ViBRA®
Measure the Future

Products Catalogue

ViBRA®

The brand name "VIBRA" was a compound of Libra and Vibration, and we devised originally. It has been registered a trademark in Japan and also measure countries.
We blended "Libra" which means balance and weight of Latin word, with "Vibration" which was the technique that we developed originally. We wish to contribute to the industrial society globally in order that the value of "Vibra" spreads like a vibration wave of the tuning fork.

SHINKO DENSHI CO., LTD.

指定製造事業者
指定番号020802

JQA–2834
TSUKUBA
ISO 9001

QUALITY ASSURANCE
JIC
REGISTERED ORGANIZATION
No.E2401-ISO 14001

1710/KI

SHINKO DENSHI CO., LTD.

Core competence of Shinko Denshi
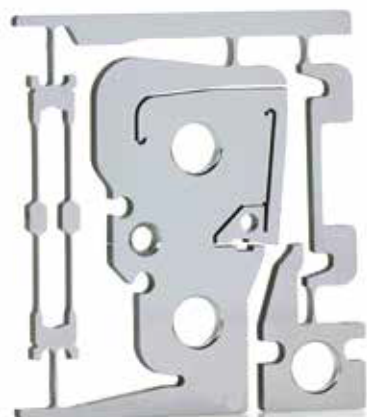
Tuning Fork sensor, Only one "technology in the world."

Shinko Denshi always pursue spirit of innovation and originality, thus released world and Japan first products into the market Amount many Shinko Denshi products, Tuning Fork, utilizing vibration frequency of tuning fork commonly used to tune music instruments and corresponding to the industry needs require high accuracy weighing and measurement, is the only one technology in the world which Shinko Denshi is proud of.

Sensor part cutout from one-piece metal alloy using sub-micron processing accuracy.

Sensor part cutout from one-piece metal alloy using sub-micron processing accuracy.

Measure frequency upon applied weight
Tuning Fork vibration frequency is extremely accurate. That is why it is used for tuning of music instruments. Force Sensor detects change of tuning fork frequency which corresponds to weight, then convert into weight value. Frequency is determined by shape and material used for tuning fork, resulting the consistency against temperature change, durability for secular change, high accuracy and robustness

Load

Tuning Fork vibration

Six Advantages of Tuning Fork Sensor
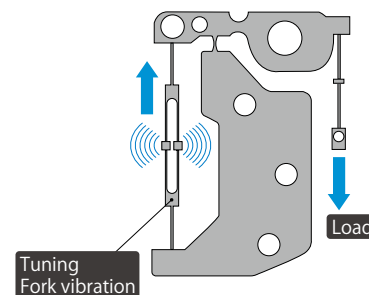
Durable and Long Life

Simple mechanism with less parts, durability with no trouble for long time. Save troublesome maintenance work.

High Scale Capacity High Resolution Capability

Realize the wide measuring range scale which is relatively difficult in other type scale sensor.
In production, we can provide one scale with Tuning fork sensor, instead of two big and small capacffy's scales.

Power Saving

Power consumption is one in couple tenth of strain gage type. Suitable for Battery operation since the necessary energy consumption is minimum. As it has almost no heat development, even work place with dangerous materials can use this scale.

Insusceptible to noise

The output of Tuning Fork sensor is a digital signal so that it has high S/N ratio and hardly susceptible to noise. It has less flickering, thus achieves the stable indication even for micro-weight.

No warm-up periods

Tuning Fork sensor has minimum weighing error by temperature alteration and in addition there is no warm-up periods. It can be used immediately after power on.
＊Warm-up period varies depend on products and usage circumstances.

No decline in the span adjustment

Normal scale requires scheduled span adjustment to keep its accuracy, but as Tuning Fork sensor's material and shape dimension remains unchanged, the span adjustment of Tuning Fork sensor also remains unchanged, thus can be used with long-term stability.

Technology supporting "SUBARU" astrometric telescope watching for 13.8 billion years away.

Shinko Denshi made Tuning Fork sensor are used in SUBARU astrometric telescope, the world largest optical outer red telescope, build on the summit of Mauna Kea Hawaii in 2000 by National Astronomical Observatory of Japan.

"SUBARU" reflector mirror performing astrometric observation corresponding to the movement of stars weighs 23 metric tons. It looses focus due to deformation by its own weight when changing its force direction. In order to compensate the deformation, it requires super accuracy sensor which measures the micro change: 1g against 150kg weight. Under the circumstance of top of the 4,000 meter high mountain, large difference in temperature day or night, and hardly perform maintenance work, there is no other equipment but Shinko Denshi Tuning Fork sensor. Implementing total 261 pieces of Tuning Fork sensor, which supports 90 kg weight per piece, are still performing its full function to unravel space mystery without no maintenance whatsoever since its installation 16 years ago.

SUBARU Optional Telescope© NAOJ

Contribute to Hydrogen Energy Society with Tuning Fork sensor:

Currently spotlighted Hydrogen energy as environment friendly fuel. Hydrogen itself is very light weight but its container is heavy so that in order to perform weighing accurately, large capacity yet fine resolution weighing apparatus is necessary. Also, hydrogen is hazardous material so that explosion-proof structure is crucial factor. To fulfill these several conditions, Shinko Denshi's Tuning Fork sensor is the only one available. We contribute to contribute to the environment conscious new society with only one technology for which only Shinko Denshi can realize.

Contribute widely in various fields.

Not only physical/chemical science and industrial field, but also logistics and space industry. Shinko Denshi is responding to automation in the production venue.

High performance yet durable ViBRA scales are leveraged in various markets other than overwhelmingly supported pharmaceutical and explosion-proof markets.

In fact, as well as Physical and Chemical field where research development is conducted by enterprises and/or educational institutes, Shinko Denshi contributes automated production line in the industry field to make up for shortfall in human resource with dynamic weighing scales
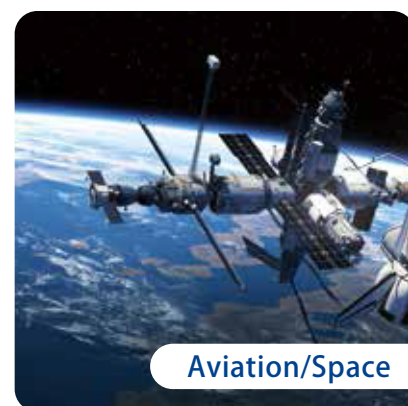
High accuracy of ViBRA scales have received recognition in various venues where scale feature/function is requested.
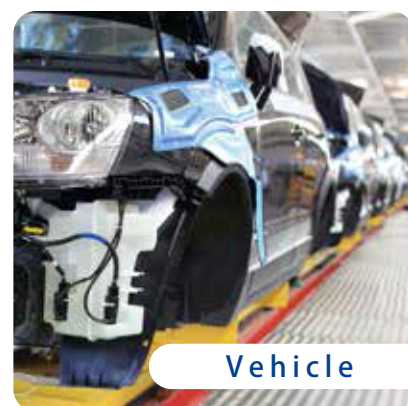
Vehicle

Pharmaceutical

Aviation/Space

Institute

Cosmetic/Fragrance

Drug pharmaceutical

Logistics

Educational institutes

Civil engineering

Support customer with only-one technology

Shinko Denshi provides "Long Life/Accurate/Reassured" scales for use in pursuing convenience/user-friendliness and functionality.

1 Cherry-picking, possible at Shinko Denshi only Selecting from 3 different sensors correspond to the purpose of usage.

Shinko Denshi, possessing 3 different sensors like unique Tuning Fork sensor, conventional Strain Gage and Electromagnetic sensor, provides variety products line-up which are inimitable by other entity, utilizing accuracy and characteristic features on each type.

Range for sensors

high / low — Resolution

Strain gauge

Tuning fork

Electro magnetic

low — Capacity — high
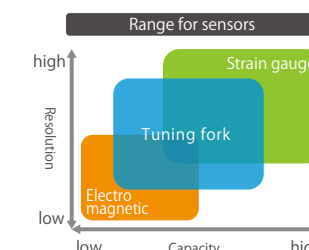
2 Carefully "Made in Japan" products. Consolidated work from R&D to Production.

To materialize engineer's idea, professional Meister skill is inevitable.

Shinko Denshi, having unique production techniques, dwells on Japan domestic production to assure and maintain highest quality.

Made In Japan
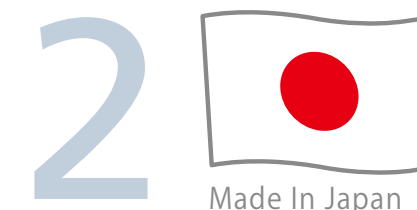
3 Heavy Duty; the Professional-Caliber

Shinko Denshi is to provide the products with toughness and long-term stability for heavy-duty usage. Especially for explosion-proof, dust-proof and water-proof products, which complies with Japan National Standard, Shinko Denshi has gained an implicit credence.

4 Measure the future by the technology continuously producing the world first.

Shinko Denshi's DNA is "the Challenge" sprit which produce world first products such as Counting Scale or Explosion-proof products. Shinko Denshi contribute to the society with keep providing products responding to the customer's needs

Index for products searches

⊠…Standard
▲…Option
※It may vary according to a model. Please check on product pages for more detals.

	Semi-micro & Analytical balance		Precision balance		Precision balance				Carat balance
	P10	P12	P16	P18	P19	P20	P21	P22	P24
List of publication function i	LF	HT/HTR	ALE	AJ/AJH	LN	AB	SJ	CJ	CT
Capacity	92～220g	80g～220g	220g～15000g	320g～12kg	220g～21kg	320g～12kg	220g～12kg	220g～15kg	600ct/1600ct
Readability	0.01mg～0.1mg	0.1mg	1mg～0.1g	0.001g～0.1g	0.001g～0.1g	0.001g～0.1g	0.01g～1g	0.01g～1g	0.001ct/0.01ct
Tuning-fork sensor		○	○	○	○	○	○	○	○
Strain gauge load cell									
Electro-magnetic sensor	○								
LCD display									○
Back-light LCD display	○	○	○	○		○	○	○	
Fluorescent display					○				
Switching function for min. readability	○	○	○					○	
Display function for actual readability									
Double range	○								
Direction Key					○			○	
Comparator Function	○	○	○	○	○	○	○	○	
Add/Accumlate Function	○	○	○		○			○	
Bar Graph Display	○	○	○	○	○	○	○	○	○
Internal calibration weight	○	○(HTR)	○(ALE-R)	○(AJH)	○(LN-R)	○(AB-R)			
Counting mode	○	○	○	○	○	○	○	○	
Percent mode	○	○		○	○	○	○	○	
Coef⊠cient Mode	○	○	○		○			○	
Speci⊠c Gravity Mode	○	○	○		○			○	
Animal weighing mode			○					○	
Statistic Calculation Mode	○		○		○				
RS232C output	○	○	○	○	○	○	▲	○	○
Printer output		○			○				
USB output	○		○						
ISO/GLP/GMP corresponding print	○	○	○		○			○	
Clock/Calendar Function	○	○	○		○				
Under weighing	○	○		▲	○		▲	○	
Rechargeable battery				▲	▲		▲		▲
Dry-cell battery		▲	○					▲	
IP65								○	
Hold display mode			○						
EC type approval		○	○	○	○	○	○	○	○

	Platform Scale		Ex-proof scale
⊠···Standard ▲···Option ※It may vary according to a model. Please check on product pages for more detals.	P28	P26	P30
List of publication function i	HJ-K/HJR-K	FS	FZ
Capacity	17kg-62kg	620g-300kg	620g-300kg
Readability	0.1g～1g	0.001g-1g	0.001g-1g
Tuning-fork sensor	○	○	○
Strain gauge load cell			
Electro-magnetic sensor			
LCD display			○
Back-light LCD display		○	
Fluorescent display	○		
Switching function for min. readability		○	○
Display function for actual readability			
Double range	○(HJ(R)-62K)		
Direction Key	○	○	○
Comparator Function	○	○	○
Add/Accumlate Function	○	○	○
Bar Graph Display	○	○	○
Internal calibration weight	○(HJR-K)		
Counting mode	○		
Percent mode	○	○	○
Coefⵥcient Mode		○	○
Speciⵥc Gravity Mode		○	○
Animal weighing mode			
Statistic Calculation Mode		○	○
RS232C output	○	○	○
Printer output	○	○	
USB output			
ISO/GLP/GMP corresponding print	○	○	○
Clock/Calendar Function	○	○	○
Under weighing	○		
Rechargeable battery	▲		
Dry-cell battery			
IP65	○	○	○
Hold display mode			
EC type approval	○	○	○

Embedded Sensor

Shinko Denshi is the only company who is selecting sensors from 3 different types.
Utilizing each sensor's characteristics, Shinko Denshi has deployed wider range products corresponding to the resolution, price and customer's needs.

Tuning Fork sensor —— No trouble with high accuracy and fast response time. ——

Vibration frequency changes against the application of load to two piece coupled Tuning Fork. Scale measures this frequency change then convert to the weight value. Stress-strain of the Tuning Fork is 1/10th and its output sensitivity is 50 times of Strain Gauge. This gives enormous difference in scale performance, such as resolution, stability and repeatability.
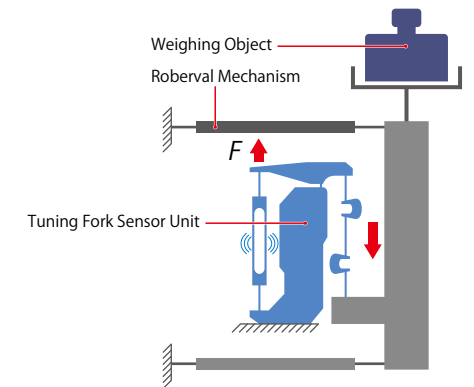
Strain Gauge Sensor —— Suitable for relatively heavy item and it is durable. ——

Applying load to Strain Gauge affixed metal makes gauge's resister value change by metal strain. Strain Gauge type sensor measures the change of resister value then convert into weight value. Structure of the sensor is relatively simple so that sensor cost is inexpensive, thus the sensor is suitable for heavy weight measurement.
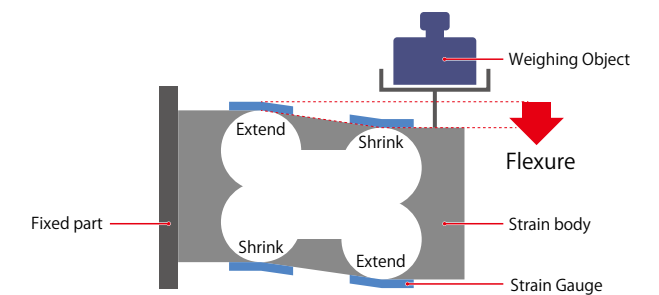
Electromagnetic Sensor —— Suitable for weighing of extreme light weight and/or micro piece. ——

Electromagnetic force, raised by the combination of Magnet and Coil, makes in balance of applied load. Sensor measures the current flown in the coil to determine weight value. It is suitable for high accuracy (high resolution) measurement. It has been noted as suitable for smaller capacity and high-resolution weighing.
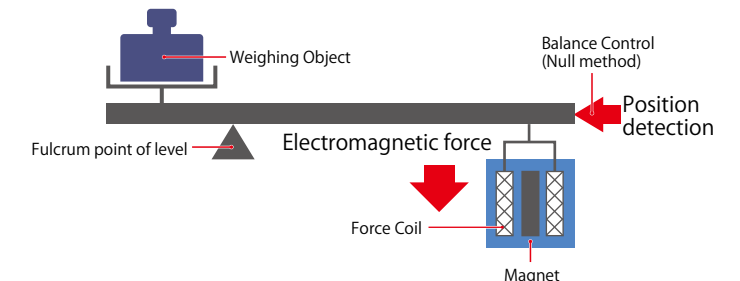
	Tuning Fork Sensor	Strain Gauge Sensor	Electromagnetic Sensor
Scale capacity	80g to 300kg	Few Hundred gram to few metric tons	Few grams to few kgs
Actual resolution	>1/3,000,000	>1/20,000	>1/60,000,000
Long-term stability (Example of span shift by year base)	High (1/200,000)	Low (1/10,000)	Normal (1/50,000)
A/D Conversion (Analogue/Digital)	N/A (Digital output)	Necessary (Analogue output)	Necessary (Analogue output)
Power consumption of Sensor	Extremely small (less than few percent of Strain Gauge type sensor)	Small	Large
Noise resistance	Strong	Weak	Normal
Warming up	Unnecessary (depend upon products and usage circumstances)	Necessary	Necessary

Eye-friendly display

LCD display
Crisp and clear contrast LCD display.

Back-light LCD display
It equipped back-light in the LCD so that indication is visible even in the dark.

Fluorescent display
Fluorescent display visible in the dark.

Various modes

Counting mode
Able to count piece with simple and easy sampling operation

Perxent mode
Indicate the ratio (%) against the set reference weight

Carat mode
Indicate in Carat (ct) for jewel measurement

Monme mode
Indicate Monme (mom) for Pearl weight measurement.

Coefficient mode
Indicate calculation result of weight value multiplied with any value.

Specific gravity mode
Indicate specific gravity value with measuring weight in the air and in the water.

Animal weighing mode
Function to weigh ambulant animals with accuracy.

Statistics calculation mode
Functions indicating statistic value like maximum or average.

Plenty functions

Stand-by function
Stand-by/sleep function, the scale can be used immediately after main power on.

Switching function of min. readability
Indication changeover function for selecting minimum readability unit.

Double range
Min display unit changes automatically when applied load exceed smaller range capacity.

Comparator (Limit) function
3 ranks discrimination is possible with setting two points (Upper limit and Lower limit).

Accumulative Adding function
Indicate addition or accumulation result of measured result.

Bar-Graph indication
Indicate by Bar-Graph the measured weight value occupancy to scale capacity.

Built-in calibration weight
Calibration weight is built-in so that manual span adjustment can be done easily by means of dial or knob.

Built-in automatic calibration weight
Motor-driven type calibration weight is built-in so that automatic span adjustment is performed by single key depression.

Comparator function   Bar-Graph display

RS232C Output
Able to connect to computer or printer which RS-232C interface is built-in.

Printer output
Shinko Denshi's exclusive printer CSP-160II or can be connected to scales.

ISO/GLP/GMP compliant printing
Simply connect to CSP-160 II or printer, then ISO/GLP/GMP compliant printing becomes available.

Clock/Calendar function
Date and time can be set to built-in Date/Time function. When exclusive printer is connected, data can be printed with date and time information.

Warning by Buzzer
Notify Limit function discrimination result by buzzer (mega volume type available) sound.

Display Unit angle adjustment
Able to adjust angle of display unit to visible angle position.

Under weight
Able to weigh beneath the floor weighing suitable for gravity measurement.

Battery Drive
Able to weigh things at anywhere, driven by exclusive rechargeable battery unit.

Dry-Call Battery drive
Able to weigh anywhere by dry battery drive.

IP65 Standard compliant dust-proof and water-proof structure.
Able to weigh under splashing water or dusty work place. The structure is IP65 compliant, dust-proof and water-proof.

Balance & Scale

Capacity : 92g～220g / Readability(d) : 0.01㎎～0.1mg

| Back-light LCD display | Under weighing |
| Windshield |

LF series

LF series Semi-micro Balance

| Electro-magnetic Sensor |

LF series

Thoroughly pursued the User-friendliness
Semi-micro Balance with min. readability 0.00001g (0.01㎎)

▌Features

● Automatic Span Adjustment Function to keep maintain high accuracy.
Advice CAL function to notify proper calibration timing.
● Combination Door which opens to left/right/double door
● Windshield designed for wide and space saving
● Large and eye-friendly display unit with back-light
● Able to use as Counting Scale
● Standard equipped USB Output

▌Common Specification

● Tare — Zero to Full weighing range
● Span adjustment — LF-R‥‥‥Automatic and semi-automatic Span Adjustment with built-in calibration weight
LF‥‥‥Manual opration Span Adjustment with external calibration weight
● Over error — "o-Err" showed when Full weight range + 9 more digits over
● Temperature and humidity range — 10～30℃、Up to 80% rh(without the dew condensation)
● Power source — AC adapter Input 100-240VAC / Output 5.95VDC
● Output — RS232C output (D-sub 9pin)
USB output

Model name	LF135R	LF225DR		LF124R	LF224R
Capacity	130g	92g	220g	120g	220g
Readability (d)	0.01mg	0.01mg	0.1mg	0.1mg	0.1mg
Verification intervals (e)	-	-	-	1mg	1mg
Repeatability	0.03mg	0.02mg	0.1mg	0.1mg	0.1mg
Linearity	±0.05mg	±0.03mg	±0.2mg	±0.2mg	±0.2mg
Stabilization time	5.0 sec.	5.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.
Pan size	80mm dia				
Dimentions(WDH)	210×320×335mm (Including Windshield)				

▌Options

Models	Option name
LFDK	Density measurement kit

▌Peripheral equipment

Models	Option name
CSP-160Ⅱ＊	Statistics Printer
CBM-910Ⅱ	Standard Printer
LAS-04D-SD	"No wind" Ionizing blower
RTS	Data-collecting Software

＊ Not available to use in EU, Switzerland & Turkey.

Density measurement kit

"No wind" Ionizing blower

Outclassing usage of Windshield unit.

In keeping wider space of scale capacity, wind shield is a two step slide door type, so that no flared section comes out from backside. It is a space saving design.
Because it is a combination door, it can open to left/right/double side and close by one hand. Able to achieve operational efficiency with using both hands.

Full Automatic Span Adjustment function to keep high-accuracy.

Full-automatic Span Adjustment function, which automatically detect a shift in the environment like ambient temparature change or lomger time usagea and calibrate (span adjustment) scale, is equipped. Periodic calibration maintains high-accuracy of the scale. In addition, Advice CAL function to inform the timing of calibration makes calibration easier.

Variety weighing mode

Weighing mode setting for gravity, percent, counting and jewellery scale. Reliable scale with variety weighing modes in small body enclosure.

■ **Measurement mode**
Weighing mode(g)
Counting Mode(Pcs)
Percent Mode(%)
Coefficient mode (#)
Monme Mode(Mon)
Carat Mode(ct)
■ **Specific Gravity Mode**
■ **Statistic Calculation Mode**

Bar graph display to indicate available weighing range.

Usage status to scale capacity is displayed in 40 fraction bar graph. Able to grasp the remaining weighing range at grance.

Large display unit with back-light.

Large and eye-friendly LCD display with 16.5 mm character hight can still read off in the dark workplace.

Standard equipped RS-232C and USB

Bidirectional RS-232C output and USB are standard equipped. Able to communicate with peripheral equipment, like printer etc, or PC.

Print date and time with ISO/GLP/GMP compliant format.

Able to print calibration records in ISO/GLP/GMP compliant format with date and time stamp when Shinko printer is connected.

Balance & Scale

Analytical
Balance

Counting Mode
Percent Mode
Carat Mode
Monme Mode
Coefficient Mode
Specific Gravity Mode
Animal weighing mode
Statistic Calculation Mode

Stand-by Function
Switching function for min. readability
Display function for actual readability
Switching of Scale range
Double Range
Direction key
Comparator Function
Add/Accumlate Function
Bar Graph Display
Built-in Calibration Weight

RS-232C Output
Printer Output
SO/GLP/GMP corresponding print
Clock/Calendar Function
Buzzer Alarm
RTS Free Download

Capacity：80g～220g ／ Readability(d)：0.1mg(0.0001g)

Back-light LCD display | Under weighing | Windshield

HT/HTR series Analytical Balance

Tuning-fork sensor

**World-first!! Analytical Balance with Tuning Fork sensor
Revolutional performance outreaches the common
sense of Analytical Balance field.**

Features

- Resolution: 1/2,200,000
- Built-in calibration weight for Automatic and semi-automatic Span Adjustment(HT-R)
- Light weight: Gross weight is reduced with approx. 50%
- Compact: overall size is approx. 60% shrinked.
- Shrorten warm-up time (reduced with approx. 90%)
- Dry Battery operation is available, first in Analytical Balance (Optional)
- Correspondence product for Free Download Data Acquisition software.

＊Data is the comparison result with Shinko one generation older products (same capacity, same min-graduation, force balance type analytical balance with built-incalibration weight

Common Specification

- Tare — Zero to Full weighing range
- Span adjustment — HT-R‥‥‥Automatic and semi-automatic Span Adjustment with built-in calibration weight
  HT‥‥‥Manual opration Span Adjustment with external calibration weight
- Over error — "o-Err" showed when Full weight range + 9 more digits over
- Temperature and humidity range — 10～30℃、Up to 80% rh(without the dew condensation)
- Power source — AC adapter Input 100-240VAC / Output 12VDC
- Output — RS232C & peripheral device output

Model name	HT84R HT84RCE	HT124R HT124RCE	HT224R HT224RCE	HT84 HT84CE	HT124 HT124CE	HT224 HT224CE
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	1mg	1mg	1mg
Accuracy class	I	I	I	I	I	I
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					
Dimentions(WDH)	213×290×314mm (Including Windshield)					

Options

Models	Option name
HTDK	Density measurement kit
HTBT*	Dry-cell battery pack

＊ not available for CE model

Peripheral equipment

Models	Option name
CSP-160Ⅱ＊	Statistics Printer
CBM-910Ⅱ	Standard Printer
LAS-04D-SD	"No wind" Ionizing blower
RTS	Data-collecting Software

＊ Not available to use in EU, Switzerland & Turkey.

"No wind" Ionizing blower

Mount the newly developped Tuning Fork sensor

Further advanced and newly developped high-precision/high-graduation Tuning Fork sensor is mounted in replacing Tuning Fork sensor known as faster response and flicker-free stable display.
Realize the world first tuning fork type analytical balance with its graduation at 1/2,200,000 and min. display interval in 0.1mg.
Revolutional performance outreaches the common sense of Analytical Balance field, such as light weight, compactness, shorten warming-up time and reduction of energy consumption etc.
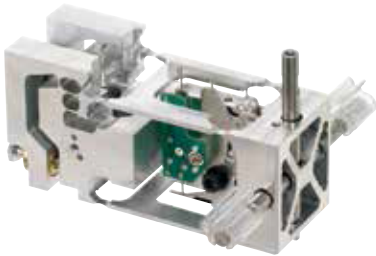
Light weight and compact body outreaches the common sense of Analytical Balance.

Realized aprrox. 2.8kg light weight and compact body by using Tuning Fork sensor and plastic wind shields. Plastic is used for 360 degree arround clear and hard to retain electrostatics.
Maintenance is easy as attachment and detachment are simple enough

Bar graph display to indicate available weighing range.

Usage status to scale capacity is displayed in 40 fraction bar graph. Able to grasp the remaining weighing range at grance.

"One-touch response time switching" function

Usage status to scale capacity is displayed in 40 fraction bar graph. Able to grasp the remaining weighing range at grance.

Full Automatic Span Adjustment Function

Full-automatic Span Adjustment function, which automatically detect a shift in the environment like ambient temparature change or lomger time usagea and calibrate (span adjustment) scale, is equipped. Periodic calibration maintains high-accuracy of the scale.

Standard equipped RS-232C

RS-232C interface and peropheral equipment output are standard equipped.

Print date and time in ISO/GLP/GMP compliant format

Able to print calibration records in ISO/GLP/GMP compliant format with date and time stamp when Shinko printer is connected. In addition, fixed time ellapsed printing iss available with using interval function.

Large LCD display with back-light read out even in a dark place.

Back-light function is added to large LCD display to read out even in dark place.
Usefull in dark room like laboratory

Analytical Balance first, Dry Battery drive. (Optional)

Dry Battery type operates for roughly 10 hours with back-light off.

Liquid gravity measurement Set (Optional)

Able to measure Liquid gravity easily with attaching Liquid Gravity Measurement Set.

※ Only for ALE223(R)CE ～ ALE623(R)CE

Capacity：220g～15kg ／ Readability(d)：0.001g～0.1g

Back-light LCD display | Under weighing
Windshield ※

Tuning-fork sensor

ALE series

ALE series Precision Balance

Saturate really required things and user-friendliness into tiny body enclosure.

Features

● Speeding up, to approximately 1/2 of stability time, becomes a reality with using newly developped Tuning Fork sensor. *
● Compact design, pursued user-friendliness and minimum size in its class(*)
● Approximately 30 kinds of function, as well as 8 kinds weighing modes, are mounted inside scale.
(*) Compared with Shinko's eqyuivalent model.

Common Specification

● Tare   Zero to Full weighing range
● Span adjustment   ALE‥‥‥Manual operation Span Adjustment with external
                                        calibration weight
                                        ALE-R‥‥‥Semi-automatic Span Adjustment with built-in
                                        calibration weight
● Over error   "o-Err" showed when Full weight range + 9 more digits over
● Temperature and humidity range   10～30℃、Up to 85% rh(without the dew condensation)
● Power source   AC adapter: Input 100-240VAC,50-60Hz / Output 5.95VDC
                                        Dry-cell battery: AA batteries 4 pcs
● Output   RS232C + USB

ALE223CE

ALE3202CE

Model name	ALE223R	ALE323R	ALE623R	ALE1502R	ALE2202R	ALE3202R	ALE6202R	ALE8201R	ALE15001R
Capacity	220g	320g	620g	1500g	2200g	3200g	6200g	8200g	15000g
Readability (d)	0.001g	0.001g	0.001g	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g
Verification intervals (e)	0.01g	0.01g	0.01g	0.1g	0.1g	0.1g	0.1g	1g	1g
Accuracy class	II	II	II	II	II	II	II	II	II
Repeatability	0.001g	0.001g	0.001g	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g
Stabilization time	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.
Pan size	118mm dia			180×160mm					
Dimentions(WDH)	205×270×301mm (Including Windshield)			192×265×86mm					
Windshield	○	○	○	×	×	×	×	×	×

Model name	ALE223	ALE323	ALE623	ALE1502	ALE2202	ALE3202	ALE6202	ALE8201	ALE15001
Capacity	220g	320g	620g	1500g	2200g	3200g	6200g	8200g	15000g
Readability (d)	0.001g	0.001g	0.001g	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g
Verification intervals (e)	0.01g	0.01g	0.01g	0.1g	0.1g	0.1g	0.1g	1g	1g
Class	II	II	II	II	II	II	II	II	II
Repeatability	0.001g	0.001g	0.001g	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g
Stabilization time	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.	1.6 sec.
Pan size	118mm dia			180×160mm					
Dimentions(WDH)	205×270×301mm (Including Windshield)			192×265×86mm					
Windshield	○	○	○	×	×	×	×	×	×

Options

Models	Option name
ALE-LM	Relay contact
ALE-RS	Extension RS2321C
ALE-ETHER	Ethernet
ALE-DU	Under weighing hook
ALE-DK	Density measurement kit

Peripheral equipment

Models	Option name
CSP-160II*	Statistics Printer
CBM-910II	Standard Printer
LAS-04D-SD	"No wind" Ionizing blower
RTS	Data-collecting Software

＊ Not available to use in EU, Switzerland & Turkey.

Tuning Fork sensor is mounted

Stability time is greatly reduced.
Signal process of Tuning Fork sensor realize the speed up. Stability time becomes 1/2 compared with current models.

Windshield outclassingly convenient

Newly designed Windshield is standard option for ALE223(R) through 623(R).
Attaching/detaching are in one touch! Superior for cleaning.

Able to drive by three different power source.

3 way drive: "AC adapter 100-240V", "Dry Battery (AA: 4pcs)", "PC's USB*"
Main power will not be shut down when dry batteries are placed.!
＊ available only on PC with exclusive driver software installed.

AC adapter
100・240VAC   Dry Battery   USB

Correspond with various system by extensive output options.

RS-232C output and USB output are standard options. Other than that, Ethernet output (optional*) are able to correspond to various system.
＊ Customer can install these optional output units.

Ethernet output

ALE-output

Battery drive

ALE can be operated with dry-cell batteries thanks to low power consumption in tuning-fork sensor unit.
Battery is useful also as reserve electric power

ALE-battery

Counting Mode
Percent Mode
Carat Mode
Monme Mode
Coefficient Mode
Specific Gravity Mode
Animal weighing mode
Statistic Calculation Mode

Stand-by Function
Switching function for min. readability
Display function for actual readability
Switching of Scale range
Double Range
Direction key
Comparator Function
Add/Accumlate Function
Bar Graph Display
Built-in Calibration Weight

RS-232C Output
Printer Output
SO/GLP/GMP corresponding print
Clock/Calendar Function
Buzzer Alarm
RTS Free Download

Counting Mode
Percent Mode
Carat Mode
Monme Mode
Coefficient Mode
Specific Gravity Mode
Animal weighing mode
Statistic Calculation Mode

Stand-by Function
Switching function for min. readability
Display function for actual readability
Switching of Scale range
Double Range
Direction key
Comparator Function
Add/Accumlate Function
Bar Graph Display
Built-in Calibration Weight

RS-232C Output
Printer Output
SO/GLP/GMP corresponding print
Clock/Calendar Function
Buzzer Alarm
RTS Free Download

ALE series

Counting Mode
Percent Mode
Carat Mode
Monme Mode
Coefficient Mode
Specific Gravity Mode
Animal weighing mode
Statistic Calculation Mode

Stand-by Function
Switching function for min. readability
Display function for actual readability
Switching of Scale range
Double Range

Direction key
Comparator Function
Add/Accumulate Function
Bar Graph Display
Built-in Calibration Weight

RS-232C Output
Printer Output
SO/GLP/GMP corresponding print
Clock/Calendar Function
Buzzer Alarm
RTS Free Download

※ Only for AJH-220(C)E～620(C)E
& AJ-220(C)E～620(C)E

Capacity : 220g～12kg / Readability(d) : 0.001g～0.1g

| Back-light LCD display | Under weighing |
| Windshield ※ |

AJ/AJH series Precision Balance

| Tuning-fork sensor |

High-Accuracy / Multiple Functions
Tuning Fork sensor equipped standard model

Features

- High performance model, scale's basic performance is upgraded.
- Tuning Fork sensor equipped basic model.
- Widely correspond to various use application.
- Eye-friendly large LCD display with back-light.
- RS-232C is standard option.

Common Specification

- Tare — Zero to Full weighing range
- Span adjustment — AJ･････Manual operation Span Adjustment with external calibration weight
  AJH･････Semi-automatic Span Adjustment with built-in calibration weight
- Over error — "o-Err" showed when Full weight range + 9 more digits over
- Temperature and humidity range — 5～35℃ (E type), 10～30℃ (CE type) Up to 80% rh(without the dew condensation)
- Power source — AC adapter Input 100-240VAC / Output 12VDC
- Output — RS232C(Din5p)

Model name	AJH-220E AJH-220CE	AJH-320E AJH-320CE	AJH-420E AJH-420CE	AJH-620E AJH-620CE	AJH-2200E AJH-2200CE	AJH-3200E AJH-3200CE	AJH-4200E AJH-4200CE	AJ-220E AJ-220CE	AJ-320E AJ-320CE	AJ-420E AJ-420CE	AJ-620E AJ-620CE
Capacity	220g	320g	420g	620g	2200g	3200g	4200g	220g	320g	420g	620g
Readability (d)	0.001g	0.001g	0.001g	0.001g	0.01g	0.01g	0.01g	0.001g	0.001g	0.001g	0.001g
Verification intervals (e)	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g	0.1g	0.01g	0.01g	0.01g	0.01g
Accuravacy class	Ⅱ	Ⅱ	Ⅱ	Ⅰ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅰ
Repeatability	0.001g	0.001g	0.001g	0.001g	0.01g	0.01g	0.01g	0.001g	0.001g	0.001g	0.001g
Linearity	±0.001g	±0.001g	±0.001g	±0.001g	±0.01g	±0.01g	±0.01g	±0.001g	±0.001g	±0.001g	±0.002g
Stabilization time	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	2.5 sec.	2.5 sec.	2.0 sec.	2.0 sec.
Pan size	118mm dia			180×160mm				118mm dia			
Dimentions(WDH)	182×235×168mm (Including Windshield)			192×265×87mm				182×235×168mm (Including Windshield)			
Windshield	○	○	○	○	×	×	×	○	○	○	○

Model name	AJ-820E AJ-820CE	AJ-1200E AJ-1200CE	AJ-2200E AJ-2200CE	AJ-3200E AJ-3200CE	AJ-4200E AJ-4200CE	AJ-6200E AJ-6200CE	AJ-8200E AJ-8200CE	AJ-12KE AJ-12KCE
Capacity	820g	1200g	2200g	3200g	4200g	6200g	8200g	12000g
Readability (d)	0.01g	0.01g	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g
Verification intervals (e)	0.01g	0.1g	0.1g	0.1g	0.1g	0.1g	1g	1g
Accuravacy class	Ⅰ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅰ	Ⅱ	Ⅱ
Repeatability	0.01g	0.01g	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g
Linearity	±0.01g	±0.01g	±0.01g	±0.01g	±0.01g	±0.02g	±0.1g	±0.1g
Stabilization time	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	170×142mm		180×160mm					
Dimentions(WDH)	182×235×75mm		192×265×87mm					
Windshield	×	×	×	×	×	×	×	×

Options

Models	Option name
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

Peripheral equipment

Models	Option name
CSP-160Ⅱ*	Statistics Printer
CBM-910Ⅱ	Standard Printer
LAS-04D-SD	"No wind" Ionizing blower
SDI/SDR*	Satellite Second Display
RTS	Data-collecting Software

＊ Not available to use in EU, Switzerland & Turkey.

Counting Mode
Percent Mode
Carat Mode
Monme Mode
Coefficient Mode
Specific Gravity Mode
Animal weighing mode
Statistic Calculation Mode

Stand-by Function
Switching function for min. readability
Display function for actual readability
Switching of Scale range
Double Range

Direction key
Comparator Function
Add/Accumlate Function
Bar Graph Display
Built-in Calibration Weight

RS-232C Output
Printer Output
SO/GLP/GMP corresponding print
Clock/Calendar Function
Buzzer Alarm
RTS Free Download

※ Only for LN23R(CE)～623R(CE)
& LM223(CE)～623(CE)

Capacity : 220g～21kg / Readability(d) : 0.001g～0.1g

| Fluorescent display | Under weighing |
| Windshield ※ |

LN series Precision Balance

| Tuning-fork sensor |

High-Accuracy / Multiple functions / Operability are compacted.
Correspond to various weighing purpose.

Features

- Aluminum diecast body, strong for radio wave interferance, robust and strong chemical resistance. (LN2100 is excluded)
- Strong for noise, fast response and less flickering stable display.
- Large weigh platter, largest in its class, 200mm square
  (LN223(R) thru 623(R), LN2100(R) HJII-21K are excluded)

Common Specification

- Tare — Zero to Full weighing range
- Span adjustment — LN･････ Manual operation Span Adjustment with external calibration weight
  LN-R･････Semi-automatic Span Adjustment with built-in calibration weight
- Over error — "o-Err" showed when Full weight range + 9 more digits over
- Temperature and humidity range — 5～35℃ (Non-CE type) & 10～30℃ (CE type), Up to 80% rh(without the dew condensation)
- Power source — AC adapter Input 100-240VAC / Output 12VDC
- Output — RS232C (Dsub 9P) + Printer output (Din 8p)

Model name	LN223R LN223RCE	LN323R LN323RCE	LN4233R LN423RCE	LN623R LN623RCE	LN2202R LN2202RCE	LN3202R LN3202RCE	LN4202R LN4202RCE	LN223 LN223CE	LN323 LN323CE	LN423 LN423CE	LN623 LN623CE
Capacity	220g	320g	420g	620g	2200g	3200g	4200g	220g	320g	420g	620g
Readability (d)	0.001g	0.001g	0.001g	0.001g	0.01g	0.01g	0.01g	0.001g	0.001g	0.001g	0.001g
Verification intervals (e)	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g	0.1g	0.01g	0.01g	0.01g	0.01g
Accuravacy class	Ⅱ	Ⅱ	Ⅱ	Ⅰ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅰ
Repeatability	0.001g	0.001g	0.001g	0.001g	0.01g	0.01g	0.01g	0.001g	0.001g	0.001g	0.001g
Linearity	±0.001g	±0.001g	±0.001g	±0.001g	±0.01g	±0.01g	±0.01g	±0.001g	±0.001g	±0.001g	±0.002g
Stabilization time	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	2.5 sec.	2.5 sec.	2.0 sec.	2.0 sec.
Pan size	140 x 120mm				200 x 200mm			140 x 120mm			
Dimentions(WDH)	220x333x190(including Windshield)				220x333x88mm			220x333x190(including Windshield)			
Windshield	○	○	○	○	×	×	×	○	○	○	○

Model name	LN1202 LN1202CE	LN2202 LN2202CE	LN3202 LN3202CE	LN4202 LN4202CE	LN6202 LN6202CE	LN8201 LN8201CE	LN12001 LN12001CE	LN15001 LN15001CE	LN21001 LN21001CE	LN31001 LN31001CE
Capacity	1200g	2200g	3200g	4200g	6200g	8200g	12000g	15000g	21000g	31000g
Readability (d)	0.01g	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g	0.1g	0.1g	0.1g
Verification intervals (e)	0.1g	0.1g	0.1g	0.1g	0.1g	1g	1g	1g	1g	1g
Accuravacy class	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅰ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ
Repeatability	0.01g	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g	0.1g	0.1g	0.1g
Linearity	±0.01g	±0.01g	±0.01g	±0.01g	±0.02g	±0.1g	±0.1g	±0.1g	±0.1g	±0.1g
Stabilization time	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	200 x 200mm									250×220mm
Dimentions(WDH)	220x333x88mm									260x330x111mm
Windshield	×	×	×	×	×	×	×	×	×	×

Options

Models	Option name
LNBT	Rechargeable battery
LNLM	Relay contact
LNUH	Under weighing hook
LNBZ	Buzzer output
LNR4	RS422A output
LNDK	Density measurement kit

Peripheral equipment

Models	Option name
CSP-160Ⅱ*	Statistics Printer
CBM-910Ⅱ	Standard Printer
LAS-04D-SD	"No wind" Ionizing blower
SDI/SDR*	Satellite Second Display
RTS	Data-collecting Software

＊ Not available to use in EU, Switzerland & Turkey.

Balance & Scale

Precision Balance

Counting Mode
Percent Mode
Carat Mode
Monme Mode
Coefficient Mode
Specific Gravity Mode
Animal weighing mode
Statistic Calculation Mode

Stand-by Function
Switching function for min. readability
Display function for actual readability
Switching of Scale range
Double Range
Direction key
Comparator Function
Add/Accumlate Function
Bar Graph Display
Built-in Calibration Weight
RS-232C Output
Printer Output
SO/GLP/GMP corresponding print
Clock/Calendar Function
Buzzer Alarm
RTS Free Download

Left page — AB series

※ Only for AB-323(R),623(R)

Capacity : 320g～12kg　/　Readability(d) : 0.001g～0.1g

Back-light LCD display　　Windshield ※

AB series　Precision Balance

Tuning-fork sensor

High-spec with Tuning Fork sensor equipped.
Middle class equipment with 1mg readability.

AB3202

Features

- Line-ups featured usability and general versatility
- Adopt large size weigh platter in its class.
- Large and eye-friendly LCD display with back light
- RS-232C is standard option
- Corresponding product to free download Data Acquisition Software "RTS".

AB323

Common Specification

- Tare ⋯⋯ Zero to Full weighing range
- Span adjustment ⋯⋯ AB⋯⋯Manual operation Span Adjustment with external calibration weight
  AB-R⋯⋯Semi-automatic Span Adjustment with built-in calibration weight
- Over error ⋯⋯ "o-Err" showed when Full weight range + 9 more digits over
- Temperature and humidity range ⋯⋯ 5～35℃、Up to 80% rh(without the dew condensation)
- Power source ⋯⋯ AC adapter Input 100-240VAC / Output 12VDC
- Output ⋯⋯ RS232C(D-Sub9Pin)

Model name	AB323	AB623	AB1202	AB3202	AB12001
Capacity	320g	620g	1200g	3200g	12000g
Readability (d)	0.001g	0.001g	0.01g	0.01g	0.1g
Verification intervals (e)	0.01g	0.01g	0.1g	0.1g	1g
Accuravacy class	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ
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		190×190mm		
Dimentions(WDH)	293×202×206mm（Including Windshield）		293×196×89mm		
Windshield	○	○	×	×	×

Model name	AB323R	AB623R	AB1202R	AB3202R	AB12001R
Capacity	320g	620g	1200g	3200g	12000g
Readability (d)	0.001g	0.001g	0.01g	0.01g	0.1g
Verification intervals (e)	0.01g	0.01g	0.1g	0.1g	1g
Accuravacy class	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ
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		190×190mm		
Dimentions(WDH)	293×202×206mm（Including Windshield）		293×196×89mm		
	○	○	×	×	×

Peripheral equipment

Models	Option name
CSP-160Ⅱ*	Statistics Printer
CBM-910Ⅱ	Standard Printer
LAS-04D-SD	"No wind" Ionizing blower
SDI/SDR*	Satellite Second Display
RTS	Data-collecting Software

＊ Not available to use in EU, Switzerland & Turkey.

Right page — SJ series

Capacity : 220g～12kg　/　Readability(d) : 0.01g～1g

Back-light LCD display

SJ series　Precision Balance

Tuning-fork sensor

Compact Electronics Balance with by far the best operability.
General purpose equipment in high-resolution yet reasonable.

SJ-820E

Features

- High Cost Performance equipment in high-resolution and durable.
- Correspond widely to various usage purpose. Base equipment mounted Tuning Fork sensor.

Common Specification

- Tare ⋯⋯ Zero to Full weighing range
- Span adjustment ⋯⋯ Manual operation Span Adjustment with external calibration weight
- Over error ⋯⋯ "o-Err" showed when Full weight range + 9 more digits over
- Temperature and humidity range ⋯⋯ 5～35℃ (E type) & 10~30℃ (CE type), Up to 80% rh(without the dew condensation)
- Power source ⋯⋯ AC adapter Input 100-240VAC / Output 12VDC
- Output ⋯⋯ Nil

Model name	SJ-220E SJ-220CE	SJ-420E SJ-420CE	SJ-620E SJ-620CE	SJ-1200E SJ-1200CE	SJ-2200E SJ-2200CE	SJ-4200E SJ-4200CE	SJ-6200E SJ-6200CE	SJ-12KE 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)	0.01g	0.01g	0.1g	0.1g	0.1g	0.1g	1g	1g
Accuravacy class	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ	Ⅱ
Repeatability	0.01g	0.01g	0.1g	0.1g	0.1g	0.1g	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			170x140mm		180×160mm		
Dimentions(WDH)	182×235×75mm				192×265×87mm			

Options

Models	Option name
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)

Peripheral equipment ＊2

Models	Option name
CSP-160Ⅱ＊¹	Statistics Printer
CBM-910Ⅱ	Standard Printer
SDI/SDR＊¹	Satellite Second Display
RTS	Data-collecting Software

＊1　Not available to use in EU, Switzerland & Turkey.
＊2　Need to install option SJR(S) or SJR(M) to connect

Balance & Scale

Precision Balance

Counting Mode
Percent Mode
Carat Mode
Monme Mode
Coefficient Mode
Specific Gravity Mode
Animal weighing mode
Statistic Calculation Mode

Stand-by Function
Switching function for min. readability
Display function for actual readability
Switching of Scale range
Double Range
Direction key
Comparator Function
Add/Accumlate Function
Bar Graph Display
Built-in Calibration Weight
RS-232C Output
Printer Output
SO/GLP/GMP corresponding print
Clock/Calendar Function
Buzzer Alarm
RTS Free Download

Capacity：220g〜15kg　/　Readability(d)：0.01g〜1g

Back-light LCD display　　**IP65**
Dry-call batteiy

CJ series

CJ series　Precision Balance

Tuning-fork sensor

World first! IP65 compliance with min. graduation at 10mg.
Electronic Balance used for heavy duty purpose in stainless steel body.

Features

- Stainless Steel enclosure (SUS304), rust-resistance and strong for corrosion
- Low power consumption and earth-riendly eco-product
- Ubiquitous weighing scale with dry battery (four AA battery) drive (optional)
- Large LCD display with auto-off back light
  Able to use as Counting Scale
- Able to weigh anywhere in accurate and high resolution using built-in calibration weight.
  (CJR series)
- Employed 3 way drive method: AC Adaptor, Dry Battery, and Rechargeable Battery.
- Ubiquitas weighing, anywhere and anytime (Dry Battery type is optional).
- Corresponding to free download Data Acquisition Software "RTS".

Common Specification

- Tare .... Zero to Full weighing range
- Span adjustment .... Manual operation Span Adjustment with external calibration weight
- Ingress Protection Rating IP65
- Over error .... "o-Err" showed when Full weight range + 9 more digits over
- Temperature and humidity range ... 0〜40℃、Up to 80% rh(without the dew condensation)
- Power source .... AC adapter Input 100-240VAC / Output 5.95VDC
- Output .... RS232C(Dsub 9P)

Model name	CJ-220E CJ-220CE	CJ-320E CJ-320CE	CJ-620E CJ-620CE	CJ-820E CJ-820CE	CJ-2200E CJ-2200CE	CJ-4200E CJ-4200CE	CJ-6200E CJ-6200CE	CJ-8200E CJ-8200CE	CJ-15KE CJ-15KCE
Capacity	220g	320g	620g	820g	2200g	4200g	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)	0.01g	0.01g	0.01g	0.01g	0.1g	0.1g	0.1g	0.1g	1g
Accuravacy class	II	II	II	II	II	II	II	II	II
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				190×190mm				
Dimentions(WDH)	206×312×89mm								

Options

Models	Option name
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)

Peripheral equipment

Models	Option name
CSP-160 II *	Statistics Printer
CBM-910 II	Standard Printer
SDI/SDR*	Satellite Second Display
RTS	Data-collecting Software

＊Not available to use in EU, Switzerland & Turkey.

High-precision and tough body. Superior dust-proof & water-proof construction compliant to IP65 standards.

Because of Tuning Fork sensor, complete shield structure with high-resolution scale becomes possible.
Body is made by stainless steel (SUS304) which is superior to not only water or dust, but also to chemical resistance and anti-corrosion. Scale is wash- down so that it can be used at dusty and succulent workplace.

Low power consumption and eco-friendly.

Earth-friendly low power consumption. Warming up time is also greatly shortened.
Able to operate for continuous 200 hours roughly by AA Alkaline dry battery. (back-light off) (Optional)

Large size display with auto-off function LCD back-light.

LCD display, in large and eye-friendly 18mm height indication, is equipped with back-light which is clearly visible in a dark workplace. Halt in operation turns back-light off to save power consumption.

Direct key for easy to operate.

Multiple functions can be selected by direct keys located right side of the display.

Bar Graph display to monitor remaining weighing range at a grance.

Indicate use status against the capacity in bar graph. Remaining weighing range, like how much can be weighed when heavy tare weight is used, can be found at a grance.

Various weighing mode

Weighing mode setting can be used as specific gravity, percent, counting scale, animal scale or jewellery scale. A reliable scale in a small body is yet providing various weighing application.

Counting Scale mode

Animal Scale mode
(Animal Weighing Platter is an option)

Standard equipped RS-232C

Standard equipped RS-232C bidirectional output. Able to communicate with buzzer, limit contacts, peripheral equipment like pinter or PC.

Print date and time in ISO/GLP/GMP compliant format.

Able to print calibration records in ISO/GLP/GMP compliant format with date and time stamp when Shinko's printer is connected.(When Output cable other than RSWP one is connected, it becomes out of IP65 compliance.)

Capacity : 600ct・1600ct　/　Readability(d) : 0.001ct・0.01ct

`Back-light LCD display`　`Windshield`

CT series　Carat balance

`Tuning-fork sensor`

**Compact and Light weight
High-accuracy Carat Balance with 1/600,000 resolution.**

Features

- Roll-Top type Wind Shield operable from its front side. CT-603(CE) / CT1602(CE)
- Corresponding product to free download Data Acquisition Software (RTS).

CT603

Common Specification

- Tare　　　　　　　　　　　Zreero to Full weighing range
- Span adjustment　　　　　Manual operation Span Adjustment with external calibration weight
- Over error　　　　　　　　"o-Err" showed when Full weight range + 9 more digits over
- Temperature and humidity range　5～35℃ (CT, CT-G), 10~30℃ (CT-CE, CT-GCE type), Up to 80% rh (without the dew condensation)
- Power source　　　　　　　AC adapter Input 100-240VAC / Output 12VDC
- Output　　　　　　　　　　RS232C (Din 5P)

CT603G

Model name	CT603 CT603CE	CT1602 CT1602CE	CT603G CT603GCE	CT1602G CT1602GCE
Capacity	600ct	1600ct	600ct	1600ct
Readability (d)	0.001ct	0.01ct	0.001ct	0.01ct
Verification intervals (e)	0.01ct	0.1ct	0.01ct	0.1ct
Accuravacy class *1	I	II	I	II
Repeatability	0.001ct	0.01ct	0.001ct	0.01ct
Linearity	±0.003ct	±0.01ct	±0.003ct	±0.01ct
Stabilization time	4.0 sec.	4.0 sec.	4.0 sec.	4.0 sec.
Pan size	80mm dia		80mm dia	
Type of windshield	Roll-top windshield		Three slide glass windshield	
Dimentions(WDH)	182×235×162mm（Including Windshield）		207×251×260mm（Including Windshield）	

＊1 accuracy class for carat

Options

Models	Option name
AJBT(S)	Rechargeable battery
CTCP	Carat pan

Peripheral equipment

Models	Option name
CSP-160 II *2	Statistics Printer
CBM-910 II	Standard Printer
LAS-04D-SD	"No wind" Ionizing blower
SDI/SDR*2	Satellite Second Display
RTS	Data-collecting Software

＊2 Not available to use in EU, Switzerland & Turkey.

Capacity:17kg ～ 62kg . Readability:0.1g～1g

`Fluorescent display`　`IP65`

HJ-K /HJR-K series　Platform Scale

`Tuning fork sensor`

**High-precision Platform Scale compliant
to IP65 standards (Resolution: 1/330,000)
Stainless Steel body, able to wash down.**

when separated (cable length: 1m)

Features

- Durable design with stainless steel enclosure surface and alminum die-cast body.
- Able to assemble to pole type or separate type depend upon measurement purpose or location.
- Correspond to various measurement occasion like comparator function, counting mode or % mode.
- Correspondence product to free download Data Acquisition Software (RTS).
- when separated (cable length: 1m)

HJ-33K

Common Specification

- Tare　　　　　　　　　　　Zero to Full weighing range
- Span adjustment　　　　　HJ-K‥‥‥Manual operation Span Adjustment with external calibration weight
　　　　　　　　　　　　　　HJR-K‥‥‥Semi automatic Span Adjustment with internal calibration weight
- Ingress Protection Rating　IP65
- Over error　　　　　　　　"o-Err" showed when Full weight range + 9 more digits over
- Temperature and humidity range　5～35℃、Up to 80% rh(without the dew condensation)
- Power source　　　　　　　AC adapter Input 100-240VAC / Output 9VDC
- Output　　　　　　　　　　RS232C (Dsub 9P)

Model name	HJ-17KSE HJ-17KSCE	HJ-22KSE HJ-22KSCE	HJ-33KSE HJ-33KSCE	HJ-62KDSE HJ-62KDSCE	
Capacity	17000g	22000g	33000g	6200g	62000g
Readability (d)	0.1g	0.1g	0.1g	0.1g	1g
Verification intervals (e)	1g	1g	1g	1g	1g
Repeatability	0.1g	0.1g	0.1g	0.1g	0.7g
Linearity	±0.3g	±0.3g	±0.3g	±0.3g	±0.1g
Stabilization time	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	
Pan size	400×350mm			400×350mm	
Dimentions(WDH)	350 x 508 x 705mm				

Model name	HJR-17KSE HJR-17KSCE	HJR-22KSE HJR-22KSCE	HJR-33KSE HJR-33KSCE	HJR-62KDSE HJR-62KDSCE	
Capacity	17000g	22000g	33000g	6200g	62000g
Readability (d)	0.1g	0.1g	0.1g	0.1g	1g
Verification intervals (e)	1g	1g	1g	1g	1g
Repeatability	0.1g	0.1g	0.1g	0.1g	0.7g
Linearity	±0.3g	±0.3g	±0.3g	±0.3g	±0.1g
Stabilization time	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	
Pan size	400×350mm			400×350mm	
Dimentions(WDH)	350 x 508 x 705mm				

Options

Models	Option name
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)

Peripheral equipment

Models	Option name
CSP-160 II *	Statistics Printer
CBM-910 II	Standard Printer
SDI/SDR*	Satellite Second Display
RTS	Data-collecting Software

＊Not available to use in EU, Switzerland & Turkey.

Tough body with superior dust-proof and water-proof structure. (IP65 standards compliant)

Weighing and Display unit is made by stainless steel which is superior for durability and anti-corrosion.
It is still comfortable in dusty or high-humidity place, because it is IP65 standard compliant product in conceiled structure so that it is washable.
In addition, alminum diecast, which is robust, strong for radio wave interference and chemical resistance, is used. Tough design in focus of actual workplace usage.

Smooth angle adjustment

For standard type, Panel angle can be adjusted in non-step. Panel's best position, suitable for location and purpose of usage, can be selected.

Type change suitable for usage.

Set up scale in pole type or separate type depend upon how to use and usage location.
It turns into a compact integrated type with using integration bracket for display (optional).

In case when integration bracket for display (optional) is attached.

Capacity：620g～300kg　/　Readability：0.001g～1g

FS series

FS series　Precision Platform Scale

Tuning-fork sensor

Large capacity, max. 300kg
High resolution up to 620,000 divisions IP65

FS30K0.1K

FS200K1G

▌Features

● High Capacity and High Precision – Two in One
　Reliable measurement for every process in manufacturing.

▌Common Specification

● Tare   Zero to Full weighing range
● Span adjustment   Manual operation Span Adjustment with external calibration weight
● Ingress Protection Rating   IP65
● Over error   "o-Err" showed when Full weight range + 9 more digits over
● Temperature and humidity range   5～40℃、Up to 85% rh(without the dew condensation)
● Power source   AC adapter Input 100-240VAC / Output 9VDC and dry-cell battery *1
● Output   RS232C(Dsub 9Pin)+Printer out put(Din 8Pin)
● Scale cable length   5m for FS 150K1GF and 300K1GF.1m for all other models. *2

Model name	FS 623	FS 3202	FS 6202	FS 15001	FS 30K0.1G
Capacity	620g	3200g	6200g	15000g	30kg
Readability (d)	0.001g	0.01g	0.01g	0.1g	0.1g
Verification intervals (e)	0.01g	0.1g	0.1g	1g	1g
Repeatability	0.001g	0.01g	0.01g	0.1g	0.1g
Linearity	± 0.002g	± 0.02g	± 0.02g	± 0.2g	± 0.1g
Stabilization time	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.
Pan size	140mm dia.	190 × 190 mm	190 × 190 mm	190 × 190 mm	310 × 330 mm
Dimentions(WDH)	294 x 352 x 570mm				310x444x672mm

Model name	FS 60K0.1G	FS 100K1G	FS 200K1G	FS 150K1GF	FS 300K1GF
Capacity	60kg	100kg	200kg	150kg	300kg
Readability (d)	0.1g	1g	1g	1g	1g
Verification intervals (e)	1g	10g	10g	10g	10g
Repeatability	0.1g	1g	1g	0.7g	0.8g
Linearity	± 0.2g	± 2g	± 2g	± 3g	± 5g
Stabilization time	2.5 sec.	2.5 sec.	2.0 sec.	2.0 sec.	2.0 sec.
Pan size	310 × 330 mm	310 × 330 mm	310 × 330 mm	800 × 600 mm	800 × 600 mm
Dimentions(WDH)	380x653x804m			800x600x142mm	

▌Options

Models	Option name
FS-RS	additional RS232C output
FS-R4	RS422A output
FS-LM	Relay contact
FS-TI	TCP/IP output
FS-DS	Display stand
FS-PK	Pole stand
FS-SC	Extended scale cable (per 5m, max.30m)
FS-WS	Windshield for FS 623 (S, M, L. Three sizes selectable)
FS-OX(S)	Communication option box (S)
FS-OX(M)	Communication option box (M)

▌Peripheral equipment

Models	Option name
CBM-910Ⅱ	Standard Printer
RTS	Data-collecting Software

*1 D type(U. S. A.), R20 & LR20(IEC category)are available.
*2 "Scale cable" is cable between indicator and platform.

High Capacity and High Precision – Two in One

FS series attains high capacity and high precision in single unit. WithFS 300K1GF model, you can measure up to 300KG with 1g readability, which satisfies two demands in single unit, high capacity and high resolution. Unique technology "tuning-fork" sensor enables "two-in-one" feature. This unique technology also ensures excellent weighing performance and long-term stability even in tough condition.

FS3202
FS6205 & F15001

FS150K1GF & FS300K16F

Reliable measurement for every process in manufacturing

FS series helps your daily weighing operation in every process in manufacturing line. With weighing range from 620g to 300kg and minimum read-out 1mg, FS can cover every process, in-bound material control, production, inspection and out-bound control, etc...

Selectable indicator

You can choose one of two indicators, i02 type and i03 type. i03 type has two sub-displays in which two additional information can be indicated (tare weight, gross weight, lower and upper limit, etc..) It make weighing operation easier and more comfortable. (NOTE : Not change after delivery)

i02

i03

in manufacturing

Ingress Protection rating (IP65) which allows FS to be used in tough environment. After daily operation you can wash FS with water and keep balance in clean condition.

Options – for more efficient and useful operation

Floor Stand

wind shield for FS623

Pole Stand

Balance & Scale

Platform Scale

Counting Mode
Coefficient Mode
Specific Gravity Mode
Animal weighing mode
Statistic Calculation Mode

Stand-by Function
Switching function for min. readability
Display function for actual readability
Switching of Scale range
Double Range
Direction key
Comparator Function
Add/Accumlate Function
Bar Graph Display
Built-in Calibration Weight

RS-232C Output
Printer Output
SO/GLP/GMP corresponding print
Clock/Calendar Function
Buzzer Alarm
RTS Free Download

Capacity：620g～300kg ／ Readability(d)：0.001g～1g

FZ series

FZ series Explosion-proof scale

Tuning-fork sensor

Correspond to the needs at explosion-proof workplace with 2 kinds of display and variety line-ups.

IEC 60079-0：2011 Ed6 EN60079-0：2012+A11
IEC 60079-11：2011 Ed6 EN60079-11：2012

Ex ia ⅡB T4 Ga

Features

- Dust-proof/Water-proof structure compliant with IP65 standards.
- Panel angle can be adjusted in non-step.(excluding FZ-150KF, 300KF)

Common Specification

● Tare	Zero to Full weighing range
● Span adjustment	Manual operation Span Adjustment with external calibration weight
● ATEX approval	Ⅱ 1 G Ex ia ⅡB T4 Ga
● Ingress Protection Rating	IP65
● OIML & EC approval	classⅡ
● Over error	"o-Err" showed when Full weight range + 9 more digits over
● Temperature and humidity range	5～40℃ (Scale & display), 0～40℃ (Power suppy box), Up to 85% rh(without the dew condensation)
● Power source	Power supply box attached as standard
● Output	RS232C or option connector
● Indicator	i02 or i03 selectable *2 model name with i02: FZ 623Ex-i02 model name with i03: FZ 623Ex-i03
● Scale cable length	5m for FZ 150K1GFEx and 300K1GFEx. 1m for all other models. *3
● Power supply cable	5m. *4

FZ-30KP-i03

FZ-60K-i03
FZ-100K-i03
FZ-200K-i03
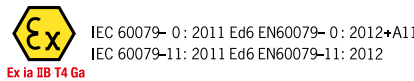
Model name	FZ 623Ex	FZ 3202Ex	FZ 6202Ex	FZ 15001Ex	FZ 30K0.1GEx
Capacity	620g	3200g	6200g	15000g	30kg
Readability (d)	0.001g	0.01g	0.01g	0.1g	0.1g
Verification intervals (e)	0.01g	0.1g	0.1g	1g	1g
Repeatability	0.001g	0.01g	0.01g	0.1g	0.1g
Linearity	±0.002g	±0.02g	±0.02g	±0.2g	±0.1g
Stabilization time	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.
Pan size	140mm dia.	190×190 mm	190×190 mm	190×190 mm	310×330 mm
Dimentions(WDH)	294 x 352 x 570mm				310x444x672mm

Model name	FZ 60K0.1GEx	FZ 100K1GEx	FZ 200K1GEx	FZ 150K1GFEx	FZ 300K1GFEx
Capacity	60kg	100kg	200kg	150kg	300kg
Readability (d)	0.1g	1g	1g	1g	1g
Verification intervals (e)	1g	10g	10g	10g	10g
Repeatability	0.1g	1g	1g	0.7g	0.8g
Linearity	±0.2g	±2g	±2g	±3g	±5g
Stabilization time	2.5 sec.	2.5 sec.	2.0 sec.	2.0 sec.	2.0 sec.
Pan size	380 X 530 mm	380 X 530 mm	380 X 530 mm	800×600 mm	800×600 mm
Dimentions(WDH)	380x653x804mm			800x600x142mm	

Options

Models	Option name
FZ-RS	additional RS232C output
FZ-R4	RS422A output
FZ-LM	Relay contact
FZ-TI	TCP/IP output
FZ-DS	Display stand
FZ-PK	Pole stand
FZ-PC	Extended power supply cable (per 5m, max.70m) *5
FZ-WS	Windshield for FZ623Ex (S, M, L. Three sizes selectable)
FZ-OX(M)	Communication option box (M)

＊Some options are not available together at the same time. Please see PDF or contact distributor for deta

Peripheral equipment

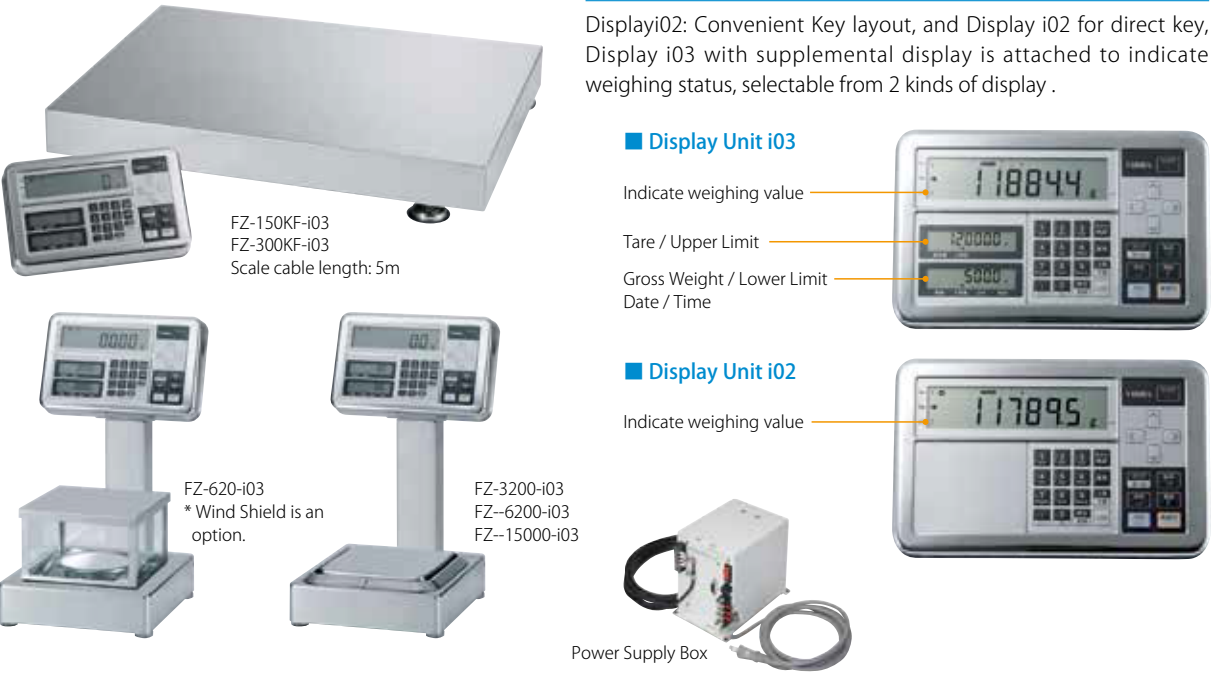| Models	Option name
CBM-910Ⅱ	Standard Printer
RTS	Data-collecting Software

*2 Not changeable after delivery
*3 "scale cable" is cable between platform and indicator.
*4 "power supply cable" is cable between indicator and power supply box.
*5 Please contact local distributor in case you need more than 70m length
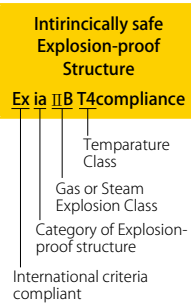
High Capacity and High Precision － Two in One

FS series attains high capacity and high precision in single unit. WithFS 300K1GF model, you can measure up to 300KG with 1g readability, which satisfies two demands in single unit, high capacity and high resolution. Unique technology "tuning-fork" sensor enables "two-in-one" feature. This unique technology also ensures excellent weighing performance and long-term stability even in tough condition.

FZ-150KF-i03
FZ-300KF-i03
Scale cable length: 5m

FZ-620-i03
* Wind Shield is an option.

FZ-3200-i03
FZ--6200-i03
FZ--15000-i03

Power Supply Box

2 kinds of display selectable for usage

Displayi02: Convenient Key layout, and Display i02 for direct key, Display i03 with supplemental display is attached to indicate weighing status, selectable from 2 kinds of display .

■ Display Unit i03

Indicate weighing value

Tare / Upper Limit

Gross Weight / Lower Limit
Date / Time

■ Display Unit i02

Indicate weighing value

Shinko Denshi's explosion-proof scale is compliant for international standards' engineering criteria.

Intirincically safe Explosion-proof Structure

Ex ia ⅡB T4compliance

- Temparature Class
- Gas or Steam Explosion Class
- Category of Explosion-proof structure

International criteria compliant

- ● Category of Explosion-proof Structure (ia) *1
  Intrincically Safe Explosion-proof Structure. The scale can be used at imminent dangerous location regardless the kinds of risk.

- ● Explosion class for Gas or Steam
  Compliant for category B at factory or office

- ● Temparature Class (T4) *2
  Maximum Surface Temparature (Ignition point) less than 135℃

＊1: Classification of dangerous point/ Explosion-proof criteria
Explosion-proof structure limits the usage dangerous points. Because of Shinko Denshi's explosion-proof scale is a intrincical safe explosion-proof structure, scales can be used at any place including the most dangerous "Imminent Dangerous Location"

＊2: Hazardous characteristics of explosive dangerous gas.

	Classification of dangerous area		Usage limitation for explosion-proof structure
			Technical Criteria
Imminent Dangerous area	Location where explosive atmosphere may exist continuously or for prolonged time period.		Intirincical Safe Explosion-proof Structure (ia)
First Grade Dangerous area	Location where explosive atmosphere may bring up under normal status.		Intrincically Safe Explosion-proof Structure (ia, ib) Pressure Tight Explosion-proof Structure Pressure-proof Structure Explosion-proof Increased Safety Structure
Second Grade Dangerous Area	Location where explosive atomosphere may bring up under the abnormal status.		Intrincically Safe Explosion-proof Structure (ia, ib) Pressure Tight Explosion-proof Structure Pressure-proof Structure Explosion-proof Increased Safety Structure
Non-dangerous area	Location where no explosive atmosphere may bring up even under abnormal status.		

High dangerous extent

	Ⅱ A	Ⅱ B	Ⅱ C
T1	aceton, 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

High dangerous extent

Ex-proof scale
Ex-proof scale

Counting Mode
Percent Mode
Carat Mode
Monme Mode
Coefficient Mode
Specific Gravity Mode
Animal weighing mode
Statistic Calculation Mode
Stand-by Function
Switching function for min. readability
Display function for actual readability
Switching of Scale range
Double Range
Direction key
Comparator Function
Add/Accumlate Function
Bar Graph Display
Built-in Calibration Weight
RS-232C Output
Printer Output
SO/GLP/GMP corresponding print
Clock/Calendar Function
Buzzer Alarm
RTS Free Download

Balance & Scale

Moisture
Determination
Balance

Counting Mode
Percent Mode
Carat Mode
Monme Mode
Coefficient Mode
Specific Gravity
Mode
Animal weighing
mode
Statistic Calculation
Mode

Stand-by Function
Switching function
for min. readability
Display function for
actual readability
Switching of
Scale range
Double Range
Direction key
Comparator
Function
Add/Accumlate
Function
Bar Graph Display
Built-in Calibration
Weight
RS-232C Output
Printer Output
SO/GLP/GMP
corresponding print
Clock/Calendar
Function
Buzzer Alarm
RTS Free
Download

Capacity:80g . Readability:0.005g. Readability moisture content:0.01% / 0.1%　　Back-light LCD display

MD series　Moisture Determination Balance

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.

Features
● Simple structure - easy to clean
● Newly adopted, organic-carbon heater
● Fast drying, high repeatability
● Connection to outside devices
● Alert signal
● Clear, bright and large LCD display

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.

Common specifivcatiuons
● Measurement format　　　　　　　　Evaporation weight loss method
● Measurement mode　　　　　　　　　Automatic operation mode, Timed operation mode
● Display　　　　　　　　　　　　　　　LCD with backlit (96 × 40 mm)
● Storage of measurement conditions　5
● Heat source　　　　　　　　　　　　Organic cargon heater (280W × 2)
● Power supply　　　　　　　　　　　　AC100～120V/220～240V
● Power consumption　　　　　　　　　Max. 900W
● Sample pan　　　　　　　　　　　　　Stainless steel (110mm dia., 11mm depth)
● Output　　　　　　　　　　　　　　　RS232C
● Items included　　　　　　　　　　　Sample pan × 2, sample pan handler, windshield, sample pan tray, spoon, spare fuse,
　　　　　　　　　　　　　　　　　　　sample alminum sheet × 10, power cord, 3P-2P plug, operation manual

Model name	MD83
Maximum sample weight	80g
Minimum sample weight	1g
Readability of balance	0.005g
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)
Temperature range	30 - 180 ℃
Increment in temperature	1℃

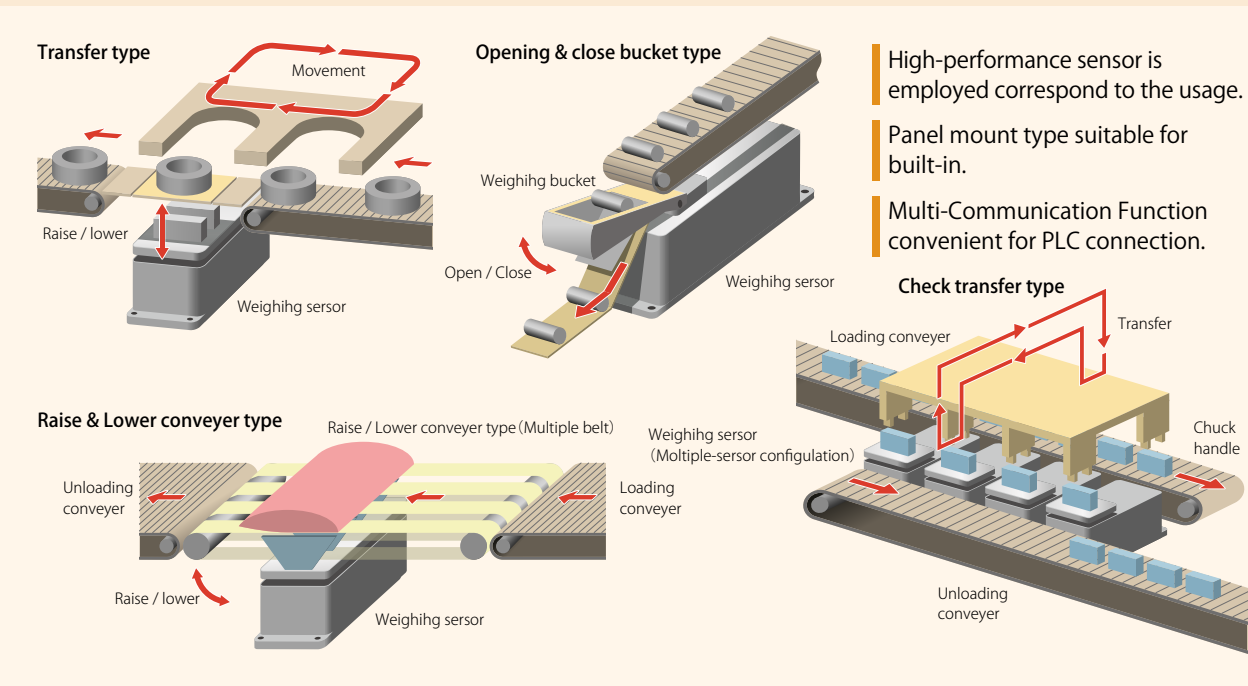*1 0.01% unit is displayable only.
*2 standard deviation

Options

Models	Option name
DA-1	Disposable alminium sheet (500pcs)
FW-100	Deodorizing windshield

Peripheral equipment

Models	Option name
VZ-330	Printer
TQ-100	Sample crusher
FDL-02	Data logger software

Built-in weighing unit

Shinko Denshi is a pioneer of Built-in Weighing Unit. Shinko's unit is able to built-in to several production system and/or apparatus.

Transfer type
Movement
Raise / lower
Weighihg sersor

Opening & close bucket type
Weighihg bucket
Open / Close
Weighihg sersor

High-performance sensor is employed correspond to the usage.

Panel mount type suitable for built-in.

Multi-Communication Function convenient for PLC connection.

Check transfer type
Loading conveyer
Transfer
Weighihg sersor
(Moltiple-sersor configulation)
Chuck handle
Unloading conveyer

Raise & Lower conveyer type
Raise / Lower conveyer type（Multiple belt）
Unloading conveyer
Loading conveyer
Raise / lower
Weighihg sersor

Capacity：620g〜3200g　/　Readability(d)：0.001g〜0.01g　　　IP65

UF series　Built-in weighing unit　Electro-magnetic Sensor

High-Accuracy/Fast Response in 56 mm width of top class in the industry.

Features

- Realized a high-accuracy weighing with min. resolution (0.001g). (UF-620)
- Display resolution 1mg at 5% capacity.: approx. 0.4 sec, Weighing renewal rate at max.100 times/sec, Fast response. (UF-620)
- Dust-proof and water-proof: All enclosure is made with stainless steel.
- IP65 standards compliant, implement water-proof connector (Optional)
- Able to output data directly to PLC or PC.

UF-620
(Weigh Platter is an option.)

Common specifivcatiuons

- Tare　　　　　　　　　　Zero to Full weighing range
- Span adjustment　　　　Manual operation Span Adjustment with external calibration weight
- Ingress Protection Rating　IP65 *4
- Power source　　　　　　DC +24V ± 10%, 0.1A
- Interface　　　　　　　　Half duplex RS485, Full duplex RS232C 1200 to 38.4kbps

Model name	UF-620	UF-3200
Capacity	620g	3200g
Readability (d)	0.001g *1	0.01g *5
Repeatability	0.001g	0.01g
Linearity	± 0.002g	± 0.02g
Stabilization time	0.4 sec. *2	0.4 sec. *2
Data updating interval (max.)	106 times/sec. *3	106 times/sec. *3
Dimentions(WDH)	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

Options

Models	Option name
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)

Display unit UD-1(option)

Capacity：60g〜6000g　/　Readability(d)：0.001g〜0.1g　　　Fluorescent display

DFB series　Built-in weighing unit　Electro-magnetic Sensor

Correspond to variety built-in usage with the employment of the Force Sensor

Features

- Weighing Platter to which container or tare is easy to detach/attach, is equipped.
- Tare weight back-up function assures operation continuity even at sudden power black-out.
- Able to set data renewal interval with 0.1 to 1.6 sec.
- Slim shape sensors are able to allocate with 50mm pitch. (DFB-60)

DFB-6000　　DFB-600　　DFB-60

Specification

- Tare deduction range: zero to capacity weight can be deducted as tare in one-touch.
- Temparature/Humidity range; 0 to 40 ℃ , Up to 80%rh (No condensation)
- Power Supply: DC24V ± 10%, 0.3A
- Output : RS-232C bi-direction output standard option, 1200, 2400, 4800, 9600bps
- External Tare Deduction input is available
- Pick-up Cable length: Std 5m (extendable at option)
- Display Unit exterior dimension: (WDH)

Display Unit

Model name	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	0.001g	0.01g	0.01g	0.1g
Linearity	± 0.001g	± 0.003g	± 0.01g	± 0.03g	± 0.1g
Stabilization time	0.1-1.6 sec	0.1-1.6 sec	0.1-1.6 sec	0.1-1.6 sec	0.1-1.6 sec
Pan Size	40x40mm	55x55mm	55x55mm	74x74mm	74x74mm
Dimentions(WDH)	45x170x85mm	56x200x95mm	56x200x95mm	80x240x100mm	80x240x100mm

Options

Models	Option name
DFB BCD	BCD output

Peripherals & Accessories

CBM-910 Ⅱ Standard Printer

Simply print the output data from balance

▌Features

CBM-910II is dot-matric standard printer in compact body. It can be connected to VIBRA balance through RS232C output.

▌Common specifivcatiuons

Model name	CSP-240
Printing method	Dot matrix
Printing direction	One-way printing
Character configuration	(5+1) × 8
Number of columns per line	24 columns: 144 dots/line
Printing speed	Approx. 2.5 lines/sec.
Character size (W × H)	1.62 × 2.4mm
Character spacing	1.98 mm
Line pitch	3.52 mm
Paper feed speed	Approx. 5.0 lines/s
Paper	Single sheet, copier paper, Total thickness: 0.13mm or less, Paper roll: 57.5 ± 0.5 (W) × 60 or 80 (dia) mm, ID: φ 12 ± 1mm, Core OD: φ 18 ± 1 mm
Power consumption	7 VA
Physical dimension (W × L × H)	106 × 80 × 88 mm
Operating temprature and humidity	0 to 40°C, 35 to 85% (RH)

▌Option

Connector RS232C cable
 (D-sub 9pin female, D-sub 25pin male)

CSP-160 Ⅱ Statistic Printer

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

▌Features

CSP-160II offetrs easy operation of useful statistic from weighing results. Contents of output in statistics are: Number of data, Average, Maximum, Minimum ,Standard Deviation, Failure ratio, Range and Total. And it can judge "OK", "HI" and "LOW" to limit values which users can set according to its own criteria.

▌Common specifivcatiuons

Models	CSP-160 Ⅱ
Character construction	5 × 7 dot matrics
Printing digits	16 digits maximum
Printing speed	Approx. 1 line/sec.
Character sizes	1.8mm(W) × 2.5mm(H)
Dimensions	155mm(W) × 145mm(D) × 48mm(H)
Operation temp	0°C to 40°C, 80%R.H. or less
Power source	AC adaptor (not included)
Ink ribbon	Cartridge ERC-05
Recoring paper	45mm(W) × 30m diameter roll papaer

▌Option

● Ink ribbon 1 set (5 pcs)
● Roll paper 1 set (20 rolls)

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

Neutrlizing electro-static to prevent instable indication

▌Features

It is sometimes happen that weighing objects, especially non-conductive material like plastic, generate static electricity. It could influence the weighing results and cause large measurement error. Ionizer is commonly used to neutralize static electricity of weighing objects and in the environment.

▌Common specifivcatiuons

Model name	LAS-05D-SD
Ionizing type	DC corona discharge (± both polarity)
Effective ionizing area	50 to 700mm
Ionizing performance	Approx. 8 seconds
Ion balance control method	TAIBS method
Life time of ionization	50,000 operation hours
Life time of needle	6,000 operation hours
Amout of O3 generation	less than 0.04 PPM
Power consumption	2.8 W

SDI/SDR 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…

▌Features

● Just connect to the printer or RS232C output port of the ViBRA balance (SDI/SDR).
● The power supply of the display is through output port from the balance (SDI).

▌Common specifivcatiuons

Models	SDI	SDR
Display	LCD 12.5mm(H)	LCD 12.5mm(H)
Dimensions	150mm(W) × 89mm(D) × 60mm(H)	150mm(W) × 89mm(D) × 60mm(H)
Operation temperature	0°C to 40°C, 80%R.H. or less	0°C to 40°C, 80%R.H. or less
Power source	Supplied from the balance	Supplied from the AC Adapter
AC adapter	None	AC100V DC9V / 200mA
Standard cable length	1m	3m
Optional cable	None	5m, 10m cable available

RTS Data collecting software

Ties the electronic balance to windows

▌Features

With this software, you can take in the RS-232C output data from SHINKO DENSHI electronic balance by the standard application software for Windows. Data from the electronic balance are transferred with the keyboard image for the applicable application.

▌Common specifivcatiuons

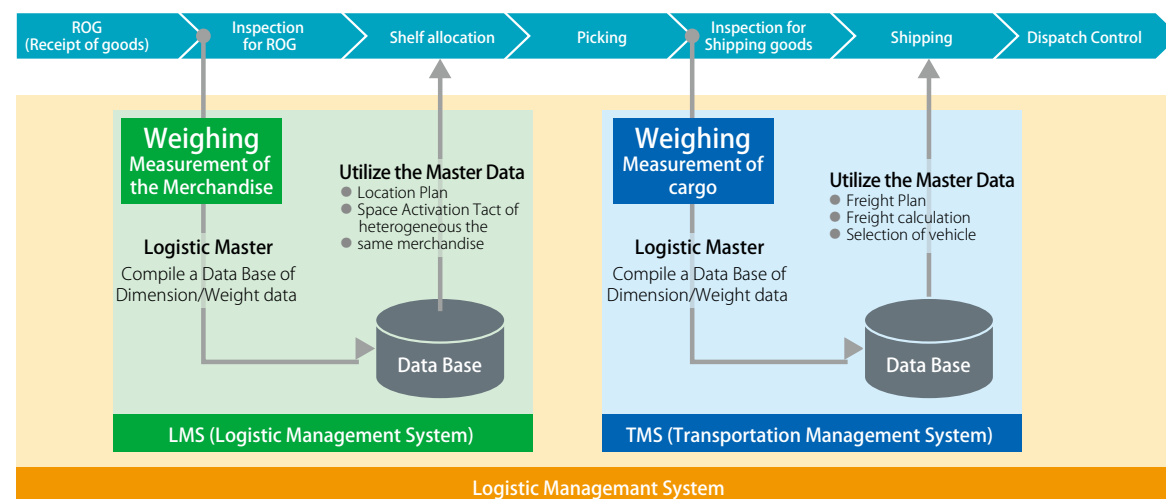| Models	RTS series
Operating system	Windows 7 (32bits / 64bits) Windows 8 (32bits / 64bits) Windows 8.1 (70, 68 & wale) Windows 10
Recommended model (*)	installed i486DX4 66MHz CPU or more.
Memory (*)	32 bits more than 1GB, 64bits more than 2GB
Display of the resolution (*)	XGA(1024 × 788) or more
Free space to install	more than 64MB

Logistic Measurement Instrument

Logistic Measurement at Shinko Denshi

Get an assured weighing/measuring data effectively yet automatically and simply.
Shinko Denshi's Logistic Measurement Equipment supports "Operation Efficiency"

Advanced System establishment, like **LMS** (Logistic Management System), **WMS** (Warehouse Management System) and **TMS** (Transportation Management System), is required in Logistic and Commercial Retail industry.

Accurate measurement of the weight/dimension of merchandise or freight is imperative in "Merchandise Master Data" or "Logistic Master Data" as the base of these system establishment. But in reality, human error, like mis-reading of the graduations, mis-recording of data, or data entry error on PC, may occur in manual merchandise or freight measurement.

Warehouse Management to Logistic Management can be effectively operated through measuring dimension/weight by logistic instrument, creating Merchandise or Freight Master then compiling a database.

| ROG (Receipt of goods) | Inspection for ROG | Shelf allocation | Picking | Inspection for Shipping goods | Shipping | Dispatch Control |

Weighing
Measurement of the Merchandise

Utilize the Master Data
- Location Plan
- Space Activation Tact of heterogeneous the same merchandise

Logistic Master
Compile a Data Base of Dimension/Weight data

Data Base

LMS (Logistic Management System)

Weighing
Measurement of cargo

Utilize the Master Data
- Freight Plan
- Freight calculation
- Selection of vehicle

Logistic Master
Compile a Data Base of Dimension/Weight data

Data Base

TMS (Transportation Management System)

Logistic Managemant System

for Merchandise Storage Management System
- Utilize in warehouse storage efficiency.
- Utilize in warehouse shelf allocation and/or rack planning
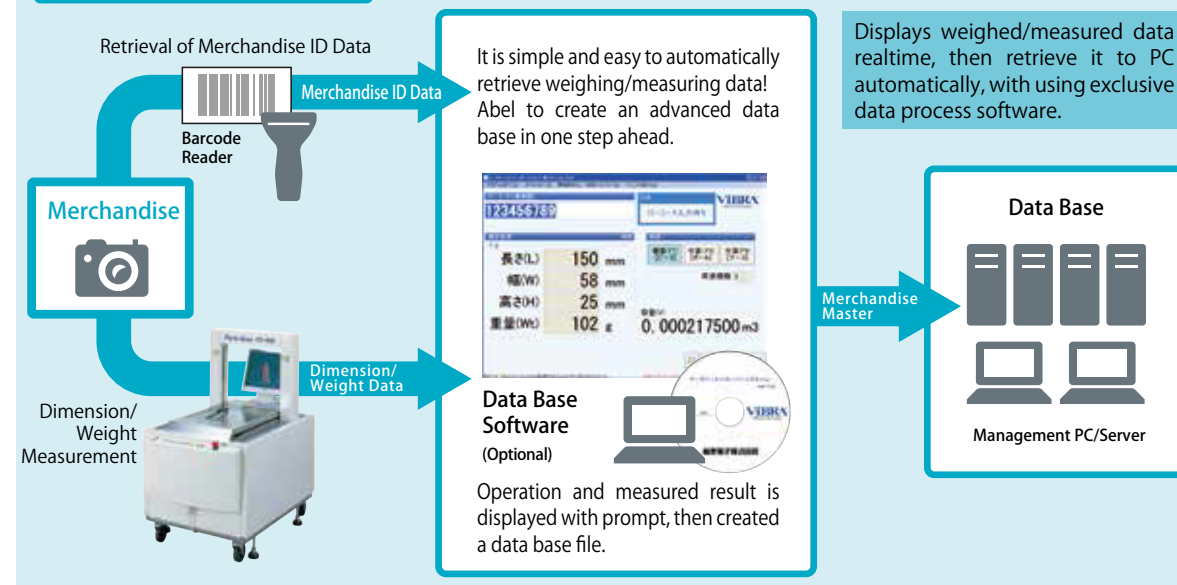
for Merchandise Warehouse Management System
- Utilize in merchandise check in the Inventory or on the Shelf
- Utilize in merchandise check at picking
- Utilize in storage plan for Ball/Case

for Merchandise Delivery Management
- Utilize in freight plan for delivery vehicle
- Utilize in freight plan for delivery vehicle

Weighing/Measuring of "Merchandise"

Imperative for creating data base ofWarehouse/Logistic Management System
Materialize an assured Merchandise Master

Retrieval of Merchandise ID Data

Merchandise ID Data

Barcode Reader

It is simple and easy to automatically retrieve weighing/measuring data! Abel to create an advanced data base in one step ahead.

Displays weighed/measured data realtime, then retrieve it to PC automatically, with using exclusive data process software.

Merchandise

Dimension/ Weight Measurement

Dimension/ Weight Data

Data Base Software (Optional)

Operation and measured result is displayed with prompt, then created a data base file.

Merchandise Master

Data Base

Management PC/Server

Capacity: 15kg   /   weighing min. graduation: 0 thru 5kg; 2g, 5kg thru 15kg; 5g

Parts Scan PS-450 High-Resolution Piece Master Measuring Instrument

Measure blister or plastic bag like transparent or irregular shape item accurately.

Features
- Achieves high-resolution indication at 1mm with Shinko's unique measuring method.
- RS-232C output is a standard option Able to create data base in PC.
- Abel to retrieve barcode reader data   ● Best suitable for creating piece master data.

Specification

Type	PS-450
Dimension mesurement range	width（W）：10〜345mm / length（L）：10〜450mm / height（H）：5〜345mm
Dimension min. indication	1mm
Capacity	15kg
Min. weight graduation	0〜5kg・2g、5kg〜15kg・5g
Dimension of the main body (WDH)	660 × 960 × 1145mm
Main Body weight: approx.	150kg

＊Mmnitor is an optional products

Easy to operate! Instantly measure width/height/weights in one touch.

Scan a commodity.
Place onto table then press start switch.

Scanning starts with table moves back and forth.

When table returns back to position, measurement complete then indicate the width, heights and weight.

Capacity: 50kg   /   weight min.graduation: 0.1kg

Measure Boy MB-900A Ball/Case Master Measurement Instrument

For Ball or Case Master Data creation, simply place the item onto conveyor results the high-accuracy measurement.
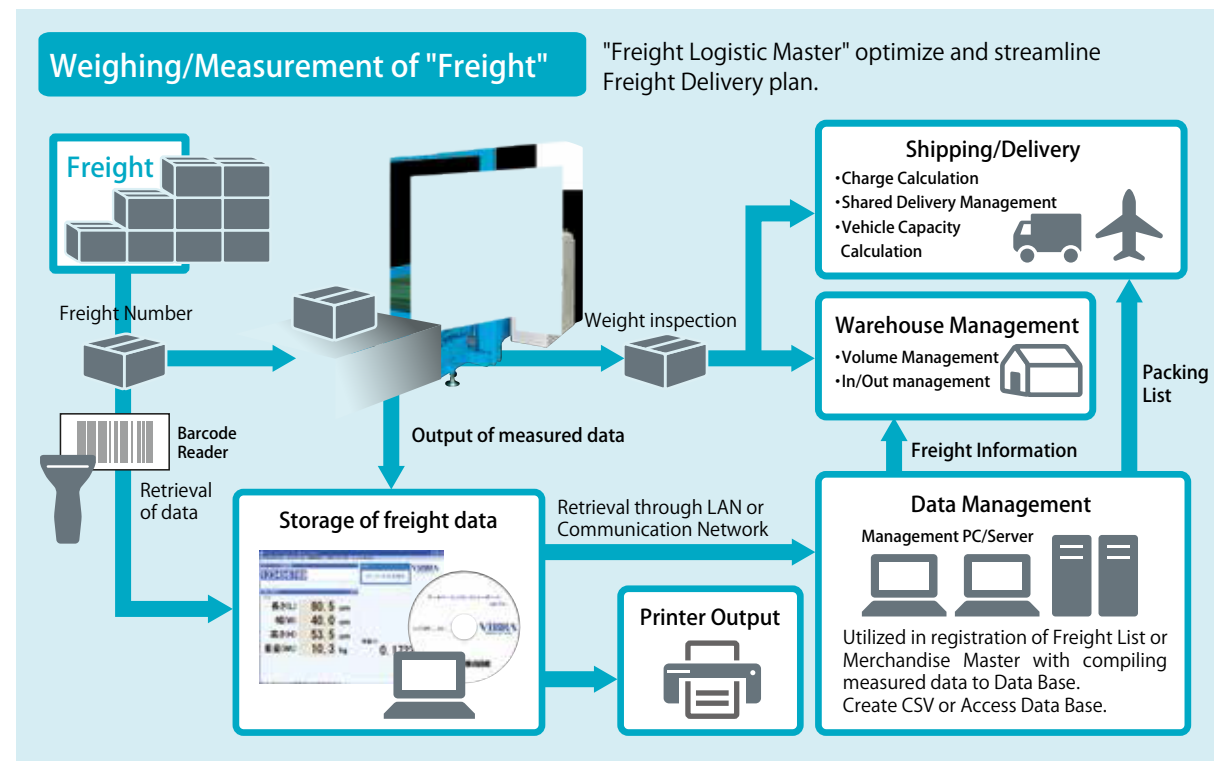
Features
- Instantly measure width/length/height/weight with placing the object on conveyor.
- Accurately measure using exclusive high-accuracy dimension measurement (patented) , with simultaneously compensating the error.
- Implement the Angle Compensation Function for an angled freight incoming.

Specification

Type	MB-900A (Mobile type)
Dimension Mesurement Method	Infra-red Beam and Rotary Encoder, Angle Compensation Function
Weight Detection Method	Loadcell
Power Supply	AC100V Single phase/ less 300VA
Output	RS-2232C compliance
Freight Transport Method	Reverse back method/ Pass through method
Dimension Measurement Range	width（W）：5〜90cm / length（L）：20〜120cm / height（H）：3〜90cm
Dimension Min.display resolution	0.5cm
Capacity	50kg (when option is used:100kg)
Min. Weight display resolution	0.1kg
Min. Freight gap	1m
Main Body weight: approx.	280kg

Weighing/Measurement of "Freight"

"Freight Logistic Master" optimize and streamline Freight Delivery plan.

Freight

Freight Number

Barcode Reader

Retrieval of data

Storage of freight data

Output of measured data

Weight inspection

Retrieval through LAN or Communication Network

Printer Output

Shipping/Delivery
・Charge Calculation
・Shared Delivery Management
・Vehicle Capacity Calculation

Warehouse Management
・Volume Management
・In/Out management

Packing List

Freight Information

Data Management
Management PC/Server

Utilized in registration of Freight List or Merchandise Master with compiling measured data to Data Base.
Create CSV or Access Data Base.

Capacity: 50kg　/　Min. weight graduation: 0.1kg

Measure Boy Ⅱ MBⅡ-900

High-speed Transfer Type freight Measurement Instrument

Further advanced Ideal instrument in Logistic Measurement !
Process Capacity: 9,600 freights/hour (Freight length: 60cm)

Features

● Realized freight gap: 40cm (double scale type measuring unit)
● Transfer speed: 160m/min, min. dimension indication: 0.5cm
● Measure any shape freights accurately
● Standard equipped RS-422A and Control Input/Output

Specification

Type	MB Ⅱ -900
Transfer Speed	50m/min～160m/min
Power Supply	3phase200V/50～60Hz
Output	RS-422A output, Contact Input/Output for control, VGA(Image) signal
Transfer Method	Belt-Conveyor (Double Scale Type)
Dimension Measurement Range	width（W）：10～90cm / length（L）：20～150cm / height（H）：3～90cm
Dimension Min.display resolution	0.5cm
Capacity	50kg
Min. Weight Graduation	0.1kg
Min. Freight Gap	40cm
Main body Weighing Mechanism: (Connection Cable is ɴᴏᴛ included)	520kg Control Panel：90kg

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Capacity: 50kg　/　Min. Weight Graduation: 0.1kg

Measure Boy MB-900B

Transfer Type Freight Measuring Instrument

Standard in Logistic Measurement

Features

● Instantly measure width / length / height / weight with placing the object on conveyor.
● Implement the Angle Compensation Function for an angled freight incoming.
● A reliable design to perform a warning by buzzer error indication at the time of a measurement error and a troubles.

Specification

Type	MB-900B (Install type)
Dimension Mesurement Method	Infra-red Beam and Rotary Encoder, Angle Compensation Function
Weight Detection Method	Loadcell
Power Supply	AC100V Single phase/ less 300VA
Output	RS-232C compliance, Contact Input/Output for Control
Transfer Method	Pass through method
Dimension Measurement Range	width（W）：5～90cm / length（L）：20～120cm / height（H）：3～90cm
Dimension Min.display resolution	0.5cm
Capacity	50kg (when option is used:100kg)
Min. Weight display resolution	0.1kg
Min. Freight gap	1m
Main Body weight: approx.	approx. 260kg

＊ Mounting Cradle is an option

Capacity: 50kg　/　Graduation: 0.01kg

Table Measure TM561

High-Resolution Carton & Box Measurenment Instrument

Easy, Accurate, Skill-Independent

Features

Just place the objects at the right position, and you get the right measurements.
● Product outline:
　　Basic static measurement system for regular size cartons.
　　 Introductory model to replace manual measurements.
● Product Benefits:
　　Designed for easy / accurate / skill-independent measurement.
● Best-fit application: to improve operation from manual
● Useful peripherals & Options / Extended functions:
　　With factory optional extended sensor units, provides extended measuring range.
　　Set on a cart, used as mobile system.
● Customers examples:
　　On line retailers,Cosmetics distributors,Toy distributors

Specification

Models	TM-561
Weight Capacity	50kg
Weight Resolution	0.01kg / 0.05kg (selectable)
Max Dimensional Capacity	56.5cm　56.5cm　63.5cm
Dimensional Resolution	0.5cm / 1cm / 2cm
Measuring time	2 seconds typical
Data Output	RS-232C / USB
Power Source	100 to 230 VAC 50 / 60Hz
Operation Condition	0°C - 40°C, non-condensing
Physical Dimension	66cm(L) x 66cm(W) x 80cm(H)
Physical Weight	Approx. 30kg

Terminology

Capacity
Maximum weighable weight value with keeping consistent accuracy of the scale.

Readability
Value expressed in units of mass of : the difference between two consecutive indicated values, for digital indication.

Verification intervals
Value expressed in units of mass, used for the classification and verification of an instrument.

Repeatability
Repeatability is the ability of reading same value under the test condition deems as consistent, with applying the same load to load receptive equipment in the same means for several times.

Eccentric Error
It refers as "Four Corner Error". The difference between indicated weight value for the weight at any position on the platter and actual weight value.

Warming Up
Period which makes scale internal circumstances (temperature, etc) ready for weighing after power on.

Response time
Period from weighing object is placed on to measured weight value is indicated in display.

Resolution
Ability to identify minimum weight value. It is indicated as "minimum display unit per scale capacity". Smaller in display unit is higher in resolution.

Instrumental error
Difference in subtracting real value from measured value, or difference value in subtracting real value from nominal value of the Reference Equipment.

Tolerance
Difference between designated max value and minimum value.

Reproducibility
Ability showing the same weighing result data even when measuring condition (time, location and measurer. It usually is indicated as standard deviation (σ). The same result is obtained in several times shows high reproducibility.

Linearity
Means the shifted amount from the theoretical line connected with two points depending upon each other,

Traceability
Measurement result or characteristics of standard value associated with the designated reference standards by means of contiguous comparison chain which describes all uncertainties. Standard is usually the National Standards or International Standards.

Drift
Means scale's gradual and consecutive characteristic declination under the consistent circumstance condition.

Authentication for trade
Trade means the act of business, regardless of whether compensation is received or not, for bennies package of things or service. And authentication means the authorization act, for the public and/or anyone else of the business, expressing that the certain fact is truth.

Auto Zero
Means the equipment to clear indication to zero automatically without the intervention by humans.

Type Approval
Means the country approval of the scale type, provided that the manufacturer conducts the test (durability and else performance test, depend directly upon type approval) to specific scales whether the scale structure complies with the technical standards designated by ministerial ordinance. in prior to mass production.

Creep
Means the change in output occurred by the lapse of time under the application of fixed load to scale, while maintaining all environmental condition and other variables consistent.

Secular change
Means the change in measuring instrument or its elements characteristics after elapsed time usage.

Weighing range
Means the range from minimum measuring value to scale capacity.

Calibration
Means the series of operation to nail down the relativeness between the value of measuring instrument/system or true weight apparatus or standard material value, and indicated value of standard material. Calibration operation does not include the adjustment procedure for scale to correct error pf the scale.

Non-automatic weighing instrument
Means the scale needs operator intervention for weighing to apply or remove load to/from platter and to get weighed result. Display or print of weighed result can be read directly, and either case they are included in the term of "Display".

Automatic weighing instrument
Means the scale weighs automatically without having operator's intervention, and operates scale in accordance with the set program for automatic operation.

Accuracy
Means the degree of measured data agreement with true value, including measured result data correctness and veracity.

Multi-interval instrument
Means the scale that it's weighing range is divided into portioned weighing range and weighing range is automatically selected corresponding to the applied load increment and decrement.

Single-interval instrument
Means the scale with single weighing graduation.

Multiple range instrument
Means the scale having more than 2 different capacity and interval to the same platter, and each weighing range can be expanded from zero to capacity.

Intrinsically Safe
Means the explosion-proof structure constructed to make ignition source energy lower than firing one."