

# Catalogue

## Precision Balance

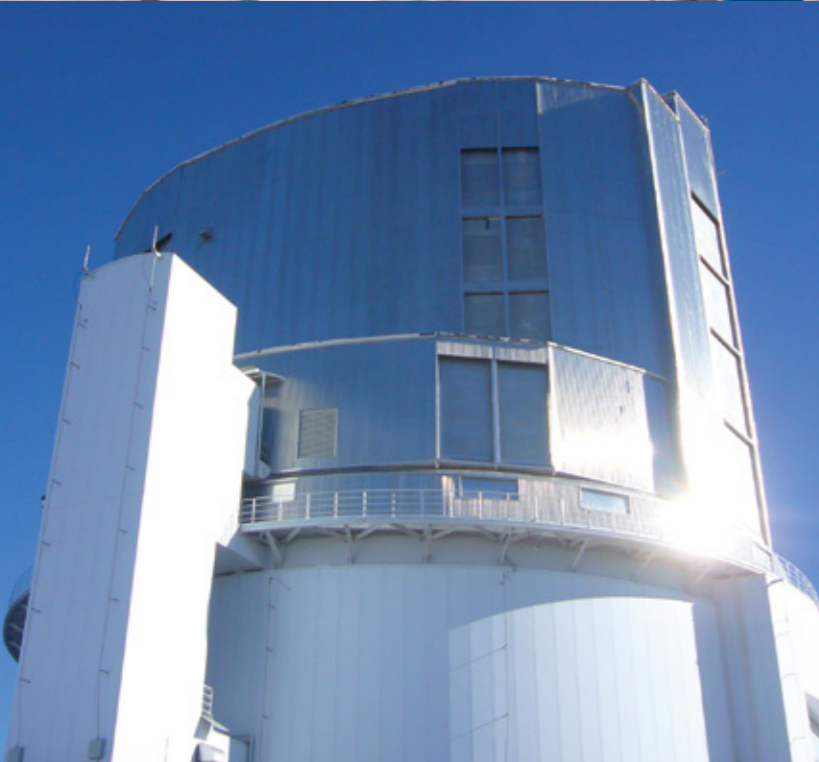


JQA-2834  
TSUKUBA



ISO 14001:2004  
ER-00130





## Sophisticated Weighing Solution for Lab Professionals

SHINKO DENSHI is one of the leading suppliers of laboratory/precision balances in the world. We provide high-quality electronic balances to wide range of business field, laboratory, pharmaceuticals, manufacturing industry, jewelers, etc...

Every kind of business market is getting more and more diversified vertically and horizontally. Furthermore time and cost efficiency are highly requested there. In this complicated business structure nothing is possible without accurate and precise measurement. It is key factor for every lab and industry professional who aims to achieve excellent performance.

As leading supplier of laboratory/precision balances our mission is to provide the accurate and precise weighing solution in sophisticated way for every professionals in all business field. For this mission we continuously devote ourselves to the development of innovative and original products in collaboration with business partners all over the world.

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"Repeatability" in each specifications table in pp.6-36 is described as standard deviation.  
"Linearity" and "Stabilization time" in each specifications table in pp.6-36 is described as typical values.



# Application Index

**Laboratory**

LF Series    LN Series    HT Series    AJ Series

**Chemical**

LN Series    CJ Series    GZ Series    HJK Series    FJ Series

**Pharmacy**

AJ Series    AB Series    SJ Series

**Industry**

LN Series    AJ Series    CJ Series    SJ Series    AB Series    HJK Series    FJ Series

**Moisture Analysis**

MD Series

**Jewelry**

LN Series    AJ Series    CT Series

**Parts counting**

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**Density Measurement**

LF Series    LN Series    HT Series    AJ Series    CJ Series

**Hazardous area**

GZ Series

**Water proof**

CJ Series    HJK Series    FJ Series

**Built-in weighing unit**

UF Series    DFB Series

Transportation    Weighing sensor

Laboratory  
Chemical  
Pharmacy  
Industry  
Moisture Analysis  
Jewelry  
Parts counting  
Density Measurement  
Hazardous area  
Water proof  
Built-in weighing unit

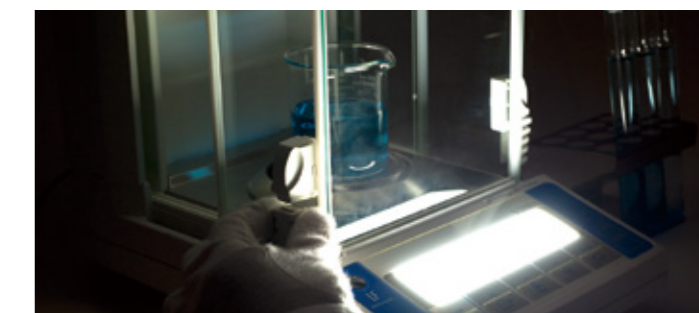


# LF series

## High Class Semi-micro and Analytical Balance

### For Lab Professionals who Create the Distinguished Achievement

VIBRA LF series provides everything lab professionals need for daily weighing works. With 0.01mg readability up to 130g weighing range and 0.1mg up to 220g, the user can experience reliable measurement operation in wide range of weighing applications ... simple weight measurement, percentage weighing, density measurement, etc... In every scene, VIBRA LF series promises excellent weighing performance which leads lab professionals to distinguished achievements.



## Specifications

| Semi-micro balance         | LF 135RCE           | LF 225DRCE          |            | LF 135R             | LF 225DR            |          |
|----------------------------|---------------------|---------------------|------------|---------------------|---------------------|----------|
| Model name                 | LF 135RCE           | LF 225DRCE          | LF 225DRCE | LF 135R             | LF 225DR            | LF 225DR |
| Capacity                   | 130g                | 92g                 | 220g       | 130g                | 92g                 | 220g     |
| Readability (d)            | 0.01mg              | 0.01mg              | 0.1mg      | 0.01mg              | 0.01mg              | 0.1mg    |
| Verification intervals (e) | 1mg                 | 1mg                 | 1mg        | -                   | -                   | -        |
| Repeatability              | 0.02mg              | 0.02mg              | 0.1mg      | 0.02mg              | 0.02mg              | 0.1mg    |
| Linearity                  | ±0.03mg             | ±0.03mg             | ±0.2mg     | ±0.03mg             | ±0.03mg             | ±0.2mg   |
| Stabilization time         | 5.0 sec.            | 5.0 sec.            | 3.0 sec.   | 5.0 sec.            | 5.0 sec.            | 3.0 sec. |
| Pan size                   | 80mm dia            | 80mm dia            |            | 80mm dia            | 80mm dia            |          |
| Calibration                | Internal & External | Internal & External |            | Internal & External | Internal & External |          |

| Analytical balance         | LF 124RCE           | LF 224RCE           | LF 124R  | LF 224R  |
|----------------------------|---------------------|---------------------|----------|----------|
| Model name                 | LF 124RCE           | LF 224RCE           | LF 124R  | LF 224R  |
| Capacity                   | 120g                | 220g                | 120g     | 220g     |
| Readability (d)            | 0.1mg               | 0.1mg               | 0.1mg    | 0.1mg    |
| Verification intervals (e) | 1mg                 | 1mg                 | -        | -        |
| Repeatability              | 0.1mg               | 0.1mg               | 0.1mg    | 0.1mg    |
| Linearity                  | ±0.2mg              | ±0.2mg              | ±0.2mg   | ±0.2mg   |
| Stabilization time         | 3.0 sec.            | 3.0 sec.            | 3.0 sec. | 3.0 sec. |
| Pan size                   | 80mm dia            | 80mm dia            | 80mm dia | 80mm dia |
| Calibration                | Internal & External | Internal & External | External | External |

OIML class I approval is under working for "CE" models.

## Common Specification

Measuring system : Electro-magnetic force compensation sensor  
 Output : RS232C (D-sub 9p), USB  
 Tare : Full weighing range  
 Display : Back-lit LCD (brightness adjustable in three levels)  
 EC type approval : under working for class 1 approval

\*For options, please see page 41.







## Cross-Over sliding windshield

ViBRA LF series is equipped with “cross-over sliding” windshield which enables the user to open the right-side door by left-side knob, vice versa. The user can handle the weighing sample with right hand while he/she operates the door with left hand. It makes weighing operation in lab routines less time-consuming.

The regular calibration is highly important to assure the reliable weighing result. “Se-CAL” function in ViBRA LF series performs automatic calibration. When elapsed time or temperature shift reach to defined value, “Se-CAL” carries out the calibration fully automatically. The calibration record can be stored in the balance and output later on.



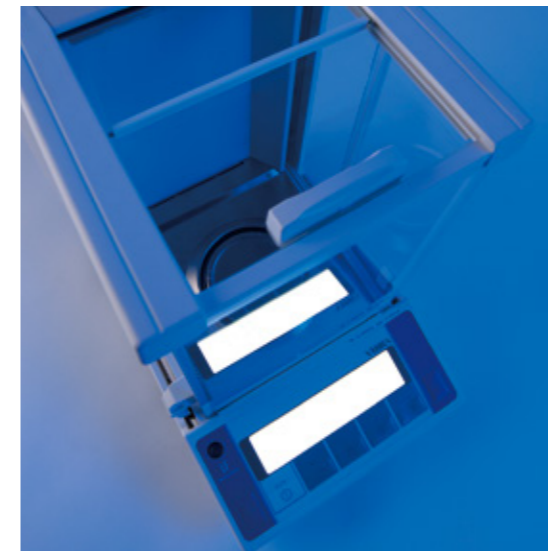
## Se-CAL



## α-Check

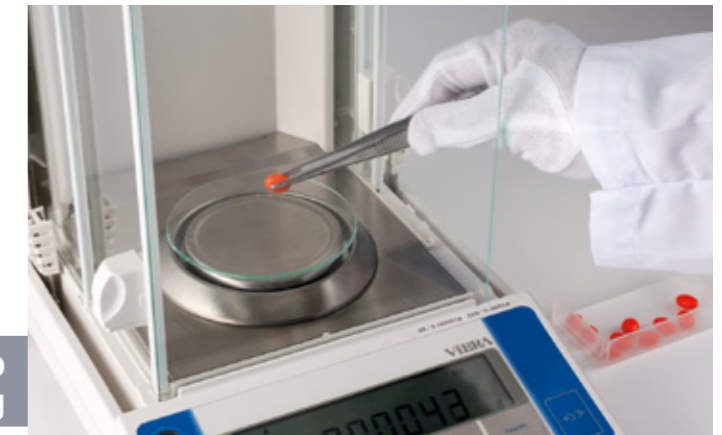
The laboratory/factory environment is changing every moment, and it affects the conditions of balance.

In  $\alpha$ -check system, ViBRA LF series gives diagnosis menu of its own conditions. Among check-items repeatability is the most fundamental parameter in laboratory balance, and the user can easily check it in this system.



## Bright LCD back light

With clear and bright back-lit LCD, the user can easily read the indication in the display. It reduces the reading errors. The brightness of back-lit can be adjusted in three levels.

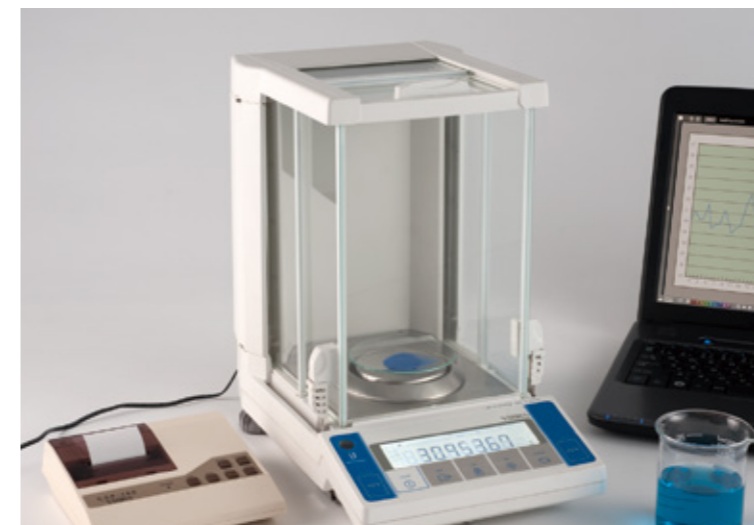


## Statistics for lab and manufacturing

Not only individual weighing result but also statistic values are frequently required in lab and manufacturing process. ViBRA LF series provides both of them. It has the function to automatically calculate the various statistical data, and to easily output to printer and PC.

## Easy RES

Stability and response speed should be correctly chosen according to environment and weighing objects. “Easy RES” offers the balance users very easy and simple way to change response speed. He/she can change response speed in three levels just with out-touch of SET key.



## Connection to outside devices

ViBRA LF series has RS232C and USB as standard and can be easily connected to the printer, PC and other outside devices. You can record the weighing results in printed and/or electric forms.



# LN series

## High Class Precision Balance Sophisticated Balance, the Professional's Choice

VIBRA LN series always offers you the complete weighing solution. The capacity ranges from 220g to 31kg, the readability from 1mg to 0.1g.

The advantage like short stabilization time, clear fluorescent display, tough housing, stylish design... VIBRA LN series can be suitable for every occasions from laboratory, light&heavy industry, and jewelers.

Laboratory  
Chemical

Laboratory  
Chemical

Industry  
Jewelry

Industry  
Jewelry

Parts  
counting

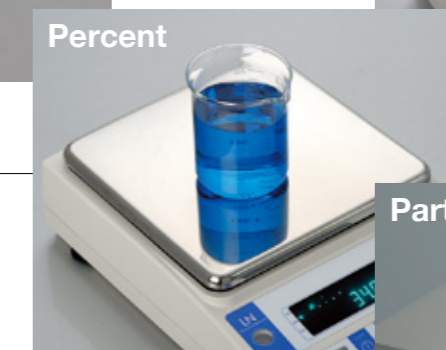
Parts  
counting

Density  
Measurement

Density  
Measurement



Density



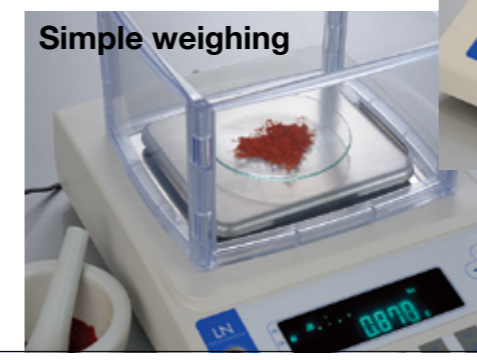
Percent



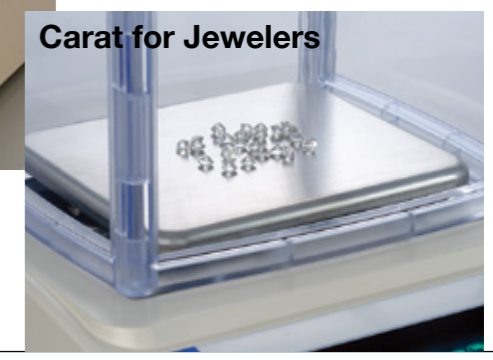
Parts Counting



Comparator



Simple weighing



Carat for Jewelers

### Specifications

| Model name                    | LN 223R<br>LN 223RCE | LN 323R<br>LN 323RCE | LN 423R<br>LN 423RCE | LN 623R<br>LN 623RCE | LN 1202R<br>LN 1202RCE | LN 2202R<br>LN 2202RCE | LN 3202R<br>LN 3202RCE | LN 4202R<br>LN 4202RCE |
|-------------------------------|----------------------|----------------------|----------------------|----------------------|------------------------|------------------------|------------------------|------------------------|
| Capacity                      | 220g                 | 320g                 | 420g                 | 620g                 | 1200g                  | 2200g                  | 3200g                  | 4200g                  |
| Readability (d)               | 0.001g               | 0.001g               | 0.001g               | 0.001g               | 0.01g                  | 0.01g                  | 0.01g                  | 0.01g                  |
| Verification intervals (e) *1 | 0.01g                | 0.01g                | 0.01g                | 0.01g                | 0.1g                   | 0.1g                   | 0.1g                   | 0.1g                   |
| Repeatability                 | 0.001g               | 0.001g               | 0.001g               | 0.001g               | 0.01g                  | 0.01g                  | 0.01g                  | 0.01g                  |
| Linearity                     | ±0.001g              | ±0.001g              | ±0.001g              | ±0.001g              | ±0.01g                 | ±0.01g                 | ±0.01g                 | ±0.01g                 |
| Stabilization time            | 2.5 sec.             | 2.5 sec.             | 2.0 sec.             | 2.0 sec.             | 2.0 sec.               | 2.5 sec.               | 2.5 sec.               | 2.5 sec.               |
| Pan size                      | 120×140mm            | 120×140mm            | 120×140mm            | 120×140mm            | 200×200mm              | 200×200mm              | 200×200mm              | 200×200mm              |
| Calibration                   | Internal & External  | Internal & External  | Internal & External  | Internal & External  | Internal & External    | Internal & External    | Internal & External    | Internal & External    |

| Model name                    | LN 223<br>LN 223CE | LN 323<br>LN 323CE | LN 423<br>LN 423CE | LN 623<br>LN 623CE | LN 1202<br>LN 1202CE | LN 2202<br>LN 2202CE | LN 3202<br>LN 3202CE | LN 4202<br>LN 4202CE | LN 6202<br>LN 6202CE | LN 8201<br>LN 8201CE | LN 12001<br>LN 12001CE | LN 15001<br>LN 15001CE | LN 21001<br>LN 21001CE | LN 31001<br>LN 31001CE |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------------------|------------------------|------------------------|------------------------|
| Capacity                      | 220g               | 320g               | 420g               | 620g               | 1200g                | 2200g                | 3200g                | 4200g                | 6200g                | 8200g                | 12000g                 | 15000g                 | 21000g                 | 31000g                 |
| Readability (d)               | 0.001g             | 0.001g             | 0.001g             | 0.001g             | 0.01g                | 0.01g                | 0.01g                | 0.01g                | 0.01g                | 0.1g                 | 0.1g                   | 0.1g                   | 0.1g                   | 0.1g                   |
| Verification intervals (e) *1 | 0.01g              | 0.01g              | 0.01g              | 0.01g              | 0.1g                 | 0.1g                 | 0.1g                 | 0.1g                 | 0.1g                 | 1g                   | 1g                     | 1g                     | 1g                     | 1g                     |
| Repeatability                 | 0.001g             | 0.001g             | 0.001g             | 0.001g             | 0.01g                | 0.01g                | 0.01g                | 0.01g                | 0.01g                | 0.1g                 | 0.1g                   | 0.1g                   | 0.1g                   | 0.1g                   |
| Linearity                     | ±0.001g            | ±0.001g            | ±0.001g            | ±0.001g            | ±0.01g               | ±0.01g               | ±0.01g               | ±0.01g               | ±0.01g               | ±0.1g                | ±0.1g                  | ±0.1g                  | ±0.1g                  | ±0.1g                  |
| Stabilization time            | 2.5 sec.           | 2.5 sec.           | 2.0 sec.           | 2.0 sec.           | 2.0 sec.             | 2.5 sec.             | 2.5 sec.             | 2.5 sec.             | 3.0 sec.             | 2.5 sec.             | 2.5 sec.               | 2.5 sec.               | 2.5 sec.               | 2.5 sec.               |
| Pan size                      | 120×140mm          | 120×140mm          | 120×140mm          | 120×140mm          | 200×200mm            | 200×200mm            | 200×200mm            | 200×200mm            | 200×200mm            | 200×200mm            | 200×200mm              | 200×200mm              | 220×250mm              | 220×250mm              |
| Calibration                   | External           | External           | External           | External           | External             | External             | External             | External             | External             | External             | External               | External               | External               | External               |

\*1 "CE" models are OIML class I and II approved. Verification interval "e" is available only in "CE" models.

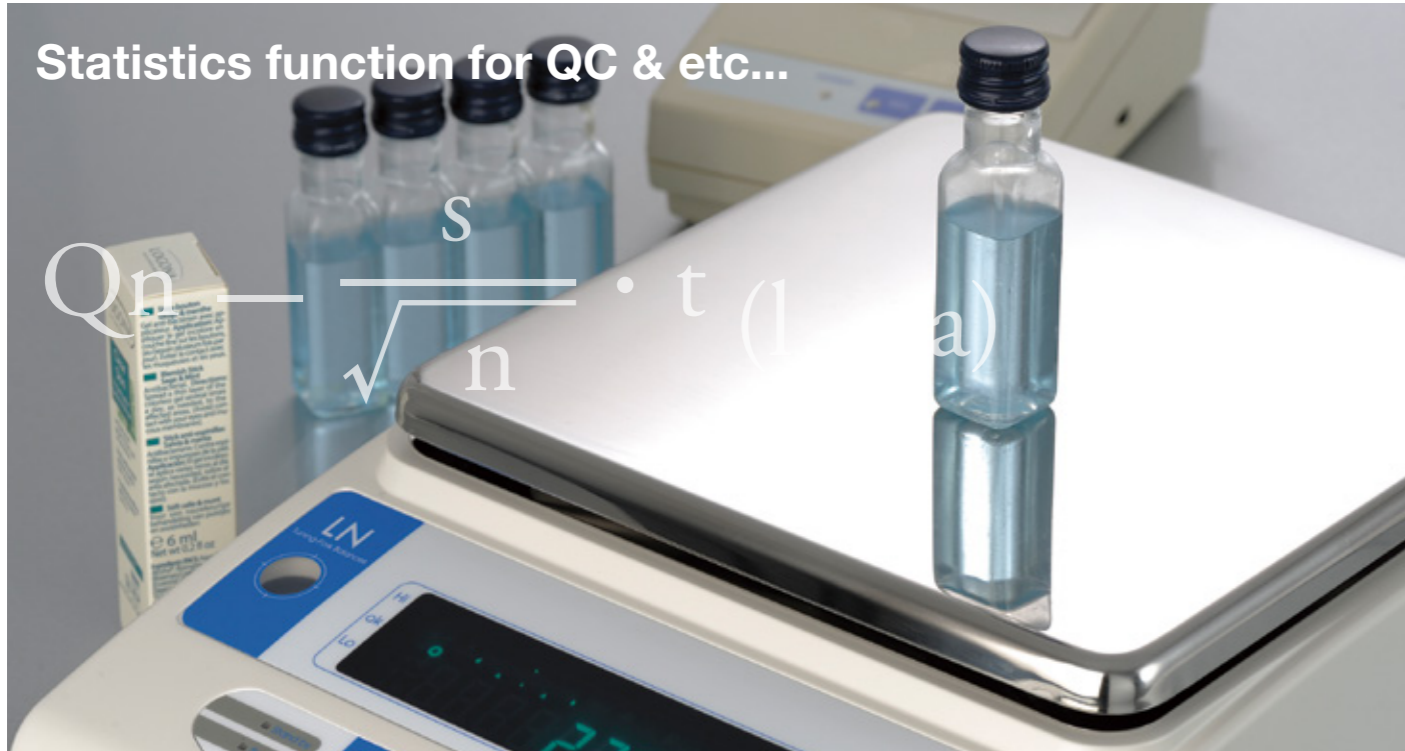
### Common Specification

- Measuring system : Tuning-fork frequency system
- Output : RS232C (2outputs)
- Tare : Full weighing range
- Display : Fluorescent display
- EC type approval : available for all models (class1 & 2)

\*For options, please see page 41.



## Statistics function for QC & etc...



VIBRA LN series has the function to automatically calculate the various statistical data from the measurement results. This data can be useful for the quality control in the assembling line and the statistical checks of prepackaged products. The data can be output to the printer and PC.



## Fluorescent display, clearly visible

The large fluorescent display is clearly visible. It can make it easy to operate the balance even in the dark location.

## Short stabilization and stable indication

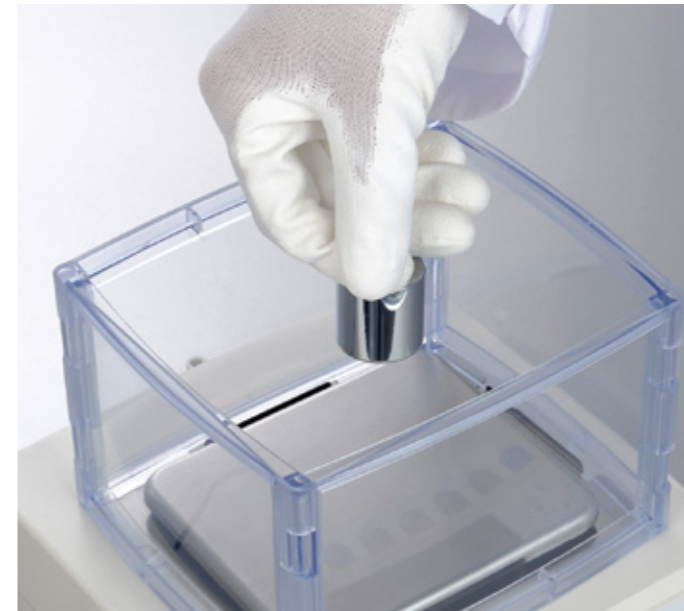
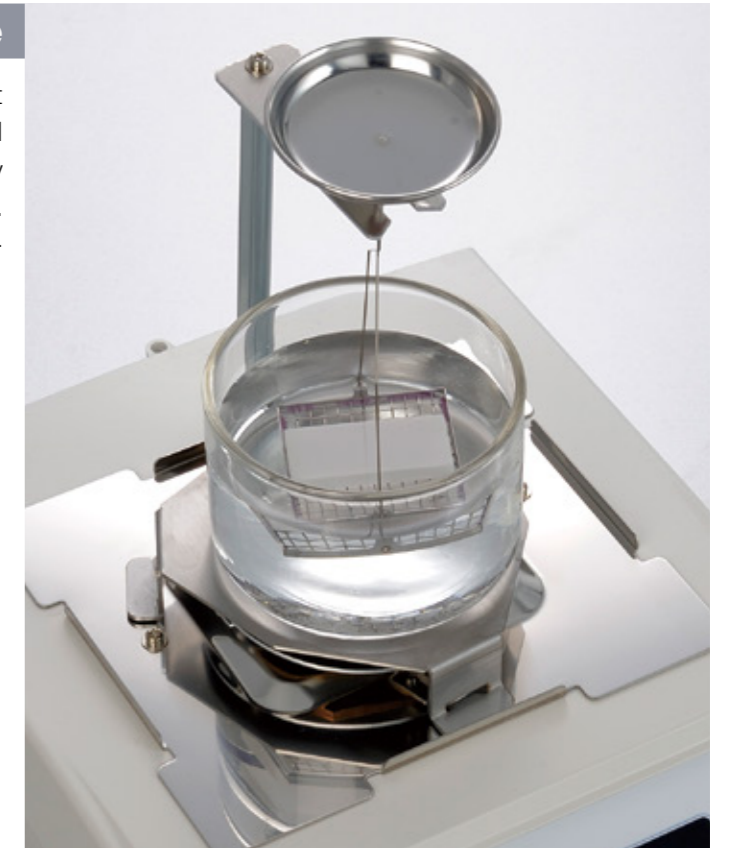
The short stabilization time and the stable indication are important for almost all the weighing operations. VIBRA LN series promises you the quickness and stableness so that it can make the measurement works much more efficient and less time-consuming.



## Density measurement mode

To measure the density of the object is one of the most typical applications for the precision balance. VIBRA LN series offers you the function to easily calculate the density from the measurement results.

\* the density measurement kit in the image is option.



## Accurate measurement by appropriate calibration

It is highly important to keep the accuracy of the balance by calibration. The procedure of the calibration is sometimes bothering, but in VIBRA LN series, you can adjust the balance with one-touch of CAL key (internal weight model only).

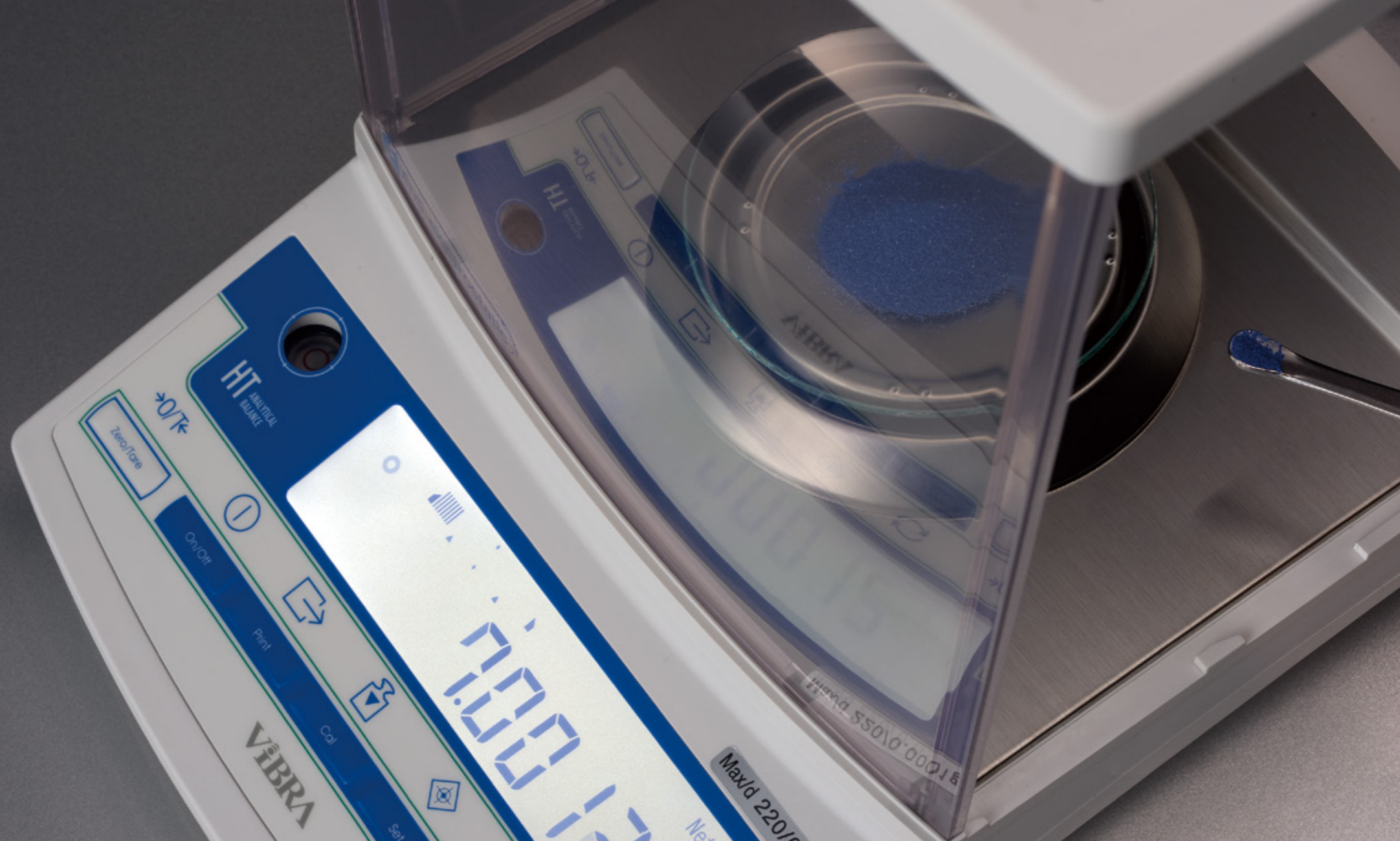


## Connection to the outside devices

VIBRA LN series has RS232C as standard (two outputs) and can be easily connected to the printer, PC. You can keep the weighing results in the printed and/or electric forms.







# HT series

## Standard Analytical Balance

### Make a difference - new concept of analytical balance

VIBRA HT series has achieved reliable analytical weighing with all of tuning-fork sensor advantages. "Plug & Perform" (no warm-up time), energy saver, stable indication, longterm reliability, etc ... all are put in this compact body. HT series provides you with comfortable and reliable weighing operation in everyday laboratory works.



## Specifications

| Model name                 | HT 84R              | HT 124R             | HT 224R             | HT 84RCE            | HT 124RCE           | HT 224RCE           |
|----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Capacity                   | 80g                 | 120g                | 220g                | 80g                 | 120g                | 220g                |
| Readability (d)            | 0.1mg               | 0.1mg               | 0.1mg               | 0.1mg               | 0.1mg               | 0.1mg               |
| Verification intervals (e) | -                   | -                   | -                   | 1mg                 | 1mg                 | 1mg                 |
| Repeatability              | 0.1mg               | 0.1mg               | 0.1mg               | 0.1mg               | 0.1mg               | 0.1mg               |
| Linearity                  | ±0.3mg              | ±0.3mg              | ±0.3mg              | ±0.3mg              | ±0.3mg              | ±0.3mg              |
| Stabilization time         | 3.0 sec.            | 3.0 sec.            | 3.0 sec.            | 3.0 sec.            | 3.0 sec.            | 3.0 sec.            |
| Pan size                   | 80mm dia            | 80mm dia            | 80mm dia            | 80mm dia            | 80mm dia            | 80mm dia            |
| Calibration                | Internal & External | Internal & External | Internal & External | Internal & External | Internal & External | Internal & External |

| Model name                 | HT 84    | HT 124   | HT 224   | HT 84CE  | HT 124CE | HT 224CE |
|----------------------------|----------|----------|----------|----------|----------|----------|
| Capacity                   | 80g      | 120g     | 220g     | 80g      | 120g     | 220g     |
| Readability (d)            | 0.1mg    | 0.1mg    | 0.1mg    | 0.1mg    | 0.1mg    | 0.1mg    |
| Verification intervals (e) | -        | -        | -        | 1mg      | 1mg      | 1mg      |
| Repeatability              | 0.1mg    | 0.1mg    | 0.1mg    | 0.1mg    | 0.1mg    | 0.1mg    |
| Linearity                  | ±0.3mg   | ±0.3mg   | ±0.3mg   | ±0.3mg   | ±0.3mg   | ±0.3mg   |
| Stabilization time         | 3.0 sec. | 3.0 sec. | 3.0 sec. | 3.0 sec. | 3.0 sec. | 3.0 sec. |
| Pan size                   | 80mm dia | 80mm dia | 80mm dia | 80mm dia | 80mm dia | 80mm dia |
| Calibration                | External | External | External | External | External | External |

\*"CE" models are OIML class I approved.

\*For options, please see page 41.

## Common Specification

Measuring system : Tuning-fork frequency system  
 Output : RS232C (2 outputs)  
 Tare : Full weighing range  
 Display : Back-lit LCD display  
 EC type approval : available for all models (class 1)







## Se-CAL

VIBRA HT series has Se-CAL function as standard. In Se-CAL, the balance can perform self-calibration fully automatically according to pre-installed conditions (elapsed time or temperature change). It makes sure that the balance is always in appropriate condition for accurate weighing operation.



## Easy RES function

It is sometimes necessary to choose appropriate response speed according to weighing object and outer environment. Easy RES offers very simple way to adjust the response speed. Just one-touch of SET key is enough to adjust response speed in three levels.

## Density measurement in laboratory

The analysis of density is one of the most common routine works in laboratory in many kinds of industry. By using density kit option VIBRA HT series provide highly precise measurement of density, not only of solid object but also of liquid.



## Automatic Repeatability Measurement

In ARM function, you can easily check the condition of the balance by calculating the standard deviation of repeatability (HTR series only).



## Short stabilization time & stable indication

Short stabilization time and stable indication are quite important for efficient laboratory works. VIBRA HT series achieves these two in high level with newly developed tuning-fork sensor.



## Simple structure – Easy to clean

It often happens that weighing objects like powder and liquid are spilled over in the windshield during weighing operation. The simple structure of windshield parts makes it possible to easily disassemble and reassemble for cleaning.



## Connection

VIBRA HT series has RS232C output as standard and can be easily connected to the printer, PC and other outside devices. You can record the weighing results in printed and/or electric forms.



## Bright LCD

With clear and bright back-lit LCD, the user can easily read the indication in the display. It reduces the reading errors.







# AJ series

## Standard Precision Balance

### SIMPLE IS THE BEST.

This is the basic concept of VIBRA AJ series. Simple, but profound scope for wide measurement fields. Laboratory, factory, jewelry shops, etc... VIBRA AJ series is always the simplest & the best solution for your needs.

#### Counting



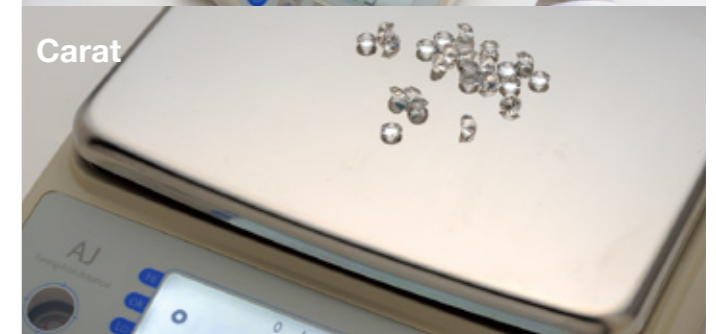
#### Percent



#### Weight



#### Carat



## Specifications

| Model                         | AJ□-220E<br>AJ□-220CE | AJ□-320E<br>AJ□-320CE | AJ□-420E<br>AJ□-420CE | AJ□-620E<br>AJ□-620CE | AJH-2200E<br>AJH-2200CE | AJH-3200E<br>AJH-3200CE | AJH-4200E<br>AJH-4200CE |
|-------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------|-------------------------|-------------------------|
| Capacity                      | 220g                  | 320g                  | 420g                  | 620g                  | 2200g                   | 3200g                   | 4200g                   |
| Readability (d)               | 0.001g                | 0.001g                | 0.001g                | 0.001g                | 0.01g                   | 0.01g                   | 0.01g                   |
| Verification intervals (e) *1 | 0.01g                 | 0.01g                 | 0.01g                 | 0.01g                 | 0.1g                    | 0.1g                    | 0.1g                    |
| Repeatability                 | 0.001g                | 0.001g                | 0.001g                | 0.001g                | 0.01g                   | 0.01g                   | 0.01g                   |
| Linearity                     | ±0.001g               | ±0.001g               | ±0.001g               | ±0.002g               | ±0.01g                  | ±0.01g                  | ±0.01g                  |
| Stabilization time            | 2.5 sec.              | 2.5 sec.              | 2.0 sec.              | 2.0 sec.              | 2.5 sec.                | 2.5 sec.                | 2.5 sec.                |
| Pan size                      | 118mm dia             | 118mm dia             | 118mm dia             | 118mm dia             | 180×160mm               | 180×160mm               | 180×160mm               |
| Calibration                   | □ Internal □ External | □ Internal □ External | □ Internal □ External | □ Internal □ External | Internal & External     | Internal & External     | Internal & External     |

| Model                         | AJ-220E<br>AJ-220CE | AJ-320E<br>AJ-320CE | AJ-420E<br>AJ-420CE | AJ-620E<br>AJ-620CE | AJ-820E<br>AJ-820CE | AJ-1200E<br>AJ-1200CE | AJ-2200E<br>AJ-2200CE | AJ-3200E<br>AJ-3200CE | AJ-4200E<br>AJ-4200CE | AJ-6200E<br>AJ-6200CE | AJ-8200E<br>AJ-8200CE | AJ-12KE<br>AJ-12KCE |
|-------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------|
| Capacity                      | 220g                | 320g                | 420g                | 620g                | 820g                | 1200g                 | 2200g                 | 3200g                 | 4200g                 | 6200g                 | 8200g                 | 12000g              |
| Readability (d)               | 0.001g              | 0.001g              | 0.001g              | 0.001g              | 0.01g               | 0.01g                 | 0.01g                 | 0.01g                 | 0.01g                 | 0.01g                 | 0.1g                  | 0.1g                |
| Verification intervals (e) *1 | 0.01g               | 0.01g               | 0.01g               | 0.01g               | 0.01g               | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g                  | 1g                    | 1g                  |
| Repeatability                 | 0.001g              | 0.001g              | 0.001g              | 0.001g              | 0.01g               | 0.01g                 | 0.01g                 | 0.01g                 | 0.01g                 | 0.01g                 | 0.1g                  | 0.1g                |
| Linearity                     | ±0.001g             | ±0.001g             | ±0.001g             | ±0.002g             | ±0.01g              | ±0.01g                | ±0.01g                | ±0.01g                | ±0.01g                | ±0.02g                | ±0.1g                 | ±0.1g               |
| Stabilization time            | 2.5 sec.            | 2.5 sec.            | 2.0 sec.            | 2.0 sec.            | 2.0 sec.            | 2.0 sec.              | 2.5 sec.              | 2.5 sec.              | 2.5 sec.              | 3.0 sec.              | 2.5 sec.              | 2.5 sec.            |
| Pan size                      | 118mm dia           | 118mm dia           | 118mm dia           | 118mm dia           | 170×142mm           | 170×142mm             | 180×160mm             | 180×160mm             | 180×160mm             | 180×160mm             | 180×160mm             | 180×160mm           |
| Calibration                   | External            | External            | External            | External            | External            | External              | External              | External              | External              | External              | External              | External            |

\*1 "CE" models are OIML class I and II approved. Verification interval "e" is available only in "CE" models.

## Common Specification

Measuring system : Tuning-fork frequency system  
 Output : RS232C  
 Tare : Full weighing range  
 Display : Back-lit LCD display  
 EC type approval : available for all models (class 1 & 2)

\*For options, please see page 41.







### Bright, White Back-light

Large LCD (16.5mm height) with bright & white back-light makes the weighing operation easy and comfortable even in the dark location.

### Short Stabilization & Stable Indication

Short stabilization time and stable indication are important feature in the precise weight measurement. The innovative tuning-fork sensor in ViBRA AJ series meets this demand and satisfies you.



### Keep the Weighing Accuracy

The model with name AJ"H" has semi-automatic built-in calibration weight. You can easily calibrate the balance with built-in weight. It ensures the accurate and precise weighing operation.



### Draft Windshield as Standard

The draft windshield is available as standard for 220g-620g capacity models. It realizes the ideal environment for precise weighing. It can be easily assembled by hands.

### Compact Housing, High Portability

The compact housing is one of the advantages of ViBRA AJ series. The space-saving design enables you to instal it even in small space. Furthermore you can bring it everywhere you want with optional rechargeable battery.



### Connection with Outside Devices

RS232C interface is installed as standard feature in every models of ViBRA AJ series. You can connect the balance to outside devices like PC.



### Density Measurement Kit Option

The density measurement kit can be available as option. \*No program to automatically calculate the density is installed in ViBRA AJ series. Just the kit as option.





Chemical

Industry

Density Measurement

Water proof



# AB series

## Specifications

| Model              | AB 323    | AB 623    | AB 1202   | AB 3202   | AB 12001  |
|--------------------|-----------|-----------|-----------|-----------|-----------|
| Capacity           | 320g      | 620g      | 1200g     | 3200g     | 12000g    |
| Readability (d)    | 0.001g    | 0.001g    | 0.01g     | 0.01g     | 0.1g      |
| Repeatability      | 0.001g    | 0.001g    | 0.01g     | 0.01g     | 0.1g      |
| Linearity          | ±0.003g   | ±0.004g   | ±0.02g    | ±0.03g    | ±0.2g     |
| Stabilization time | 3.0 sec.  | 3.5 sec.  | 3.0 sec.  | 3.5 sec.  | 3.0 sec.  |
| Pan size           | 140mm dia | 140mm dia | 190×190mm | 190×190mm | 190×190mm |
| Calibration        | External  | External  | External  | External  | External  |

\*1 including windshield

\*For options, please see page 41.

## Standard Precision Balance

### High precision in Affordable budget

VIBRA AB series provides basic applications which are indispensable in daily work in laboratory and industrial lines. In any applications highly precise measurement is promised. VIBRA AB series is the best affordable entrance into high-grade weighing solution.

## Common Specification

Measuring system : Tuning-fork frequency sensing  
 Tare : Full weighing range  
 Display : LCD with backlit

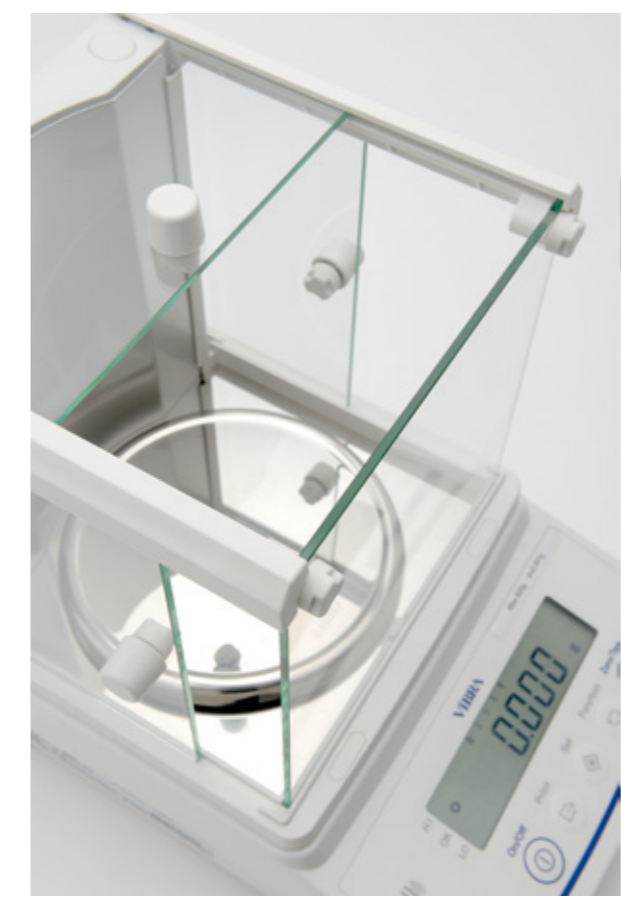


Chemical

Industry

Density Measurement

## User-friendly : Key to efficient daily works



VIBRA AB series is equipped with features to make routine measurement works easy and comfortable. Large back-lit LCD is easy to read in any locations. Glass windshield prevents air turbulence from disturbing weighing operation in tough environment.



## Connection to outside devices

VIBRA AB series has RS232C output as standard. When you need to print the weighing data and/or store it in outside devices, you can easily connect VIBRA AB series to PC, printer, etc... through RS232C output.







## Adaptability.

ViBRA MD series can be available for moisture analysis of various objects and various locations. Unique organic carbon heater has strong power and is environmentally correct heat source.

## Simplicity.

ViBRA MD series has automatic measurement mode in which MD monitors the drying process and automatically stops the operation. And the structure is quite simple that daily cleaning and maintenance are easy.

## Reliability.

No other factor is more important than reliability in measurement performance. Combination of auto-taring system and newly developed organic carbon heater realize excellent repeatability in measurement results.

# MD series

## Moisture Determination Balance

### Adaptability, Simplicity, Reliability

Grain, Processed Food, Medicine, Wood, Paper, Concrete, Jute, Copra, coke, Nonwoven fabric, Plastic pellets, ...etc. In many products, moisture content is one of the key factors in quality control process. ViBRA MD series provides simple but reliable measurement of moisture content in laboratory and manufacturing process.



## Specifications

|                                   |                                                                                                                                                      |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model name                        | MD 83                                                                                                                                                |
| Measurement format                | Evaporation weight loss method                                                                                                                       |
| Readability moisture content      | 0.01% / 0.1% *1                                                                                                                                      |
| Repeatability with 5g sample      | 0.1% *2                                                                                                                                              |
| Measurement range                 | 0~100% (wet base, solids), 0~500% (dry base)                                                                                                         |
| Maximum sample weight             | 80g                                                                                                                                                  |
| Minimum sample weight             | 1g                                                                                                                                                   |
| Readability of balance            | 0.005g                                                                                                                                               |
| Measurement mode                  | Automatic operation mode, Timed operation mode                                                                                                       |
| Temperature range                 | 30 - 180 °C                                                                                                                                          |
| increment in temperature          | 1°C                                                                                                                                                  |
| Display                           | LCD with backlit (96x40 mm)                                                                                                                          |
| Output                            | RS232C                                                                                                                                               |
| Storage of measurement conditions | 5                                                                                                                                                    |
| Heat source                       | Organic carbon heater (280Wx2)                                                                                                                       |
| Power supply                      | AC100~120V/220~240V                                                                                                                                  |
| Power consumption                 | Max. 900W                                                                                                                                            |
| Sample pan                        | Stainless steel (110mm dia., 11mm depth)                                                                                                             |
| Items included                    | Sample panx2, sample pan handler, windshield, sample pan tray, spoon, spare fuse, sample aluminum sheetx10, power cord, 3P-2P plug, operation manual |

\*1 0.01% unit is displayable only.

\*2 standard deviation

\*For options, please see page 41.







## Simple structure - easy to clean



The simple structure of MD series allows the users to clean and do maintenance work easily when the liquid/powder samples are spilled over. It ensures long product life time.

## Newly adopted, organic-carbon heater

Organic carbon heater gives strong radiation in a narrow range of specific wavelength. In this range water molecules are efficiently actuated whereas the influence on others are minimal. Water content is fastly dried and other contents in the sample are well preserved. Fast drying and minimized risk of burning samples. VIBRA MD series meet two important requirements in moisture content analysis simultaneously.



## Fast drying, high repeatability

Organic carbon heater in ViBRA MD series achieve fast drying with minimized risk of sample burning. The operation time in routine moisture content analysis can be reduced and the high repeatability of operation result is also assured.

## Connection to outside devices

ViBRA MD series has RS232C output as standard feature. The measurement results can be printed by optional printer VZ-300 through RS output. It can be stored in PC with optional data-logger software FDL-02, too.



## Clear, bright and large LCD display

LCD display is clear, bright and large. It reduces the reading error during measurement operations even in tough working environment.



## Alert signal

Red alert signal is blinking during heating process. You can immediately notice when the measurement is completed.





# CJ series

## High Class Precision Balance

Heavy duty, Reliable measurement, Water proof IP65

As heavy-duty high-precision balance with water & dust proof feature, CJ series promises the excellent performance in any environment, dust atmosphere, mist, oil splashes, dark condition... etc. The stainless-steel upper case is resistant to chemical products, and easy to clean.

CJ series provides multi-function & multi-mode measurement and covers the wide weighing range from 220g to 15kg with minimum readability 0.01g. This is the best solution to your every needs.

## Specifications

| Model                        | CJ-220E<br>CJ-220CE | CJ-320E<br>CJ-320CE | CJ-620E<br>CJ-620CE | CJ-820E<br>CJ-820CE | CJ-2200E<br>CJ-2200CE | CJ-3200E<br>CJ-3200CE | CJ-6200E<br>CJ-6200CE | CJ-8200E<br>CJ-8200CE | CJ-15KE<br>CJ-15KCE |
|------------------------------|---------------------|---------------------|---------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------|
| Capacity                     | 220g                | 320g                | 620g                | 820g                | 2200g                 | 3200g                 | 6200g                 | 8200g                 | 15000g              |
| Readability (d)              | 0.01g               | 0.01g               | 0.01g               | 0.01g               | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g                  | 1g                  |
| Verification intervals (e)*1 | 0.01g               | 0.01g               | 0.01g               | 0.01g               | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g                  | 1g                  |
| Repeatability                | 0.01g               | 0.01g               | 0.01g               | 0.01g               | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g                  | 1g                  |
| Linearity                    | ±0.01g              | ±0.01g              | ±0.01g              | ±0.01g              | ±0.1g                 | ±0.1g                 | ±0.1g                 | ±0.1g                 | ±1g                 |
| Pan size                     | 140mm dia.          | 140mm dia.          | 140mm dia.          | 140mm dia.          | 190×190mm             | 190×190mm             | 190×190mm             | 190×190mm             | 190×190mm           |
| Calibration                  | External            | External            | External            | External            | External              | External              | External              | External              | External            |

\*1 "CE" models are OIML class II approved. Verification interval "e" is available only in "CE" models.

\*For options, please see page 41.

## Stainless steel highly resistant to tough conditions

Mirror finished stainless steel housing easy to clean, durable to tough conditions.



## Minimize stabilization time and keep the indication stable

Unique tuning-fork sensing system achieves short stabilization time and stable indication necessary for reliable measurement. The short stabilization ensures the comfortable and efficient operation.



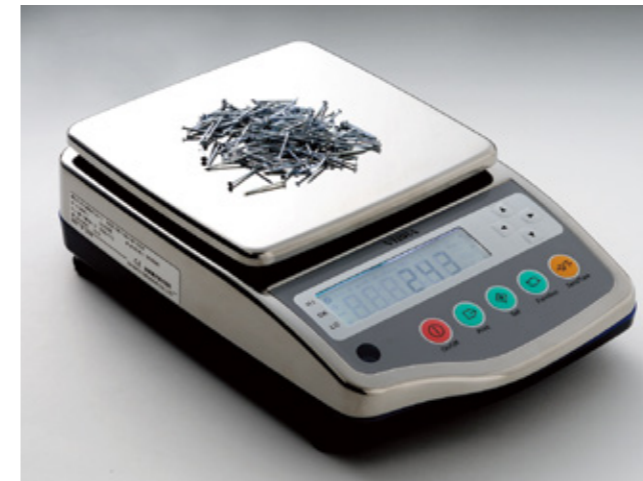
## Density Measurement

The density can be measured in "density measurement mode" with under-weighing hook (hook is option).



## Various measurement modes & functions for industrial weighing

Parts counting, percentage, comparator, density measurement... CJ is the answer to various requirements in the industrial weighing. You can easily set the appropriate mode with arrow key.



## Low energy-consuming, high portability

Low energy-consuming design allows CJ series to operate for 200 hours with dry-cell battery (when back-lit is OFF). It is very much suitable for mobile use (32-hour operation with dry-cell battery in case of back-lit ON).



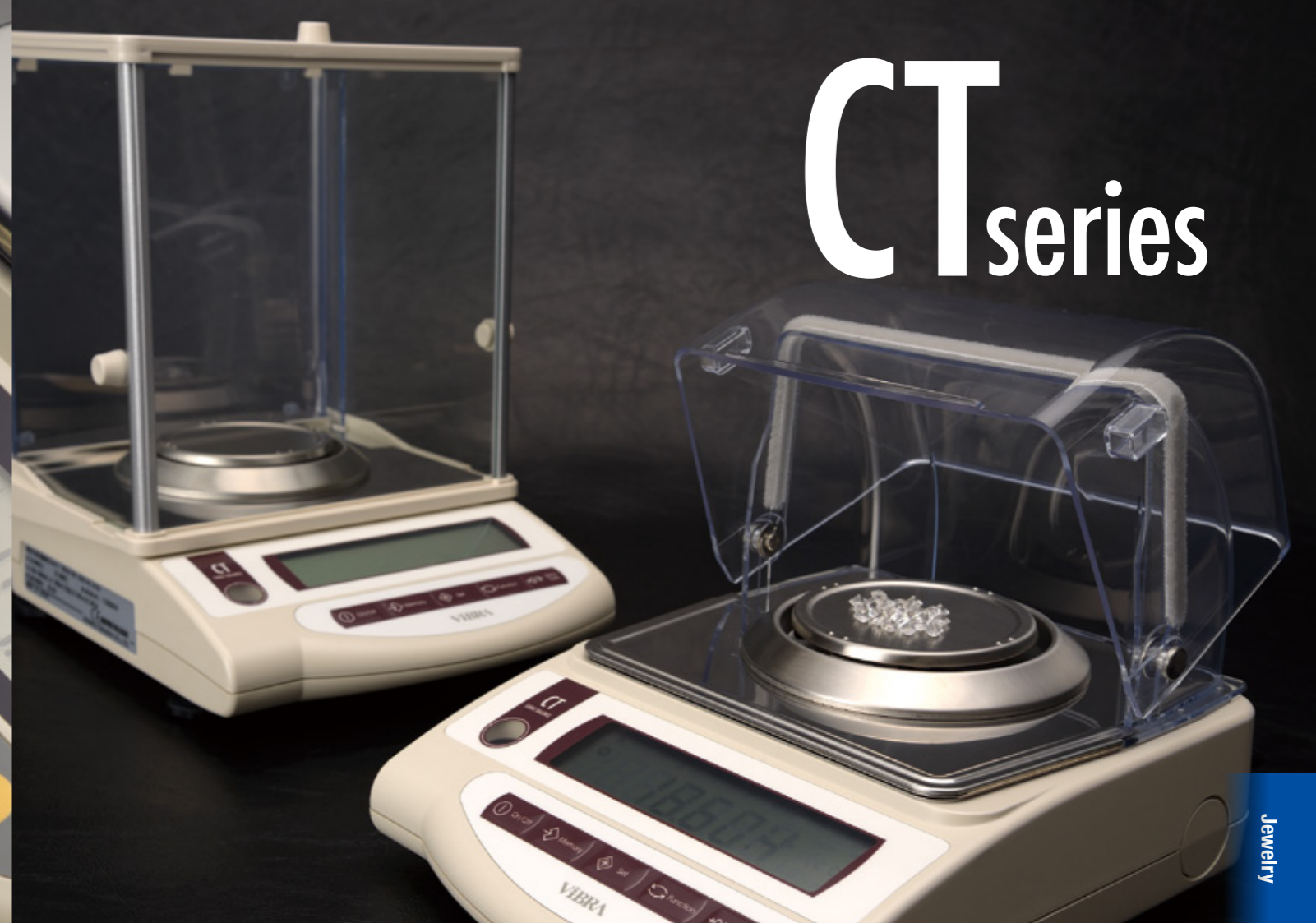


# SJ series

Pharmacy  
Industry  
Jewelry



# CT series



Jewelry

## Basic Precision Balance

Indispensable functions with reasonable budget

### Highly usable basic applications

SJ series offers basic applications in user-friendly operations to make weighing work easier : percentage weighing, counting, comparator, etc...

### Short stabilization & stable indication

SJ series offers short stabilization time and stable indication. It promises stress-free weighing routine works.

### Portability

SJ series can be operated with rechargeable battery option. And all features are well combined in quite compact body. It realizes high-portability of precision balance.



## Specifications

| Model name                   | SJ-220E<br>SJ-220CE | SJ-420E<br>SJ-420CE | SJ-620E<br>SJ-620CE | SJ-1200E<br>SJ-1200CE | SJ-2200E<br>SJ-2200CE | SJ-4200E<br>SJ-4200CE | SJ-6200E<br>SJ-6200CE | SJ-12KE<br>SJ-12KCE |
|------------------------------|---------------------|---------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------|
| Capacity                     | 220g                | 420g                | 620g                | 1200g                 | 2200g                 | 4200g                 | 6200g                 | 12000g              |
| Readability (d)              | 0.01g               | 0.01g               | 0.01g               | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g                  | 1g                  |
| Verification intervals (e)*1 | 0.01g               | 0.01g               | 0.1g                | 0.1g                  | 0.1g                  | 0.1g                  | 1g                    | 1g                  |
| Repeatability                | 0.01g               | 0.01g               | 0.01g               | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g                  | 1g                  |
| Linearity                    | ±0.01g              | ±0.01g              | ±0.01g              | ±0.1g                 | ±0.1g                 | ±0.1g                 | ±0.1g                 | ±1g                 |
| Stabilization time           | 2.5 sec.            | 2.0 sec.            | 2.0 sec.            | 2.0 sec.              | 2.5 sec.              | 2.5 sec.              | 3.0 sec.              | 2.5 sec.            |
| Pan size                     | 140mm dia.          | 140mm dia.          | 140mm dia.          | 170×142mm             | 180×160mm             | 180×160mm             | 180×160mm             | 180×160mm           |
| Calibration                  | External            | External            | External            | External              | External              | External              | External              | External            |

\*1 "CE" models are OIML class II approved. Verification interval "e" is available only in "CE" models.

\*For options, please see page 41.

### Roll-top type



### Three-sliding type



## Carat Balance

Light and compact balance for jewelers

### Compact housing

CT series is equipped with unique "Roll-top" windshield. It enables user to access the balance from front and reduces the volume of balance housing. Standard three-sliding windshield model is also available.

### Readability from 0.001ct to 0.01ct

0.001ct readability with capacity 600ct is very much fitted to weighing of diamond. It is typically used in diamond jewelry shops and diamond manufacturers.

## Specifications

### "Roll-top" windshield type

| Model name                   | CT 603<br>CT 603CE | CT 1602<br>CT 1602CE |
|------------------------------|--------------------|----------------------|
| Capacity                     | 600ct              | 1600ct               |
| Readability (d)              | 0.001ct            | 0.01ct               |
| Verification intervals (e)*1 | 0.01ct             | 0.1ct                |
| Repeatability                | 0.001ct            | 0.01ct               |
| Linearity                    | ±0.003ct           | ±0.01ct              |
| Stabilization time           | 4.0 sec.           | 4.0 sec.             |
| Pan size                     | 80mm dia.          | 80mm dia.            |
| Calibration                  | External           | External             |

\*1 "CE" models are OIML class I & II approved. Verification interval "e" is available only in "CE" models.

\*For options, please see page 41.

### Three-sliding windshield type

| Model name                   | CT 603G<br>CT 603GCE | CT 1602G<br>CT 1602GCE |
|------------------------------|----------------------|------------------------|
| Capacity                     | 600ct                | 1600ct                 |
| Readability (d)              | 0.001ct              | 0.01ct                 |
| Verification intervals (e)*1 | 0.01ct               | 0.1ct                  |
| Repeatability                | 0.001ct              | 0.01ct                 |
| Linearity                    | ±0.003ct             | ±0.01ct                |
| Stabilization time           | 4.0 sec.             | 4.0 sec.               |
| Pan size                     | 80mm dia.            | 80mm dia.              |
| Calibration                  | External             | External               |



# GZII series

# GZH series



# GZ series



## Precision Ex-proof scale

ATEX approved scale for precision weighing in dangerous areas

In industrial scene the accurate weighing operation is often necessary even in explosive atmosphere. GZ series can perform reliable weighing operation in explosive atmosphere zone 1 and zone 2. All models can be supplied as "dry-cell battery operation type" for which no complicated installation works are necessary.

## Specifications

| Model           | 610g                | 1500g               | 3100g               | 6100g               | 30000g              | 2000g      | 6000g     | 12000g    | 30000g    | 60000g    |
|-----------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------|-----------|-----------|-----------|-----------|
| Capacity        | 610g                | 1500g               | 3100g               | 6100g               | 30000g              | 2000g      | 6000g     | 12000g    | 30000g    | 60000g    |
| Readability (d) | 0.01g               | 0.01g               | 0.01g               | 0.1g                | 0.1g                | 0.01g      | 0.1g      | 0.1g      | 1g        | 1g        |
| Repeatability   | 0.01g               | 0.01g               | 0.01g               | 0.1g                | 0.2g                | 0.01g      | 0.1g      | 0.2g      | 1g        | 1g        |
| Pan size        | 140mm dia.          | 250×202mm           | 250×202mm           | 250×202mm           | 270×250mm           | 170mm dia. | 250×202mm | 250×202mm | 360×326mm | 360×326mm |
| Calibration     | Internal & External | Internal & External | Internal & External | Internal & External | Internal & External | External   | External  | External  | External  | External  |

| Model                      | 610g                | 1500g               | 3100g               | 6100g               | 30000g              | 2000g      | 6000g     | 12000g    | 30000g    | 60000g    |
|----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------|-----------|-----------|-----------|-----------|
| Capacity                   | 610g                | 1500g               | 3100g               | 6100g               | 30000g              | 2000g      | 6000g     | 12000g    | 30000g    | 60000g    |
| Readability (d)            | 0.01g               | 0.01g               | 0.01g               | 0.1g                | 1g                  | 0.01g      | 0.1g      | 0.1g      | 5g        | 1g        |
| Verification intervals (e) | 0.1g                | 0.1g                | 0.1g                | 1g                  | 1g                  | 0.1g       | 1g        | 1g        | 5g        | 10g       |
| Repeatability              | 0.01g               | 0.01g               | 0.01g               | 0.1g                | 0.2g                | 0.01g      | 0.1g      | 0.2g      | 5g        | 1g        |
| Pan size                   | 140mm dia.          | 250×202mm           | 250×202mm           | 250×202mm           | 270×250mm           | 170mm dia. | 250×202mm | 250×202mm | 360×326mm | 360×326mm |
| Calibration                | Internal & External | Internal & External | Internal & External | Internal & External | Internal & External | External   | External  | External  | External  | External  |

\*1 "CE" models are OIML class II approved.

\* All models can be ordered as dry-cell battery type. The model name of dry-cell type contains alphabet "B" like "GZ△-B×××Ex".

\*For options, please see page 41.



Selectable from two types in power supply, power supply box type or dry-cell battery type

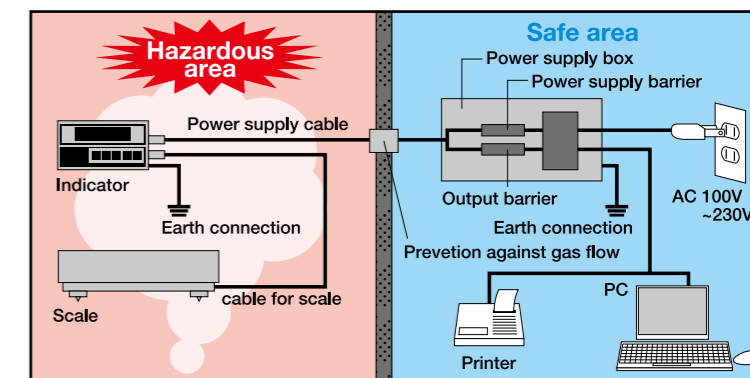
### Power supply box type

no earth connection work is necessary

### Dry-cell battery type, very easy to install

no wiring work is necessary, 150 hours continuous operation

### Configuration



\* The standard length of power supply cable is 5m. It can be extended as option (see page 41).

## Always keep the scale in good condition

semi-automatic calibration with built-in weight (available only with GZH(-B) series). GZII(-B) series can be calibrated with external reference weight.

## Stainless steel housing, tough body ideally fitted to industrial scene

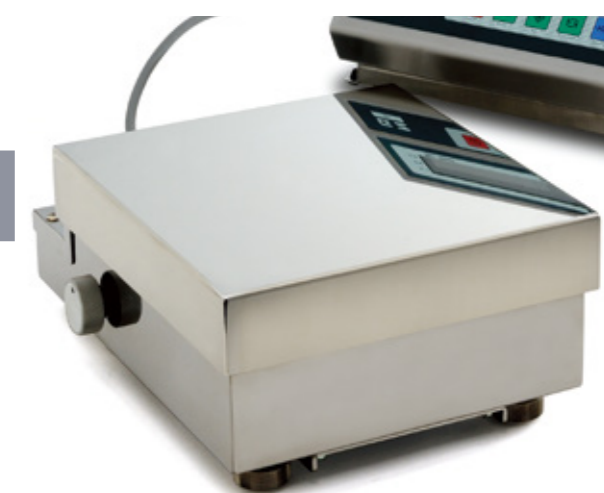
mirror finish weighing pan available as standard in GZII(-B)2000(C)Ex, 6000(C)Ex, 12K(C)Ex, all models in GZH(-B) series



II 2 G Ex ia IIB T4  
 Temperature range class for use in hazardous areas  
 Gas classification  
 Type of protection (intrinsically safe)  
 Explosion-protected  
 For gases  
 Category 2  
 Equipment group

in accordance with

IEC 60079-0:2004 Ed. 4 EN 60079-0 : 2006  
 IEC 60079-11:2006 Ed. 5 EN 60079-11 : 2007



### Operation area

|    | II A                                                                                | II B                                                         | II C             |
|----|-------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------|
| T1 | acetone, benzene, ammonia, methanol, ethane, toluene, propane, methane, acetic acid | coke-oven gas, acrylonitrile, hydrocyanic acid, cyclopropane | hydrogen         |
| T2 | ethanol, butanol, butane, methyl methacrylate                                       | ethylene, ethylene oxide, ethyl acrylate                     | acetylene        |
| T3 | gasoline, hexane, pentane                                                           | acrylaldehyde, dimethyl ether                                |                  |
| T4 | acetaldehyde, trimethylamine                                                        | ethyl methyl ether, diethyl ether                            |                  |
| T5 |                                                                                     |                                                              | carbon disulfide |
| T6 |                                                                                     | ethyl nitrite                                                | ethyl nitrite    |



# HJK series

## Precision Industrial Scale

Water & dust proof, durable, high resolution

HJK series has IP rating 65 water and dust proof feature as standard. This series can be used in two styles, separate type with 1m cable or pole type. Separate type can be changeable to pole type with pole kit option. And cable length can be extended to 5m or 10m as option (the standard is 1m).

### Specifications

| Separate type                |                         |                         |                         |                           |                       |                       |                       |                         |  |  |
|------------------------------|-------------------------|-------------------------|-------------------------|---------------------------|-----------------------|-----------------------|-----------------------|-------------------------|--|--|
| Model                        | HJR-17KSE<br>HJR-17KSCE | HJR-22KSE<br>HJR-22KSCE | HJR-33KSE<br>HJR-33KSCE | HJR-62KDSE<br>HJR-62KDSCE | HJ-17KSE<br>HJ-17KSCE | HJ-22KSE<br>HJ-22KSCE | HJ-33KSE<br>HJ-33KSCE | HJ-62KDSE<br>HJ-62KDSCE |  |  |
| Capacity                     | 17000g                  | 22000g                  | 33000g                  | 6200g<br>62000g           | 17000g                | 22000g                | 33000g                | 6200g<br>62000g         |  |  |
| Readability (d)              | 0.1g                    | 0.1g                    | 0.1g                    | 0.1g<br>1g                | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g<br>1g              |  |  |
| Verification intervals (e)*1 | 1g                      | 1g                      | 1g                      | 1g<br>1g                  | 1g                    | 1g                    | 1g                    | 1g<br>1g                |  |  |
| Repeatability                | 0.1g                    | 0.1g                    | 0.1g                    | 0.1g<br>0.7g              | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g<br>0.7g            |  |  |
| Linearity                    | ±0.3g                   | ±0.3g                   | ±0.3g                   | ±0.3g<br>±1.0g            | ±0.3g                 | ±0.3g                 | ±0.3g                 | ±0.3g<br>±1.0g          |  |  |
| Pan size                     | 400x350mm               | 400x350mm               | 400x350mm               | 400x350mm                 | 400x350mm             | 400x350mm             | 400x350mm             | 400x350mm               |  |  |
| Calibration                  | Internal & External     | Internal & External     | Internal & External     | Internal & External       | External              | External              | External              | External                |  |  |

| Pole type                    |                       |                       |                       |                        |                     |                     |                     |                      |  |  |
|------------------------------|-----------------------|-----------------------|-----------------------|------------------------|---------------------|---------------------|---------------------|----------------------|--|--|
| Model                        | HJR-17KE<br>HJR-17KCE | HJR-22KE<br>HJR-22KCE | HJR-33KE<br>HJR-33KCE | HJR-62KDE<br>HJR-62KDE | HJ-17KE<br>HJ-17KCE | HJ-22KE<br>HJ-22KCE | HJ-33KE<br>HJ-33KCE | HJ-62KDE<br>HJ-62KDE |  |  |
| Capacity                     | 17000g                | 22000g                | 33000g                | 6200g<br>62000g        | 17000g              | 22000g              | 33000g              | 6200g<br>62000g      |  |  |
| Readability (d)              | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g<br>1g             | 0.1g                | 0.1g                | 0.1g                | 0.1g<br>1g           |  |  |
| Verification intervals (e)*1 | 1g                    | 1g                    | 1g                    | 1g<br>1g               | 1g                  | 1g                  | 1g                  | 1g<br>1g             |  |  |
| Repeatability                | 0.1g                  | 0.1g                  | 0.1g                  | 0.1g<br>0.7g           | 0.1g                | 0.1g                | 0.1g                | 0.1g<br>0.7g         |  |  |
| Linearity                    | ±0.3g                 | ±0.3g                 | ±0.3g                 | ±0.3g<br>±1.0g         | ±0.3g               | ±0.3g               | ±0.3g               | ±0.3g<br>±1.0g       |  |  |
| Pan size                     | 400x350mm             | 400x350mm             | 400x350mm             | 400x350mm              | 400x350mm           | 400x350mm           | 400x350mm           | 400x350mm            |  |  |
| Calibration                  | Internal & External   | Internal & External   | Internal & External   | Internal & External    | External            | External            | External            | External             |  |  |

\*1 "CE" models are OIML class II approved. Verification interval "e" is available only in "CE" models.

And cable length can be extended to 5m or 10m as option (the standard is 1m).



### Large fluorescent display

With clear and large fluorescent display the use can easily read the indication even in dark location.



### Display angle adjustable

In pole style the angle of display part can be easily adjustable.



### Connection to outside devices

RS232C output is equipped as standard. It can be easily connected to outside devices. \*IP rating becomes ineffective when it is connected to outside devices.



### Durable body with IP rating 65

HJK series has durable body made from stainless steel. Together with IP rating 65, it makes HJK series very much fitted to precise weighing work in hard environment.



# FJ series

Chemical

Industry



## Precision Platform Scale

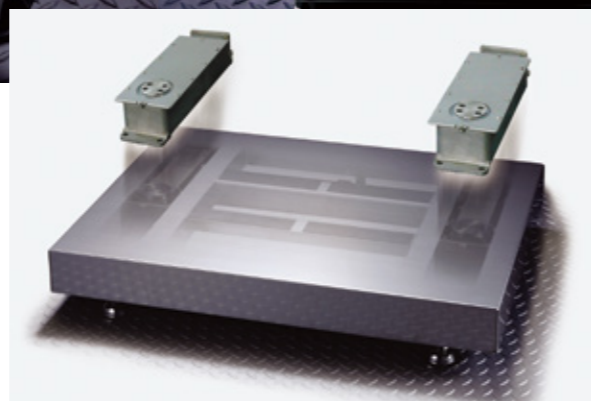
High precision, high capacity & wide weighing platform

FJ series offer you high precision 1g readability all through weighing range up to 300kgs. Furthermore the housing is made from stainless steel SUS304 which is highly resistant to chemical corrosion and rust (IR rating 65).

## Specifications

| Model           | FJ 150K1G | FJ 300K1G |
|-----------------|-----------|-----------|
| Capacity        | 150kg     | 300kg     |
| Readability (d) | 1g        | 1g        |
| Repeatability   | 0.7g      | 0.8g      |
| Linearity       | ±3g       | ±5g       |
| Pan size        | 800×600mm | 800×600mm |
| Calibration     | External  | External  |

\*For options, please see page 41.



## For rugged circumstances

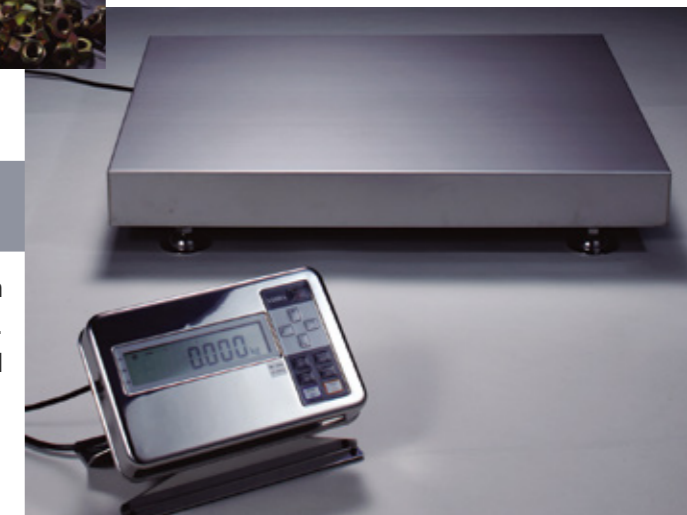
High Capacity (and) High Resolution Weighing Platform and Indicator  
IP65 dust and water protection

Chemical

Industry

## A whole (complete) set solution

This is a complete set of balance with platform and indicator. All covered with stainless steel



## Flexible configuration

Indicator could be installed on the optional pole stand or desk stand, adapting to the every occasion.  
RS-232 Interface is provided from the Indicator.

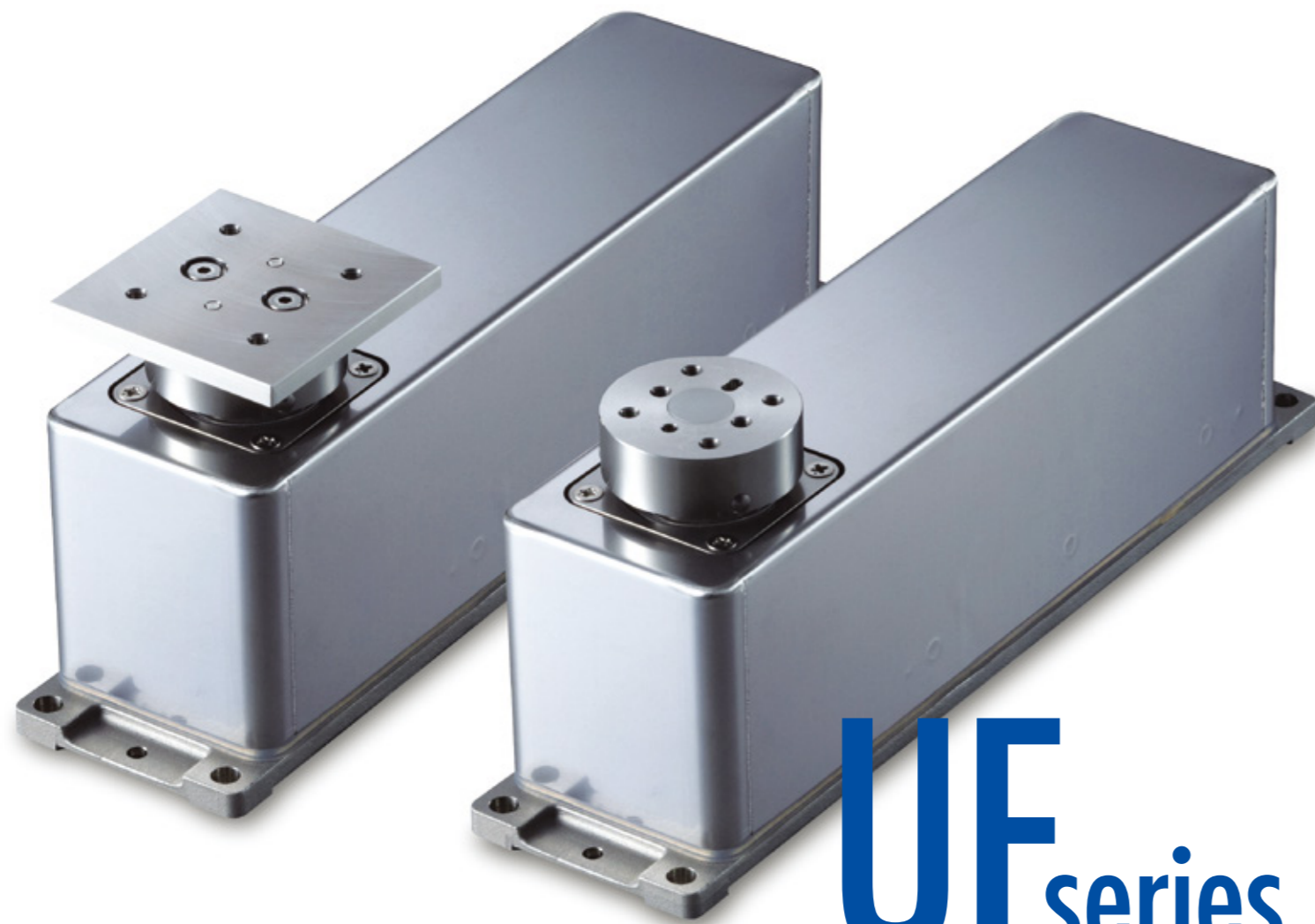
## Useable Indicator

Clearly visible Back lit LCD display  
Direct function setting with Direction Keys  
Easy RES function can change response speed in three levels just with out- touch of SET key.



Water proof





# UF series

## Built-in weighing unit

Suitable for applications in production lines where weighing is required

### Space-saving design for the installation where space is limited

The width of the weighing unit is 56mm. This enables you to achieve greater productivity by disposing the weighing units in the limited space efficiently.

### High precision & High speed

1mg readability & 1/620000 resolution with 0.4 seconds of stabilization time (load 5% of capacity). Also the data update interval is 100 times per second at maximum.

### Direct digital output from the weighing unit

Easy connection to PLC or PC without indicator by RS232C or RS485 directly. This is suitable for efficient disposition of the weighing units and the wiring.

## Specifications

| Model name                    | UF-620                                                    | UF-3200                                                   |
|-------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| Capacity                      | 620g                                                      | 3200g                                                     |
| Readability (d) *1            | 0.001g *1                                                 | 0.01g *5                                                  |
| Repeatability                 | 0.001g                                                    | 0.01g                                                     |
| Linearity                     | ±0.002g                                                   | ±0.02g                                                    |
| Stabilization time *2         | 0.4 sec. *2                                               | 0.4 sec. *2                                               |
| Data updating interval (max.) | 106 times/sec. *3                                         | 106 times/sec. *3                                         |
| Interface                     | Half duplex RS485,<br>Full duplex RS232C 1200 to 38.4kbps | Half duplex RS485,<br>Full duplex RS232C 1200 to 38.4kbps |
| Power supply                  | DC +24V±10%, 0.1A                                         | DC +24V±10%, 0.1A                                         |
| Water proof IP rating         | 65 *4                                                     | 65 *4                                                     |
| Dimension (WLH)               | 56x230x85mm                                               | 56x230x95mm                                               |

\*1 switchable among 0.001g/0.002g/0.005g/0.01g/0.02g

\*2 in case of load of 5% of full capacity with smallest read-out

\*3 when connecting with Display unit, max.50t times/sec.

\*4 with optional water proof connector cable

\*5 switchable among 0.01g/0.02g/0.05g/0.1g/0.2g

\* Weighing pan and display unit are option. Please see the option list in page 41.



# DFB series

## Built-in weighing unit

Suitable to install in production systems where weighing is required

### Various models are available

Weighing units with capacities from 60g to 6kg are available. This line-up makes it possible to meet a variety of customer needs of making weighing systems.

### Space-saving design of the weighing units

The weighing unit is designed to be arranged at a minimum pitch of 50mm (DFB-60), ideal for multiple-weighing unit configuration. The indicator, small enough to fit the palm of your hand, can be mounted separately from the weighing unit.

### Ease of connection to PLC

DFB series is equipped with RS-232C or BCD parallel output (optional).

This makes it easier to connect DFB series to a controller in a system into which DFB series is to be built.

## Specifications

| Model           | DFB-60  | DFB-300 | DFB-600 | DFB-3000 | DFB-6000 |
|-----------------|---------|---------|---------|----------|----------|
| Capacity        | 60g     | 300g    | 600g    | 3000g    | 6000g    |
| Readability (d) | 0.001g  | 0.001g  | 0.01g   | 0.01g    | 0.1g     |
| Repeatability   | 0.001g  | 0.002g  | 0.01g   | 0.02g    | 0.1g     |
| Linearity       | ±0.001g | ±0.003g | ±0.01g  | ±0.03g   | ±0.1g    |
| Pan size        | 40x40mm | 55x55mm | 55x55mm | 74x74mm  | 74x74mm  |

### Indicator and General Specifications

|                        |                                                                   |
|------------------------|-------------------------------------------------------------------|
| Display                | 7-segment, 6-digit fluorescent display tube                       |
| Data updating interval | Approx. 0.1 to 1.6 seconds. (Fix/Auto-change) selectable          |
| Communication function | Bi-directional RS232C (featured as standard), BCD output (option) |
| Power supply           | 24 VDC (±10%), 0.3A                                               |

\*For options, please see page 41.







## CBM-910 II Standard Printer

Simply print the output data from balance.

### Specifications

|                        |                                            |
|------------------------|--------------------------------------------|
| Model name             | CBM-910 II                                 |
| Character construction | (5+1)×8 dot matrix                         |
| Character sizes        | 1.62mm(W) × 2.4mm(H)                       |
| Dimensions             | 80×106×88mm (LWH)                          |
| Paper size             | 57.5mm(W) × 60 or 80mm diameter roll paper |
| Power consumption      | 7VA                                        |



## LAS-05D-SD "No wind" Ionizing blower

Neutrizing electro-static to prevent instable indication

### Specifications

|                         |                                                    |
|-------------------------|----------------------------------------------------|
| Model name              | LAS-05D-SD                                         |
| Ionizing method         | DC corona discharge (±bipolar)                     |
| Effective ionizing area | distance : 50 to 700mm                             |
| Ionizing performance    | 8 seconds                                          |
| Life time               | 50,000 hours                                       |
| Dimension (WLH)         | 110x84x57mm (117mm height when stand leg attached) |

\*manufactured by TRINC Co.,Ltd.



## SDI Satellite Second Display

SDI works as second display in various scene like face-to-face sales in jewelry shops, hang-on display in manufacturing line...

### Specifications

| Model name      | SDI                 | SDR                    |
|-----------------|---------------------|------------------------|
| Display         | LCD 12.5mm height   |                        |
| Outer dimension | 150×89×60mm (LWH)   |                        |
| Power source    | supply from balance | supply from AC adaptor |
| Cable length    | 1m                  | 3m *1                  |

\*1 5m and 10m cable can be available as factory option.



## CSP-160 II Statistics Printer

Easy operation of useful statistics calculation as well as simple printing.

### Specifications

|                        |                                 |
|------------------------|---------------------------------|
| Model                  | CSP-160 II                      |
| Character construction | 5×7 dot matrices                |
| Printing digits        | 16 digits maximum               |
| Character sizes        | 1.8mm(W)×2.5mm(H)               |
| Dimensions             | 155×145×48(LWH)                 |
| Paper size             | 45mm(W)×30m diameter roll paper |

## RTS Data-collecting Software

Ties the electronic balance to PC. With RTS software, you can take in RS-232C output data from SHINKO DENSHI electronic balance by the standard application software for PC. Free download from website.

### Specifications

|                           |                                                                                                                                                                    |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating system          | Windows 98<br>Windows 98SE<br>Windows NT4.0 (SP3 or more)<br>Windows Me<br>Windows 2000 Professional<br>Windows XP Professional Edition<br>Windows XP Home Edition |
| Recommended model         | installed i486DX4 66MHz CPU or more.                                                                                                                               |
| Memory                    | 16MB and more                                                                                                                                                      |
| Display of the resolution | 640×480 or more                                                                                                                                                    |
| Free space to install     | more than 20MB                                                                                                                                                     |



# Options

### LF series pp.6-9

|      |                         |
|------|-------------------------|
| LFDK | Density measurement kit |
|------|-------------------------|

### LN series pp.10-13

|      |                         |
|------|-------------------------|
| LNBT | Rechargeable battery    |
| LNLN | Relay contact           |
| LNUH | Under weighing hook     |
| LNBZ | Buzzer output           |
| LNR4 | RS422A output           |
| LNDK | Density measurement kit |

### HT series pp.14-17

|        |                         |
|--------|-------------------------|
| HTDK   | Density measurement kit |
| HTBT * | Dry-cell battery pack   |

\*not available for CE model

### AJ series pp.18-21

|         |                                   |
|---------|-----------------------------------|
| AJBT(S) | Rechargeable battery (200g-1200g) |
| AJBT(M) | Rechargeable battery (2200g-12kg) |
| AJUH(S) | Under weighing hook (220g-1200g)  |
| AJUH(M) | Under weighing hook (2200g-12kg)  |
| AJDK    | Density measurement kit           |

### MD series pp.24-27

|        |                                     |
|--------|-------------------------------------|
| VZ-330 | Printer                             |
| DA-1   | Disposable aluminium sheet (500pcs) |
| FW-100 | Deodorizing windshield              |
| TQ-100 | Sample crusher                      |
| FDL-02 | Data logger software                |

### CJ series pp.28-29

|          |                                         |
|----------|-----------------------------------------|
| CJ-R4    | RS422A output                           |
| CJ-BZ    | Buzzer output                           |
| CJ-LM    | Relay contact                           |
| CJ-LS    | Full pack (BZ, RS, LM)                  |
| CJ-BT    | Dry -cell battery pack                  |
| CJ-WR    | Water-proof cable for RS232C output     |
| AJUH(S)  | Under-weighing hook                     |
| CJ-AP(S) | Bucket for animal weighing (620g, 820g) |
| CJ-AP(M) | Bucket for animal weighing (2200-6200g) |
| CJ-AP(L) | Bucket for animal weighing (8200g-15kg) |

### SJ series p.30

|         |                                   |
|---------|-----------------------------------|
| SJBT(S) | Rechargeable battery (200g-1200g) |
| AJBT(M) | Rechargeable battery (2200g-12kg) |
| SJR(S)  | RS232C output (220g-1200g)        |
| SJR(M)  | RS232C output (2200g-12kg)        |
| SJLM(S) | Relay contact (220g-1200g)        |
| SJLM(M) | Relay contact (2200g-12kg)        |
| AJUH(S) | Under weighing hook (220g-1200g)  |
| AJUH(M) | Under weighing hook (2200g-12kg)  |

### CT series p.31

|         |                      |
|---------|----------------------|
| AJBT(S) | Rechargeable battery |
| CTCP    | Carat pan            |

### GZ series pp.32-33

|         |                                 |
|---------|---------------------------------|
| GZR1 *1 | Printer output (Din 5p)         |
| GZR2 *1 | RS232C output (D-sub 25p)       |
| GZR4 *1 | RS422A output (D-sub 25p)       |
| GZLM *1 | Relay contact output            |
| GZPC *2 | Extension of power supply cable |
| GZDS    | Display stand                   |

\*1 available only for power supply box type  
\*2 Max 100, per 5m.

### HJK series pp.34-35

|       |                                    |
|-------|------------------------------------|
| HKBT  | Rechargeable battery               |
| HKBZ  | Buzzer output                      |
| HJKLM | Relay contact                      |
| HJKPK | Pole kit                           |
| HJKR4 | RS422A output                      |
| HJKUH | Under weighing hook                |
| HJKPC | Extended pick-up cable (5m or 10m) |

### FJ series pp.36-37

|      |                                    |
|------|------------------------------------|
| FJLM | Relay contact                      |
| FJPS | Pole stand                         |
| FJDS | Display stand                      |
| FJPC | Extended pick-up cable (5m or 10m) |

### UF series p.38

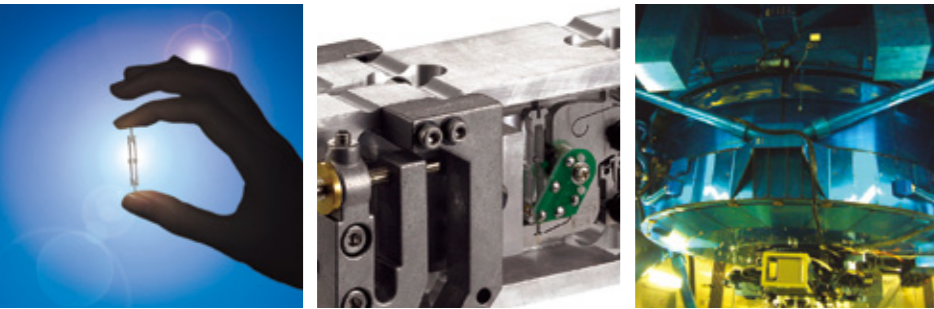
|         |                                   |
|---------|-----------------------------------|
| UD-1    | Display unit                      |
| UF BCD  | BCD Option                        |
| UF WPAN | Weighing pan                      |
| UF AD   | AC adaptor                        |
| UF CB   | Connector cable (10m)             |
| UF WPCB | Water proof connector cable (10m) |

### DFB series p.39

|        |            |
|--------|------------|
| DFBBCD | BCD output |
|--------|------------|



# Technology



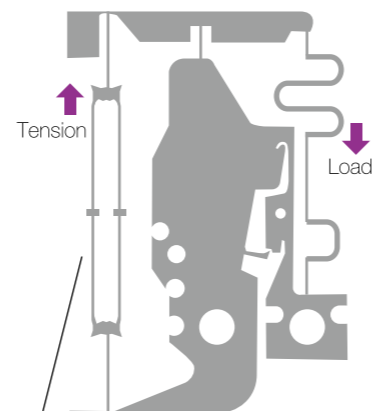
## Our core technology : tuning-fork sensor

In the 1980s, by aiming to develop an original weighing sensor SHINKO DENSHI has developed the world's first tuning-fork sensor.

The invention of tuning-fork sensors has improved the performance and stability of precision balances and tuning-fork sensor technology has been staple of SHINKO DENSHI ever since.

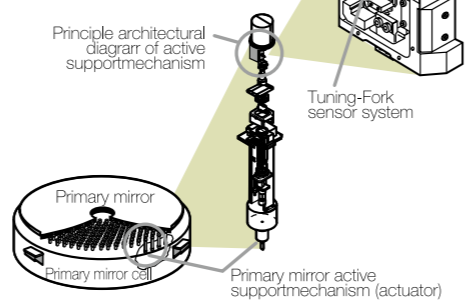
## Principle of tuning-fork sensor : stable of vibration frequency

The vibration frequency of a tuning-fork, which produces a reference sound, is extremely stable. The vibrational frequency changes when force is applied. Taking advantage of this property, a tuning-fork sensor can be create by combining two tuning-forks, a top and a bottom, thereby forming a monoblock structure which further enhances the property. Using the principle that vibrational frequency changes when load is applied to the tuning-fork vibrator, we measure force and mass by digital output processing.



Tuning-fork vibrator  
Schematic diagram of a tuning-fork sensor

Primary mirror and actuator  
Abstract from "The Sky Watcher"



SUBARU pictures presented by NAO

## Why we use tuning-fork sensor?

Advantages of the electronic balances and scales with the tuning-fork sensor are high repeatability, excellent stability, high durability, excellent temperature characteristic, low power consumption and compact. We have received good reputations in not only domestic market, but also overseas market.

## Eyes to universe : tuning-fork sensor in world's largest optical astronomical telescope

SHINKO DENSHI's tuning-fork sensors are used in the world's largest optical astronomical telescope, SUBARU, built by National Astronomical Observatory of Japan at 4,200-meter summit of Mr. Mauna Kea on the island of Hawaii.

With a diameter of 8.2m and a thickness of 20cm SUBARU's reflecting mirror is composed of ultra-low expansion glass. Because the mirror weighs a massive 23 tons, its surface is subject to gravitational distortion, which affects the focus. In order to solve this problem, precision technology to reduce the distortion in the telescope to a level less than  $\pm 2\text{mm}$  within a surface diameter of 100km was necessary. 261 actuators which control the mirror surface require an extremely precise power sensor with excellent long-term stability, and among many sensors available, SHINKO DENSHI's tuning-fork sensors have been adopted.

# About us

## Japan Quality, the seal of reliability

SHINKO DENSHI has started measurement business as small factory in Tokyo in 1963. Since our founding, SHINKO DENSHI has performed all manufacturing processes within company, development, design, processing of parts, assembly and maintenance service. We have succeeded to expand the business

worldwide, and continuously adapted ourselves to ever changing business environment. But we steadily keep core policy, dedication to high quality products. We deliver from Japan not only the precision balances but also the sense of reliability to all business field.



## SHINKO DENSHI values our partnerships with our customers.

Our products are highly valued for their quality all over the world. In order to expand further we are building a global sales and service network. Through the products we will continue to value our partnerships with our customers and business associates.



## Domestic Bases

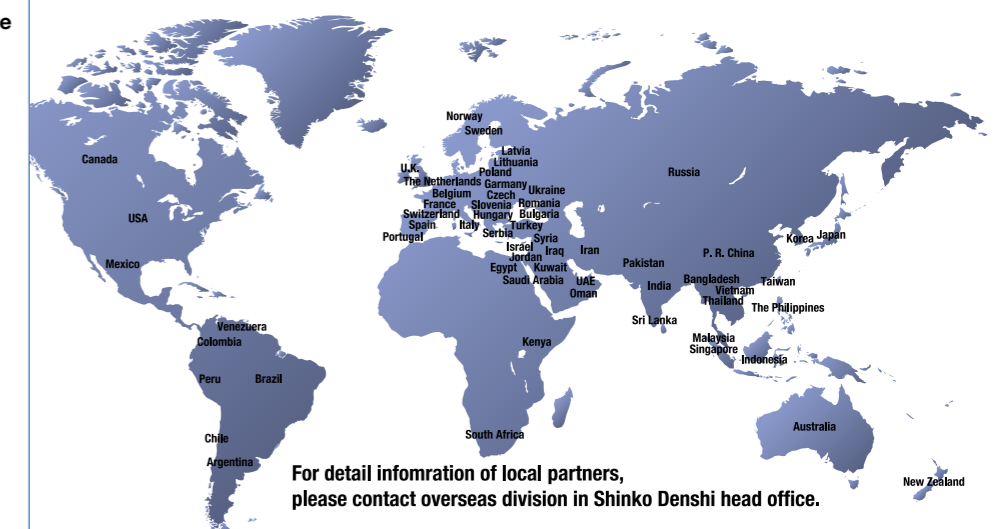
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Tsukuba Plant

**Kansai Plant and Sales Office**  
**Nagoya Sales Office**

## Overseas sales network



For detail information of local partners, please contact overseas division in Shinko Denshi head office.



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