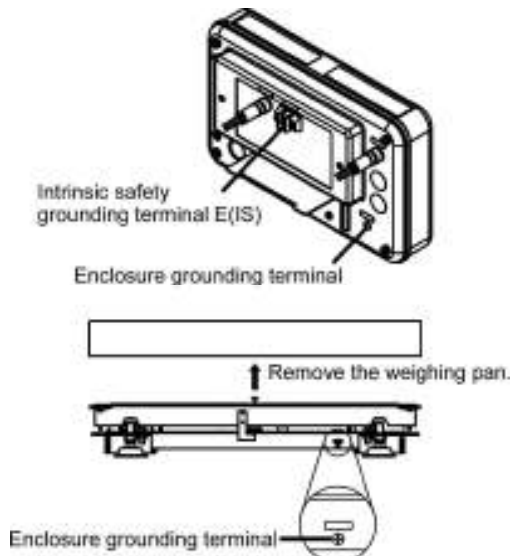
- Rating: 250 V $\sim$  / 2 A
- Type: Time-lag
- IEC 60127-2 compliant
- Dimension: 5 mm x 20 mm

### 3-4 Maintenance of earth connection



Earth connection has a significant impact on explosion-proof performance. Make sure to inspect it periodically.

#### 1 Check grounding terminals.



- (1) Make sure that there is no looseness, rust or damages on the ground terminals. Retighten the terminal screws as necessary.  
If ground terminals are damaged in any way, immediately disconnect the product from the main power supply and contact your dealer.
- (2) Confirm that it is properly grounded by using earth tester.

### 3-5 Troubleshooting

Symptom	Cause	Contermeasure
The earth terminals are rusted or damaged, and the grounding cannot be secured.	<ul style="list-style-type: none"> <li>• Damage caused by chemicals or by physical impact or abrasion</li> </ul>	<ul style="list-style-type: none"> <li>• When the damaged terminal is one of the enclosure ground terminals, try to connect it with the enclosure ground terminal at another location.</li> <li>• When all of the enclosure found terminals are damaged or Intrinsic safe ground terminal is damaged, contact the store you purchased the product.</li> </ul>
Enclosure, weighing pan, connectors or cables are damaged	<ul style="list-style-type: none"> <li>• Damage caused by chemicals or by physical impact or abrasion</li> </ul>	<ul style="list-style-type: none"> <li>• Contact the store where you purchased the product.</li> </ul>
"*" symbol does not appear on the display of the Indicator when the power is supplied from Power supply box.	<ul style="list-style-type: none"> <li>• Poor connector contact or forgotten connection</li> <li>• Cable disconnection</li> <li>• Blown fuse</li> <li>• Internal short contacts</li> <li>• System failure</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the lamp on the switch of the power supply box is lit. When it is not lit, contact the store where you purchased the product.</li> <li>• Confirm that all cables are properly connected.</li> <li>• If the above solutions don't work, contact the store where you purchased the product.</li> </ul>
Err001 to Err099 is displayed and the scale does not boot properly.	<ul style="list-style-type: none"> <li>• System error</li> </ul>	<ul style="list-style-type: none"> <li>• Take a note of the error number and notify the store where you purchased the product.</li> </ul>
Err100 to Err104 or Err120 to Err124 is displayed and the scale does not boot properly.	<ul style="list-style-type: none"> <li>• Communication error</li> </ul>	<ul style="list-style-type: none"> <li>• Disconnect the product from mains power supply and check the cable connection.</li> <li>• Keep cables away from noise sources.</li> <li>• If the above solution doesn't work, take a note of the error number and notify the store where you purchased the product.</li> </ul>
Err200 is displayed and the scale does not boot properly.	<ul style="list-style-type: none"> <li>• Internal processing error</li> </ul>	<ul style="list-style-type: none"> <li>• Take a note of the error number and notify the store where you purchased the product.</li> </ul>
Err703 or Err704 is displayed and the scale does not boot properly.	<ul style="list-style-type: none"> <li>• Some key was pressed at the time of starting from the standby status.</li> </ul>	<ul style="list-style-type: none"> <li>• Do not press any keys while the scale is in the process of starting from the standby status.</li> </ul>
Err705, Err706 is displayed and the scale does not boot properly.	<ul style="list-style-type: none"> <li>• The initial zero adjustment was not completed at the time of starting from the standby status.</li> <li>• Out-of-range initial zero adjustment error.</li> </ul>	<ul style="list-style-type: none"> <li>• Check for any wind or vibration around the weighing unit.</li> <li>• Check for any objects left on the weighing pan.</li> <li>• If the above solutions don't work, take a note of the error number and notify the store where you purchased the product.</li> </ul>
Err712 is displayed and the scale does not boot properly.	<ul style="list-style-type: none"> <li>• User information calling CRC error</li> </ul>	<ul style="list-style-type: none"> <li>• Turn on the product again.</li> <li>• If the above solution doesn't work, take a note of the error number and notify the store where you purchased the product.</li> </ul>

## 4 Repair

---

User repair of this product is not allowed. If repair is needed, contact your dealer.



Disconnect this product from mains power supply before disconnecting any parts or connectors in the hazardous area.

When the product comes back from repair by the dealer, reinstall it according to “1-5 Assembling and installation”.

## 5 Taking out of service and dismantling

---



(1) Disconnect this product from mains power supply before disconnecting any parts or connectors in the hazardous area.

(2) Do not open the enclosure in the hazardous area.



Do not dismantle the product beyond its original state of purchase.

Disassemble the equipment by performing steps 1-5 in reverse order.



### ■For proper disposal




This product including accessories may not be disposed of in domestic waste in conformance with the specific requirements in your country, such as the European Directive 2012/19/EU on waste electrical and electronic equipment (WEEE).

When you dispose of this product, please contact your local authorities or dealer and ask for the correct method of disposal.


# Appendix

## Appendix 1 Specification

### Appendix 1-1 Metrological specification

Model name	Max (g)	 Min (g)	 e (g)	d (g)	 Accuracy class	Weighing pan size (mm)
FZ150K1GFEx	150000	50	10	1	II	600 x 800
FZ300K1GFEx	300000	50	10	1	II	

### Appendix 1-2 Common specification

Weighing system	Tuning fork vibration type	
Protection class	IP65	
Main unit weight (NET)	Weighing section	Approx 53 kg
	Indicator section i02	Approx 1.7 kg
	i03	Approx 1.8 kg
	Power supply box S Power supply box M	Approx 2.6 kg Approx 2.9 kg
Package weight (GROSS)	FZ150K1GFEx, FZ300K1GFEx	Approx 65 kg
	Power supply box S	Approx 3.6 kg
	Power supply box M	Approx 3.9 kg
Standard cable length	AC power cord EU / UL	3 m / 5 m
	DC Power supply cable	5 m
	Scale cable	5 m
Operating temperature and humidity	Temperature: Weighing section and Indicator section: +5 °C to +40 °C Power Supply Box: 0 °C to +40 °C Humidity: 85%RH or lower (no condensation nor frost)	
Power source and ratings	Dedicated power supply box: - Input rating: 100 to 240 V ~ ± 10%, 50/60 Hz - Maximum power consumption: 25 VA typical - Output: 8 to 12 V 	
Altitude	2000 m or less above sea level	
Overtoltage category	II	
Pollution degree	Indicator and weighing section: 3 Power Supply Box: 2	
Location of use	Indoor use only	
EMC	Immunity: Industrial electromagnetic environment Emission: Class B	
Option	FJ pole stand FJ table stand Extension DC power supply cable (in 5 m units, max. 95 m) Power supply box M	
Interface Option	Additional RS232C (Simplex Output) RS422A I/O Contact Relay I/O	

### Appendix 1-3 The combination of the interface option

#### ■ Power supply box S (Standard)

Slot No.	RS232C	Additional RS232C	RS422A	Contact Relay
Slot 1	x(standard)	-	-	-
Slot 2	-	x(optional)	x(optional)	x(optional)

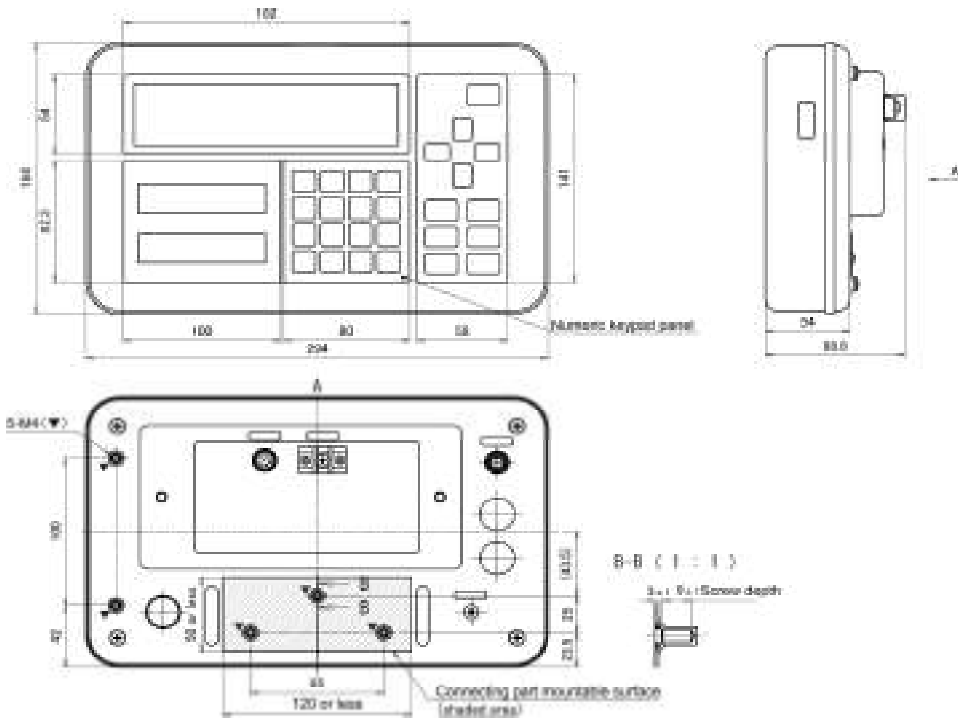
#### ■ Power supply box M (Option)

Slot No.	RS232C	Additional RS232C	RS422A	Contact Relay
Slot 1	x(standard)	-	-	-
Slot 2	-	x(optional)	x(optional)	-
Slot 3	-	-	-	x(optional)

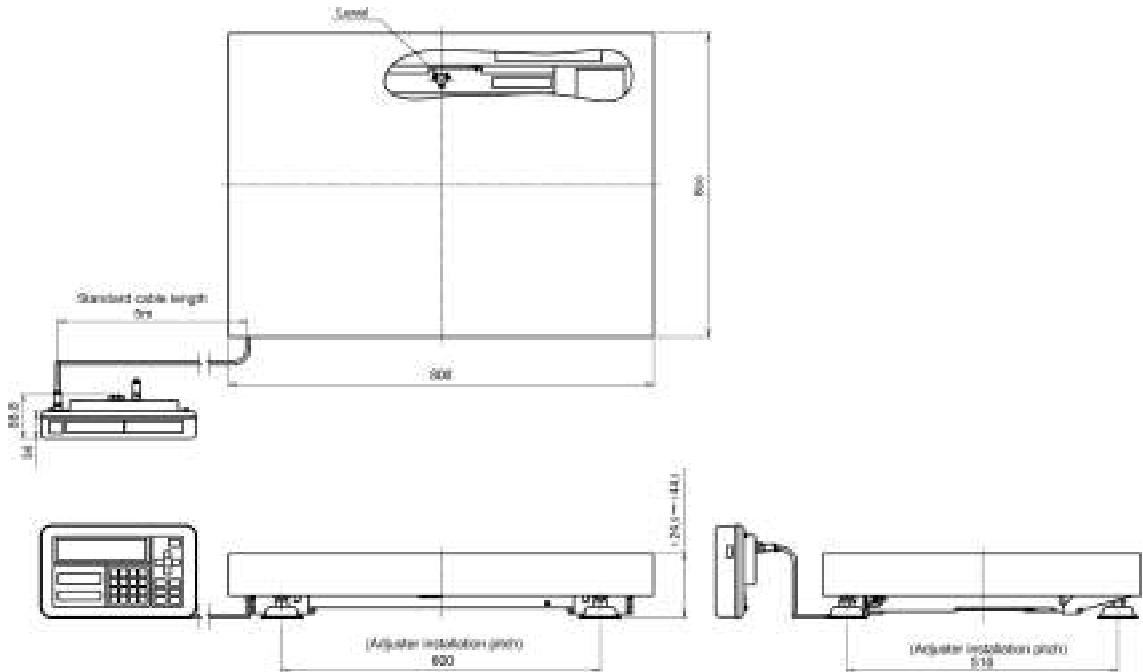
Refer to the manual of each interface option.

## Appendix 1-4 Outline drawing

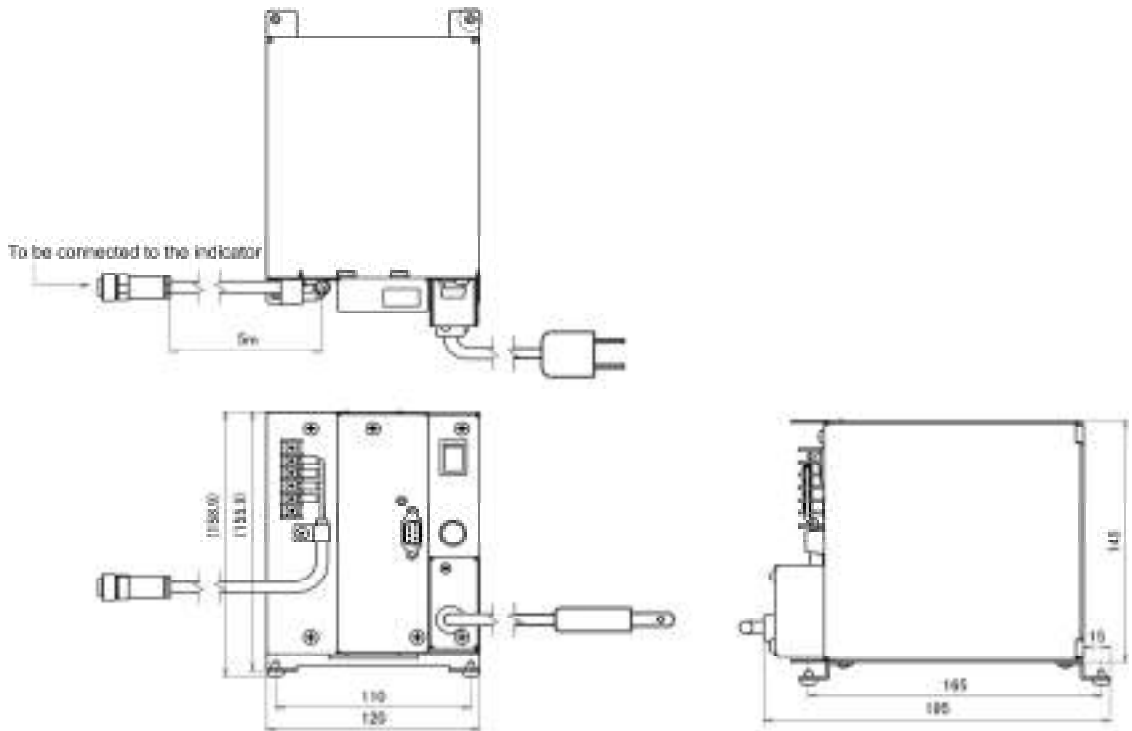
### ■ Indicator section



### ■ FZ150K1GFEx, FZ300K1GFEx



■ Power supply box S (Standard)



■ Power supply box M (Option)

