

Products Guide



JFE Advantech Co., Ltd.

Formerly Kawatetsu Advantech Co., Ltd.

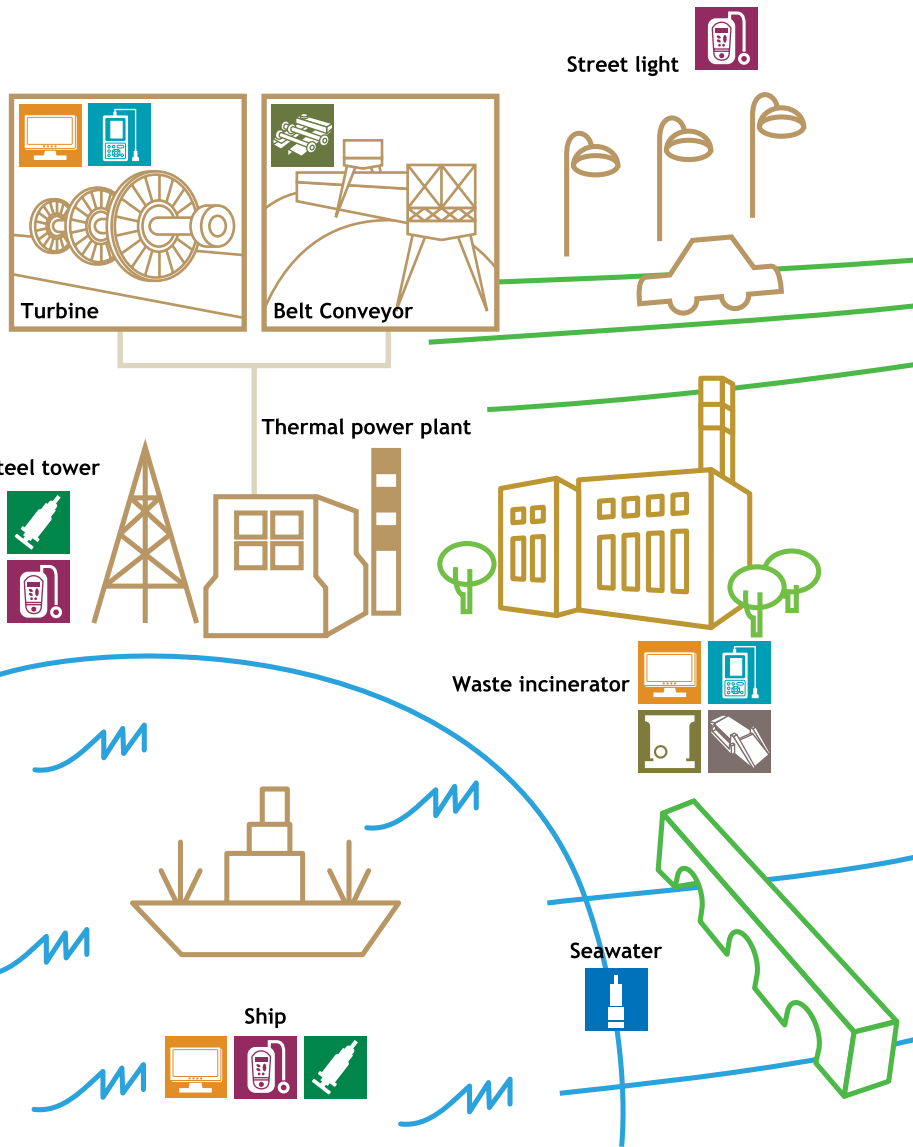
Exploring the Limitless Potential of New Endeavors

JFE ADVANTECH offers cutting-edge technology that meets a variety of on-site requirements. We offer an array of high-quality products that contribute to a richer society.

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01



Submersion Level Detector

These detectors accurately measure the levels of rivers and bodies of clean water or sewage water. They can also be used in large water sources that form part of the public infrastructure. They exhibit a high level of precision and outstanding durability.



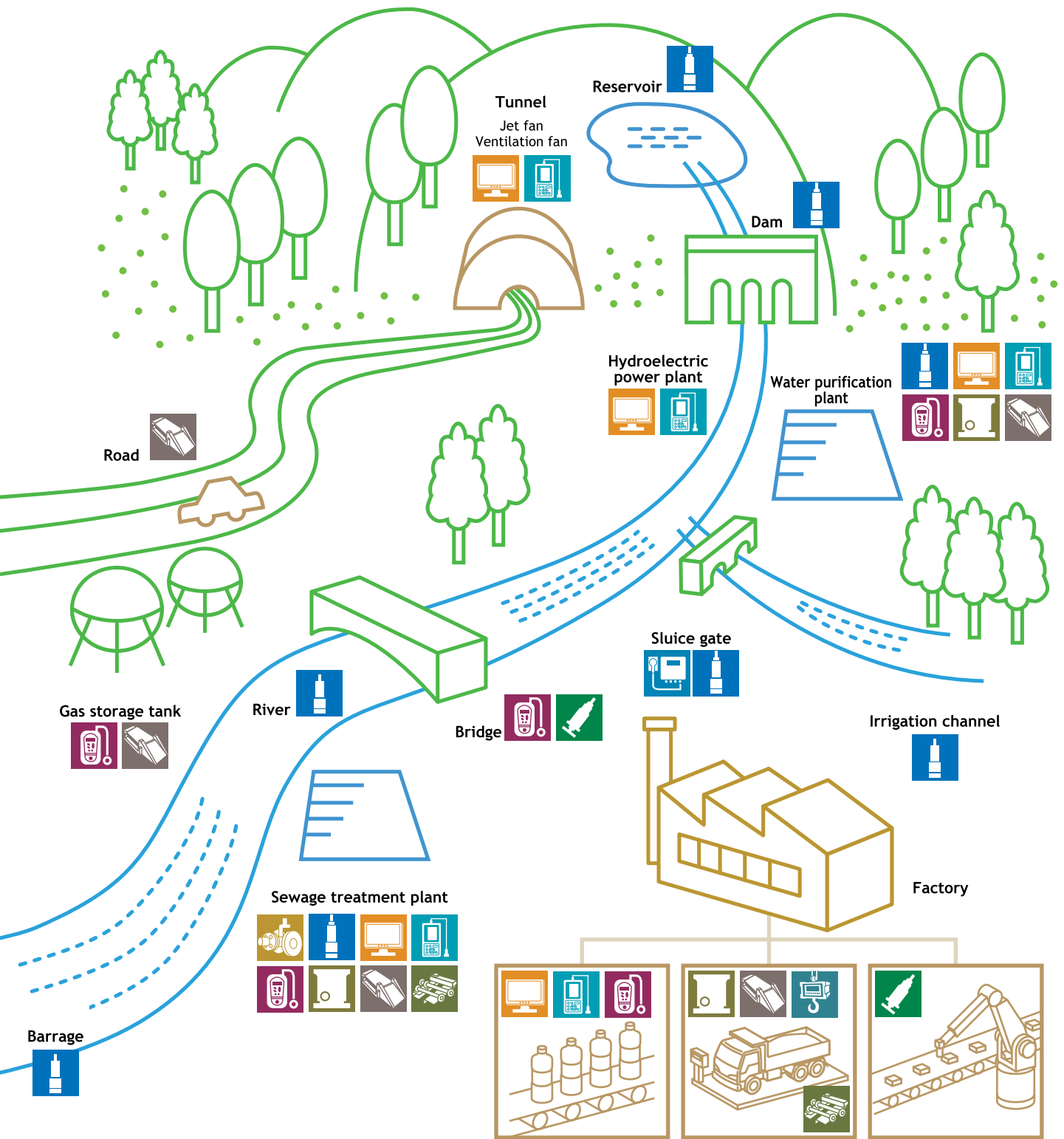
Electromagnetic Flow Velocity/Direction Meter

This device determines the current direction through sluice gates in the rivers and channels of sluiceways. The detector accurately detects reversed flow, which is difficult to detect.



Sludge Density Meter

The Sludge Density Meter is used by sewage treatment plants and agricultural drainage treatment plants. This device offers high reliability and a high level of precision. Moreover, the automatic cleaning mechanism ensures great ease of maintenance.



Online Machine Diagnosis System

The facility diagnosis system improves factory efficiency by applying the advances of factory automation. Employed in a wide range of fields, our products ensure more accurate maintenance through abnormality detection, cause analysis, and deterioration prediction.



Machine Diagnosis Instrument

This instrument is useful for on-site abnormality detection and cause analysis. With user-friendly features and outstanding performance, this instrument helps maintenance staff carry out machine maintenance.



Ultrasonic Hardness Tester

When this meter's probe is positioned on a material, it measures the hardness of that material. This user-friendly handheld device demonstrates its capability with on-site measuring applications.



Ultrasonic Thickness Gauge

By injecting ultrasonic pulses, this meter measures the thickness from one side in a nondestructive manner. These meters are used in a variety of applications including tanks, pipes, ships hulls, and factory machinery.



Hopper Weigher



Truck Scale



Crane Scale



Conveyor Scale





These devices are used for a variety of applications including trucks, cranes, and belt conveyors. When designed as systems to meet specific requirements, they provide optimal measurements.

Submersion Level Detector

Our submersion level detectors measure water depth by detecting water pressure. These detectors can serve for monitoring water levels, automatic control of pumps and gates.

Detector

Our wide-ranging product lineup supports various usage including clean water, sewage, rivers, seawater, and chemical solutions.

Usage	Clean water		Deep wells	Chemical solutions/seawater
Model	WL-122B	SL-130B	SL-222B	SL-710C
				
Measuring range	Min: 0-2 m Max: 0-5 m	Min: 0-0.1 m Max: 0-70 m	Min: 0-3 m Max: 0-150 m	Min: 0-0.8m Max: 0-12 m
Warranty	1 year	2 years	1 year	2 years
Accuracy	±0.5% of full scale	±0.25% of span	±0.25% of span	±0.3% of span
Mass	3.0 kg	4.1 kg	0.2 kg	2.3 kg
Diameter of unit (support leg)	ø63.5 mm (ø180 mm)	ø95 mm (ø180 or 88 mm)	ø17.5 mm	ø42.7 mm (ø63.5 mm)
Installation area	Tank and distribution reservoir on waterworks		Deep wells	Chemical solutions of sewage treatment facilities, other chemical solutions, and seawater
Remarks	Standard type	Wide range type	Micro diameter (semiconductor sensor)	Hastelloy* constructions

*Registered trademark of Haynes International, Inc., U.S.A.

Detector

Advantage 1 Robust structure




The robust structure offers high shock proofness.

Advantage 2 High thunder proofness

The differential transformer has no electric parts. In addition, the junction box and converter are equipped with thunder proof circuits.

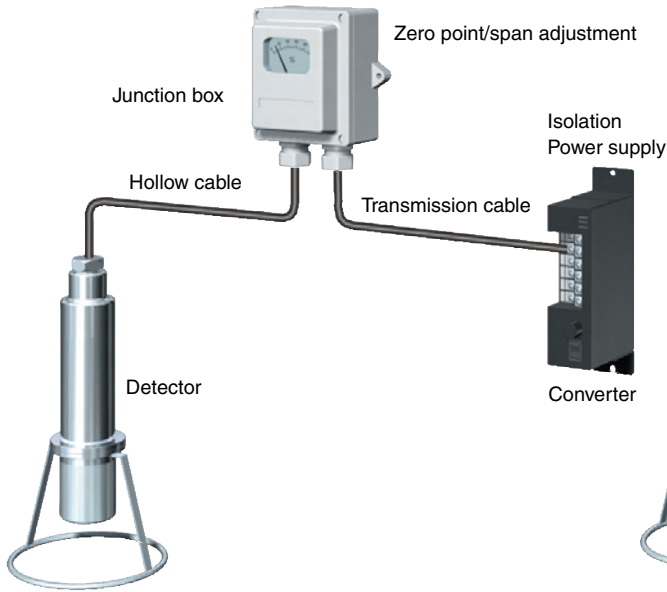
Advantage 3 Superior resistance to sludge and floating objects

Since the detector is installed underwater, it is not affected by surface water conditions such as floating objects, ice, and unsettled water surfaces caused by high winds. And the sludge-resistant structure of the pressure receiving section protects the detector from sludge.

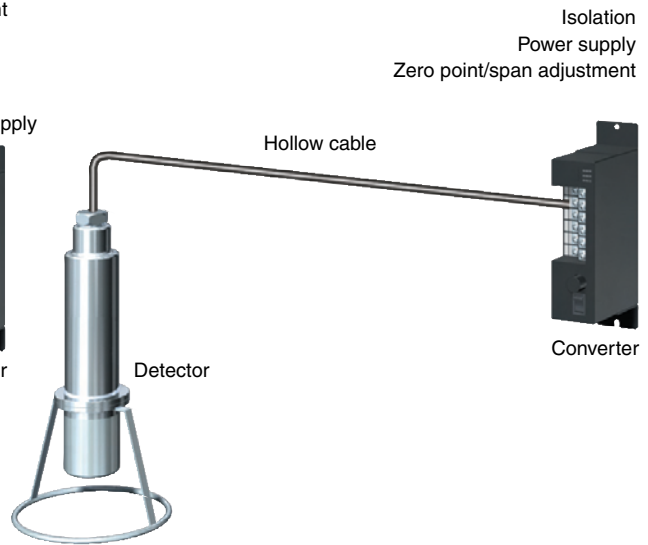
Usage	Sewage		Rivers
Model	WL-122C	SL-130C	SL-140C
			
Measuring range	Min: 0-2 m Max: 0-5 m	Min: 0-0.1 m Max: 0-70 m	Min: 0-3 m Max: 0-40 m
Warranty	1 year	2 years	2 years
Accuracy	±0.5% of full scale	±0.25% of span	±0.5% of span
Mass	3.0 kg	4.7 kg	4.7 kg
Diameter of unit (support leg)	ø63.5 mm (ø180 mm)	ø95 mm (ø180 or 76.3 mm)	ø95 mm (ø180 or 76.3 mm)
Installation area	For waste water and sewage water facilities: pumping stations, flow conduits in treatment plants, tanks from pump wells to sludge reservoirs and discharge conduits, manhole-accessible pumping stations and urban sewerage/river facilities.		For facilities where junction boxes are immersed in water such as manholes, drainage conduits, and rivers. For high-humidity facilities and facilities that generate corrosive gases.
Remarks	Standard type	Wide range type	Waterproof junction box

Device Configurations

General installation



Direct connection installation



■ General installation

Applicable Detectors	Junction box			Converters	
	Without meter		With meter	Indoor installation	Outdoor installation
	-5 to 60°C	-20 to 80°C	0 to 50°C		
SL-130	JB-433S	JB-434S	JB-433M	PSB-130	PSB-230
SL-222	JB-424S	JB-424S	JB-424M	PSB-180	-
SL-710	JB-463S	JB-464S	JB-463M	PSB-130	PSB-230
SL-140	JB-643S	JB-644S	-	ALC-142	-

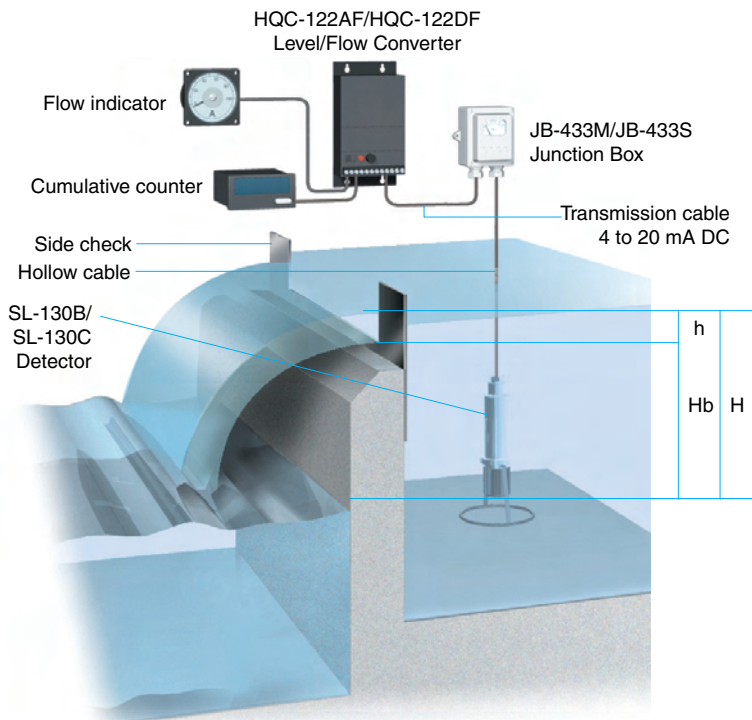
■ Direct connection installation

Applicable Detectors	Converters	
	Indoor installation	Outdoor installation
SL-130	PSB-132	PSB-232
SL-710	PSB-162	PSB-262
WL-122	WC-122	-

05

Measurement System with Water Level Detector

Dike-type and Partial Flume-Type Flowmeters



Applications

For flow measurement and flow control of open conduit channels in water supply facilities and sewage facilities. For automatic control of pumps, valves, and gates.

Features

- Accurately detects water heads of 0 m to 0.1 m.
- The level/flow converter outputs instantaneous flow and cumulative pulses.

Specifications

- 0 to 64,000 m³/h measurement range
- JIS B-8302 or Strickland conversion modes
- Accuracy: $\pm 0.6\%$ of the span
- Also applicable to Partial Flume type

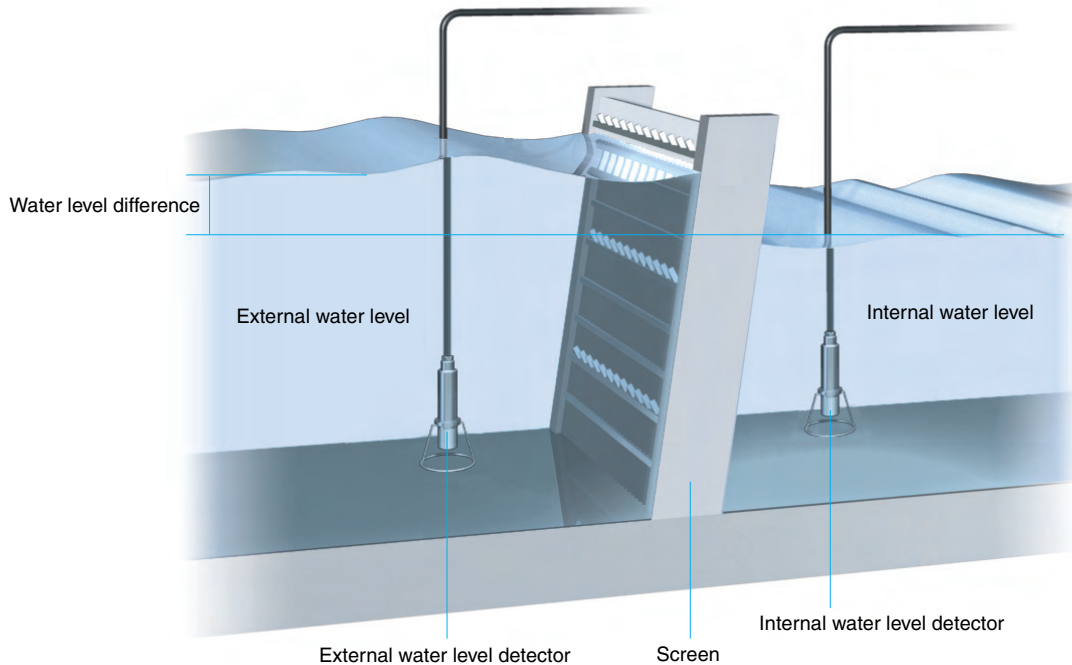
Water-level Difference Measuring System

Applications

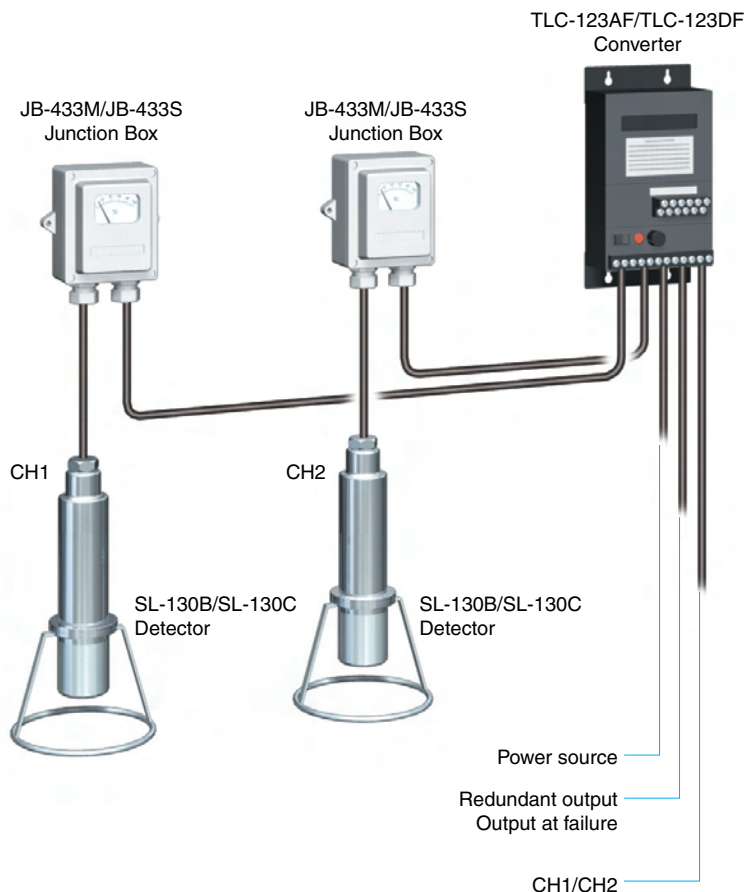
- Measures internal and external water level differences of gates and screens.
- Best choice for automatic gate control (open/close) and automatic rubbish removal by detecting water-level differences caused by clogged screens.

Features

- Sends a signal if the water level reached to preset maximum or minimum value.



Redundant Configuration of Water Level Detector



Applications

- The self-diagnosis function automatically switches between controlling channels of the two water level detectors.
- The ideal backup for water supply facilities and sewage facilities.

Features

- Automatically detects a fault of the sensor and switches between CH-1 and CH-2.
- Sets abnormal output, filter constants, and zero point/span in an interactive manner.
- Built-in fault signal output system.

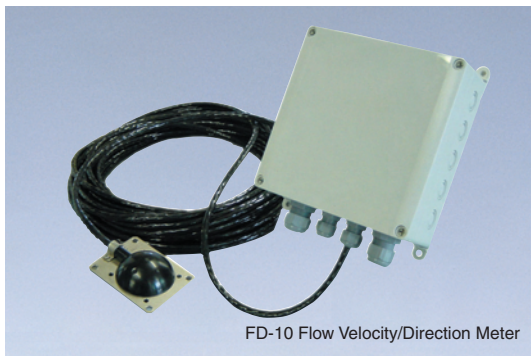
Self Fault diagnosis

- Detects broken and short-circuited transmission line.
- Checks sudden change in input signals
- Detects abnormal difference between two water level detectors.
- Self detection of faults.

Environmental Measuring Instrument

These devices support the management of rivers, agricultural water, sewage systems, and other channels and facilities. Their accuracy and reliability contribute to the maintenance of clean water sources.

Electromagnetic Flow Velocity/Direction Meters



FD-10 Flow Velocity/Direction Meter

These devices accurately measure the flow velocities and directions through sluice gates and pipes. With their compact design and high-performance features, these units offer excellent value.

Advantage 1 Accurate detection of back flow

Accurately detects back flow in waterway, which is not detectable by water-level monitoring or water-surface monitoring.

Advantage 2 Electromagnetic measuring method

The unit uses an electromagnetic measuring method. In addition, with a unique processing method, the meter can output flow directions accurately.

Advantage 3 Prevention of operation errors

Water-surface detection prevents operation errors caused by air exposure. High reliability is assured.



FD-20 Flow Velocity/Current Direction Meter

Specifications

		FD-10	FD-20
Measuring range		-1.00 to +1.00 m/s	
Flow velocity outputs		0 to 2 V DC	4 to 20 mA DC
Flow direction outputs		3 contact outputs (forward, stop, reverse)	
Measuring accuracy		±0.5% of full scale	
Current direction			
Flow velocity		±3% of full scale	±2% of full scale
Water-surface detector		External input	Built-in/external input
Flow velocity display		Unavailable	Available
Threshold of flow direction (m/s)		±0.05	±0.02 to 0.095 (adjustable)

Portable Water-Level Recorder (for sewage)



Detector: SL-803C

Data Unit

Records water levels continuously for at least six months without an external power source.

Advantage 1 Battery powered

With its high-capacity battery, this recorder can monitor water levels at almost any location.

Advantage 2 Outstanding environmental resistance

With the IP67 waterproof enclosure of the Data Unit and the sludge-proof structure of the detector, this service can be installed in hostile environment such as manholes and sewage pipes. The detector is hermetically sealed to prevent condensation.

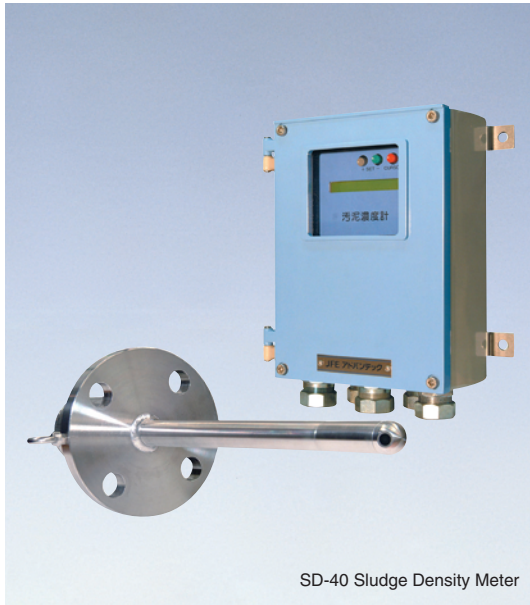
Advantage 3 Ample data storage

The built-in RAM can store 675 days of water-level data sampled at 10-minute intervals. For easier management, records include installation location and recording time.

Specifications

	Detector	Data Unit
Model	SL-803C	PSB-591
Operating temperature	-5 to 50 °C	-5 to 60 °C
External dimensions	ø52 x 190 mm	272 x 249 x 175 (W x H x D) mm
Mass	Approx. 0.7 kg	Approx. 4.5 kg
Material	SUS316	Polycarbonate
Cable length	20 m (Standard)	
Measuring range	Standard: 0 to 10 m Optional: 0 to 2 m, 0 to 5 m	
Accuracy	±0.5%	
Output	Compact flash memory card, RS-232C	
Optional functions	Wireless communications and modem communications	

SD-40 Dual Scattered-Light Sludge Density Meter



Type SD-40 detects the density of sludge discharged from sedimentation tank and concentrators, in sewage treatment plants and water works. It achieves the accurate observation of sludge density, and helps to control the discharge of sludge.

Advantage 1 Automatic correction according to sludge color

Because the SD-40 automatically corrects for any change in sludge color, it can be used to observe black digested sludge.

Advantage 2 Excellent sludge removal features

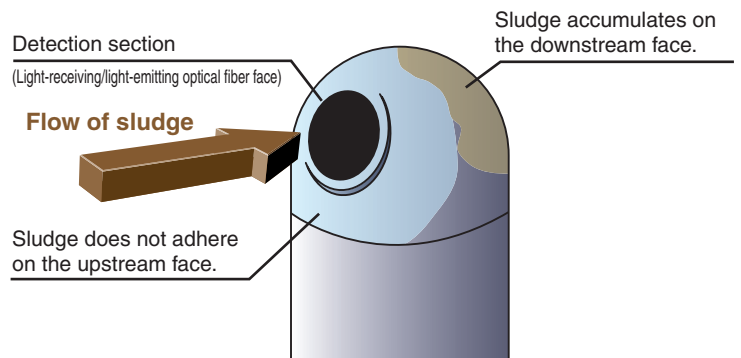
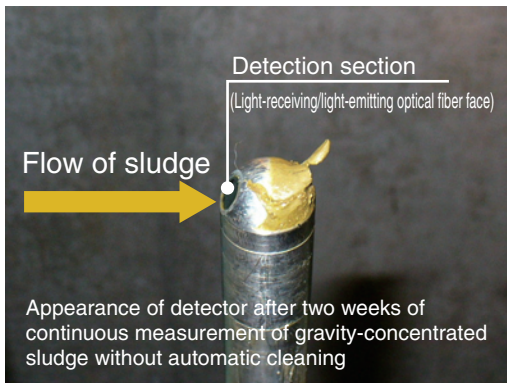
The end of the detector is shaped to prevent sludge from adhering to it. In addition, SD-40 is equipped with an automatic clearing mechanism as standard. Thus, the meter is capable of performing stable measurement over a long period.

Advantage 3 Easy maintenance

The detector can be checked without stopping the flow of sludge. Bypass piping is not required.

Specifications

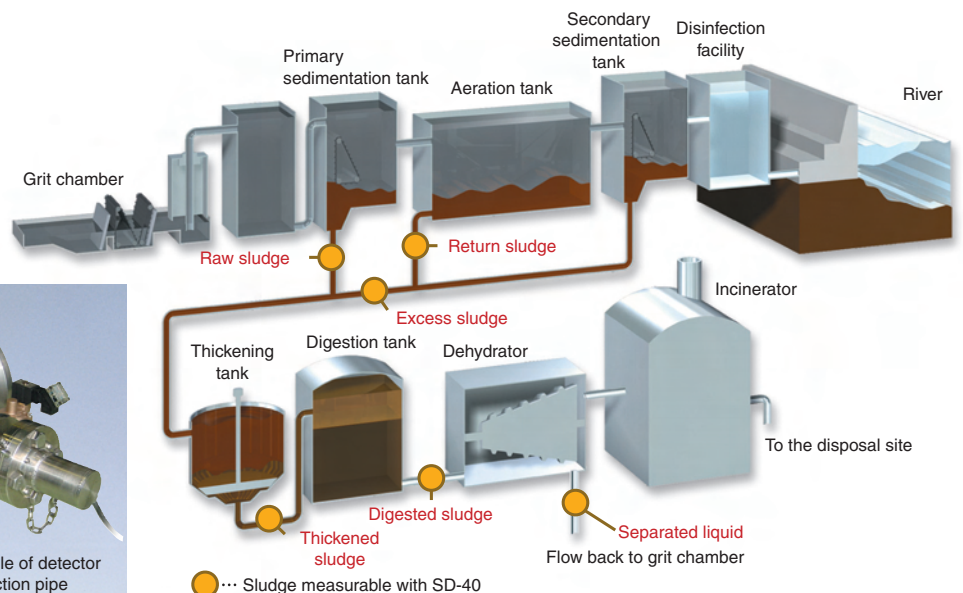
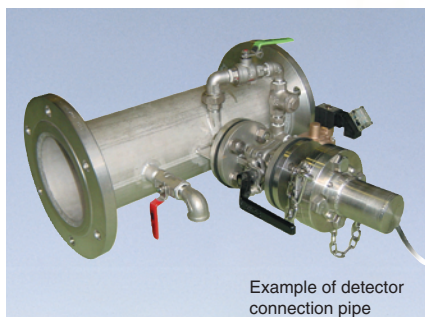
Model	Detector	SD-40
	Converter	CV-40
Measuring method		Dual-scattered light (with automatic color correction function)
Measuring range		0 to 8.0% of T.S. (Standard)
Measuring accuracy (Repeatability)		±2% of full scale (Bright sludge) ±5% of full scale (Black sludge)
Power source		90 to 110 V AC, 50/60Hz, 15 VA
Ambient temperature	Detector	-5 to 50 °C
	Converter	-5 to 50 °C
Minimum velocity requirement		0.03 m/s (bright sludge), 0.30 m/s (black sludge)
Output	Sludge density	4 to 20 mA DC
	Warning	Upper/lower limit contact output (2) Fault contact output (1)
	Control	Electromagnetic valve control



Flow prevents sludge from adhering on the upstream face of detector.

Therefore, placing the detection section on the upstream face reduces the sludge accumulation by the self cleaning effect, together with the automatic cleaner.

















Installation Location



Load Cell

Based on our original technology, these load cells contribute to factory automation. Using the expertise we gained in steel industry, we developed the following load cells to excel in hostile environments.

Load Cell

Model/Shape	Rated Load	Accuracy (Nonlinearity as % of rated output)	Typical Applications																		
				196 N 20 kgf	294 N 30 kgf	490 N 50 kgf	981 N 100 kgf	1960 N 200 kgf	2940 N 300 kgf	4900 N 500 kgf	9.81 kN 1 tf	19.6 kN 2 tf	49 kN 5 tf	98.1 kN 10 tf	196 kN 20 tf	294 kN 30 tf	490 kN 50 tf	981 kN 100 tf	1960 kN 200 tf	2940 kN 300 tf	
Built-in constringer type DF							•	•	•	•	•	•	•							0.05	Platform weigher Hopper scale
Built-in constringer type DF-KE Ex						•	•	•	•	•	•	•								0.05	Platform weigher Hopper scale
Built-in constringer type CB										•	•	•	•	•	•					0.1 to 0.2	Hopper scale
General-purpose compression type HR										•	•	•	•	•	•	•	•	•	•	0.1 to 0.2	Hopper scale Crane scale
High precision compression type HR II												•	•	•	•	•	•	•	•	0.02 to 0.03	Truck scale Platform weigher Hopper scale
High precision compression type IR													•	•						0.02	Truck scale Platform weigher Hopper scale
High precision tensile type ZT									•	•			•	•						0.03	Platform weigher Hopper scale
High precision compression type ZR									•	•	•	•	•	•						0.02 to 0.03	Truck scale Platform weigher Hopper scale
High precision compression type ZR-KE Ex													•	•						0.02	Truck scale Platform weigher Hopper scale
Sheave bearing type BH												•	•	•	•	★				0.1 to 0.2	Crane scale Crane overload detector
Tensile type CT												•	•	•	•	★				0.1	Crane scale Crane overload detector
Plate type TM-H									•	•										0.2	Tension meter Force measurement
Plate type TM-V										•	•	•								0.2	Tension meter Force measurement
Plate type SPL												★	★	★	★	★	★	★	★	2 to 4	Roll load meter Crane overload detector Force measurement
Compact compression type KM				•	•	•		•	•	•	•	•								0.2 to 0.3	Hopper scale Force measurement
Shaft type KS									•	•	•	•	•	•						2	Crane overload detector Force measurement
Beam type KB		•	•	•	•	•	•													0.03	Hopper scale Platform weigher

★: Configured to order Ex: Flame-proof

SI unit equivalent 1 tf = 9.80665 kN
1kf = 9.80665 N

Load Cell



Load cells of highly reliable technology developed under the stringent environmental requirements common to the steelmaking environment. Choose our load cells for various requirements.

Advantage 1 Advantech has developed and produced the load cell as a unique product.

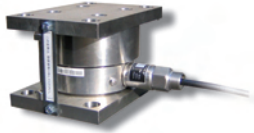
Our load cells benefit from our years of experience. A load cell can be used for measurement as well as for special purposes.

Advantage 2 A varied product lineup

We offer a variety of load cells including the general compression type, tensile type, plate type, and bearing type. Simply choose the type that best suits your requirements.

Built-in Constrainer Type

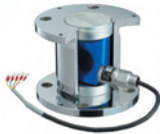
DF/DF-KE Patent number: 3745107



- Advantage 1** A stainless steel waterproof load cell
- Advantage 2** The built-in constrainer requires no cross bracing.
- Advantage 3** A compact size for ease of facility design. Flame-proof types are also available.
- Accuracy** 1/1000 to 1/2000 class

Built-in Constrainer Type

CB Patent number: 2539460



- Advantage 1** Built-in constrainer requires no cross-brace.
- Advantage 2** Available in a wide product line up to high-capacity 490-kN (50-tf) rating.
- Accuracy** 1/500 to 1/1000 class

General Purpose Compression Type

HR Patent number: 2774384 and 2742138



- Advantage 1** Compact rectangular cylinder compression type
- Advantage 2** Waterproof hermetically sealed structure contains nitrogen gas.
- Advantage 3** Maintains high accuracy with its self stabilizing design.
- Accuracy** 1/500 to 1/1000 class

High Precision Compression Type

IR Patent number: 2774384



- Advantage 1** Compact design ensures ease of installation.
- Advantage 2** Self stabilizing design ensures high accuracy.
- Advantage 3** Hermetically sealed structure is highly reliable.
- Accuracy** 1/3000 to 1/5000 class

High Precision Compression Type

ZR/ZR-KE



- Advantage 1** Z-curve shearing compression type
- Advantage 2** Self stabilizing design ensures high accuracy.
- Advantage 3** Flame proof types are available (Flame-proof structure: ExdIIBT4)
- Accuracy** 1/3000 to 1/5000 class

Sheave Bearing Type

BH



- Advantage 1** Compression-type bearing sheave type.
- Advantage 2** Designed for off-center loads and inclined loads.
- Advantage 3** Minimal size with direct inserting of shaft
- Accuracy** 1/500 to 1/1000 class

Tensile Type

CT Patent number: 2515743



- Advantage 1** Tensile type with compact rectangular cylinder
- Advantage 2** Features a safety factor of 5.
- Advantage 3** The best choice for detection of crane overload
- Accuracy** 1/1000 class

Plate Type

TM-H/TM-V



- Advantage 1** Designed for installation under a bearing.
- Advantage 2** Accurately detects horizontal or vertical load accurately measures tensile strength.
- Advantage 3** Durable, all stainless-steel construction for severe environments.
- Accuracy** 1/500 class

Plate Type

SPL (custom order)

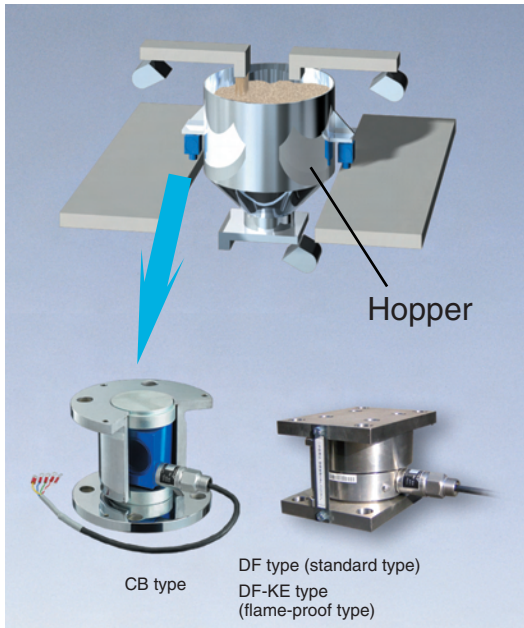


- Advantage 1** Liner type allows for flat installation.
- Advantage 2** Special sizes available for customer's applications. Made to order on your demand.
- Accuracy** 1/50 class

Hopper Weigher

This weigher can be easily installed in a hopper for faster construction by adopting our prominent load cells with built-in constrainer.

Hopper Weigher



The weigher employs a constrainer which is safe for horizontal seismic coefficient of 1.0.

Advantage 1 | New innovative mounting bracket

The hopper mounting bracket has built-in constrainer. Since the hopper weigher does not require mechanisms such as a cross brace or check rods, the space required for the hopper can be reduced, thereby facilitating installation.

Advantage 2 | Highly earthquake-resistant design

The constrainer is designed to be safe for a seismic factor of 1.0.

Advantage 3 | Available with a high-precision hopper scale and in flame-proof configurations

Equipped with a high-precision load cell, the scale can also be used as a hopper scale. A flame-proof model is also available.

11

How to Select a Load Cell

Select a load cell so that the load applied on the load cell is approximately 70% of the load cell's rated load.

Rated load of the load cell > $(Wt \div n) \div 0.7^*$

* This formula shall be applied on conditions showed below.

- (a) The load applied on the load cells have no or little offset.
- (b) No or little vibration is given to the load cells.

Where

$$\begin{cases} Wt = \text{total weight (tare weight + load cell capacity} \times \\ \text{number of load cells used)} \\ n = \text{number of load cells used (normally 3 or 4)} \end{cases}$$

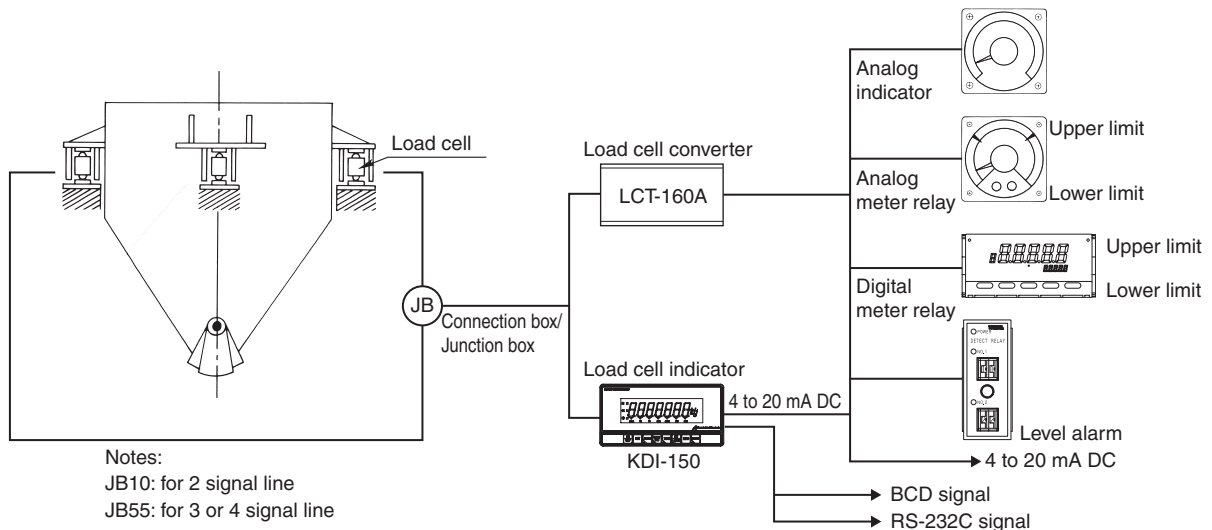
● Specifications for CB type

Model	CB-1	CB-2-5	CB-2-10	CB-3-10	CB-3-20	CB-3-30	CB-4
Load cell type	HR-2	HR-5	HR-10	HR-10	HR-20	HR-30	HR-50
Rated load	19.6 kN	49 kN	98.1 kN	98.1 kN	196 kN	294 kN	490 kN
	2 tf	5 tf	10 tf	10 tf	20 tf	30 tf	50 tf
Safe horizontal load	39.2 kN			98.1 kN			157 kN
	4 tf			10 tf			16 tf

● Specifications for DF-type and DF-KE type

Model	DF-200LA	DF-500LA	DF-1	DF-2	DF-5	DF-10	
Model (flame-proof type)	DF-200LA-KE	DF-500LA-KE	DF-1-KE	DF-2-KE	DF-5-KE	DF-10-KE	
Rated load	1960 N	4900 N	9.81 kN	19.6 kN	49 kN	98.1 kN	
	200 kgf	500 kgf	1 tf	2 tf	5tf	10 tf	
Permissible horizontal load	7.8 kN			15.7 kN			31.4 kN
	0.8 tf			1.6 tf			3.2 tf

System Configuration



Crane Scale

We offer a wide product line with 500 kg to 30 metric ton capacities. This scale (with built-in battery) can also be operated remotely with the Handheld Display Unit (Type-L).

ATH Series Crane Scale

Small Crane Scale



The ultimate solution among Japanese-made crane scales, this innovation allows you to see the weight right in your hands.

Advantage 1 | Good visibility on outdoor use

The LCD used for the indicator allows you to easily check the display outdoors.

Advantage 2 | The measured weight is displayed on the Handheld Display Unit.

In addition to offering remote control functions, the Handheld Display Unit also displays the weight wirelessly.

Advantage 3 | Compact size and light weight (500 kg to 3,000 kg models)

The compact main unit is made of robust die-cast aluminum. The light weight makes it easy to handle.

Advantage 4 | An entirely Japanese-made crane scale

Advantech manufactures in our factory. Based on this, we can offer high performance and quick response to your requirements.

Large Crane Scale



■ Product Line

Capacity	General Purpose	With Handheld Display Unit	Minimum graduation
500 kg	ATH-05B	ATH-05BL	0.2 kg
1000 kg	ATH- 1B	ATH- 1BL	0.5 kg
2000 kg	ATH- 2B	ATH- 2BL	1 kg
3000 kg	ATH- 3B	ATH- 3BL	1 kg
5 t	ATH- 5B	ATH- 5BL	2 kg
10 t	ATH-10B	ATH-10BL	5 kg
20 t	ATH-20B	ATH-20BL	10 kg
30 t	-	ATH-30BL	20 kg

Please contact us for information regarding capacities exceeding 30 metric tons.

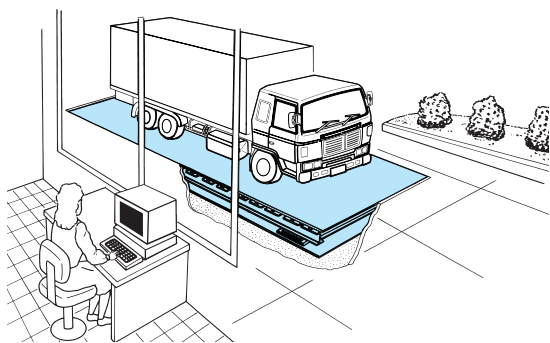
■ Specifications

Main Unit	Operation switches	Power source, zero adjustment, tare weight cancellation, and backlight
	Display	Weight value (LCD with a character's height in 45 mm), stable, center zero, tare weight cancellation, battery remaining power
Handheld Display Unit	Operation switches	Power source, zero adjustment, and tare weight cancellation
	Display	Weight value (LCD with a character's height in 25 mm), center zero, tare weight cancellation, battery remaining power
Common specifications	Standard accessories	Battery, rechargeable battery charger, pedestal, and operation manual

Truck Scale

These scales accommodate various requirements such as easy measuring and multiple application of measurement data. They provide a user-friendly measuring system for a variety of data-processing systems.

KMT Series Pit-type Truck Scale



Advantage 1 Excellent versatility

The pit-type scale is the most popular type. It supports a variety of applications across a wide measurement range.

Advantage 2 No restrictions on the approach

Because the load surface is at ground level, there are no restrictions on the approach. The truck scale can be installed and used with ease.

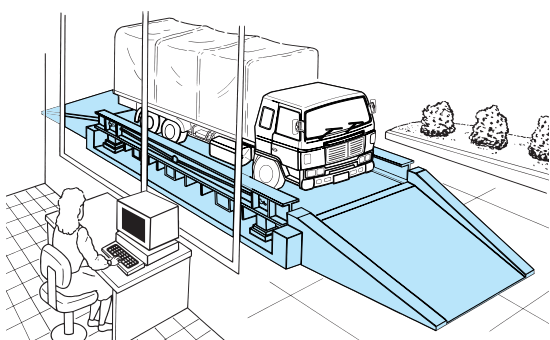
Advantage 3 Ease of maintenance

This precision-class load cell achieves excellent accuracy and ease of maintenance. Slope-less approaching style enables installation at small site and is driver friendly.

■ Main Specifications

Capacity	20 to 100 metric tons
Minimum graduation	10, 20, 50 kg
Loading platform dimensions	2.7 x 6.5 m, 3.0 x 7.5 m, 3.0 x 8.0 m, 3.0 x 10.5 m, 3.0 x 12.0 m, 3.0 x 15.0 m, 3.0 x 18.0 m, 3.5 x 15.0 m, 3.5 x 18.0 m Note: Custom sizes are available.

KMG Series Mount-type Truck Scale



Advantage 1 Excellent value

On-ground installation makes for ease of installation. No drainage facilities are required.

Advantage 2 Safety features

A safety guard is provided (to ensure safe and accurate measurement).

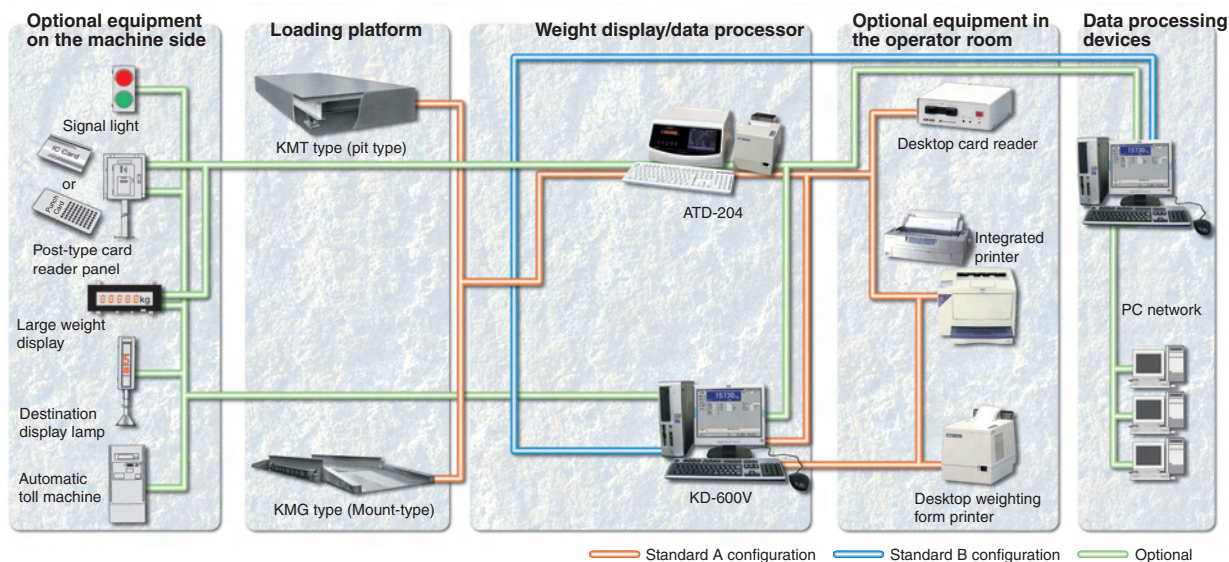
Advantage 3 Ease of maintenance

This precision-class load cell achieves excellent accuracy and ease of maintenance.

■ Main Specifications

Capacity	20 to 80 metric tons
Minimum graduation	10, 20, 50 kg
Loading platform dimensions	2.7 x 6.5 m, 3.0 x 7.5 m, 3.0 x 8.0 m, 3.0 x 10.5 m, 3.0 x 12.0 m, 3.0 x 15.0 m Note: Custom sizes are available.

System Configuration



Conveyor Scale

This advanced belt conveyor-type constant feeder weighs various raw materials in particle or powder form, and products on the belt conveyor.

KW-KY Series Belt Weigher



This under mounted type load detection platform provides accurate weighing by minimizing errors that occur from belt tension fluctuations.

- Under-mounted load detection platform
<LU(D)-40, LU(D)-120, LU(D)-240, LU(D)-450>

Advantages

- The low displacement minimizes errors that occur from belt tension fluctuations.
- The compact structure enables the entire system to be installed under the conveyor, and save your factory's space.
- The unit is equipped with a load cell protection unit for operation under overload conditions.

Specifications

Model	LU(D)-40	LU(D)-120	LU(D)-240	LU(D)-450
Belt width	400 to 900 mm	750 to 1200 mm	750 to 1200 mm	900 to 1800 mm
Accuracy	±0.5 to 1.0% of full scale			

Integrator

Advantages

- This integrator has a load cell amplifier.
- Built-in microcomputer enables assistance in setting of zero-weight point and span.
- Digital processing of operations maintains high accuracy.
- Zero-point adjustment can be performed outside the unit.

Specifications

Models	ERM-300SP, 300SL
Load signal	Load cell input (0 to 30 mV) or 4 to 20 mA
Velocity signal	0 to 120 Hz pulses
Integration display	9-digit LCD display
Output	Instant transport volume signal and integration value pulse output

KC-V Series Constant Feeder



This constant feeder continuously supplies a fixed volume of raw materials.

Applications

For production processes such as steel, ceramics, power, chemicals, fertilizer, and food

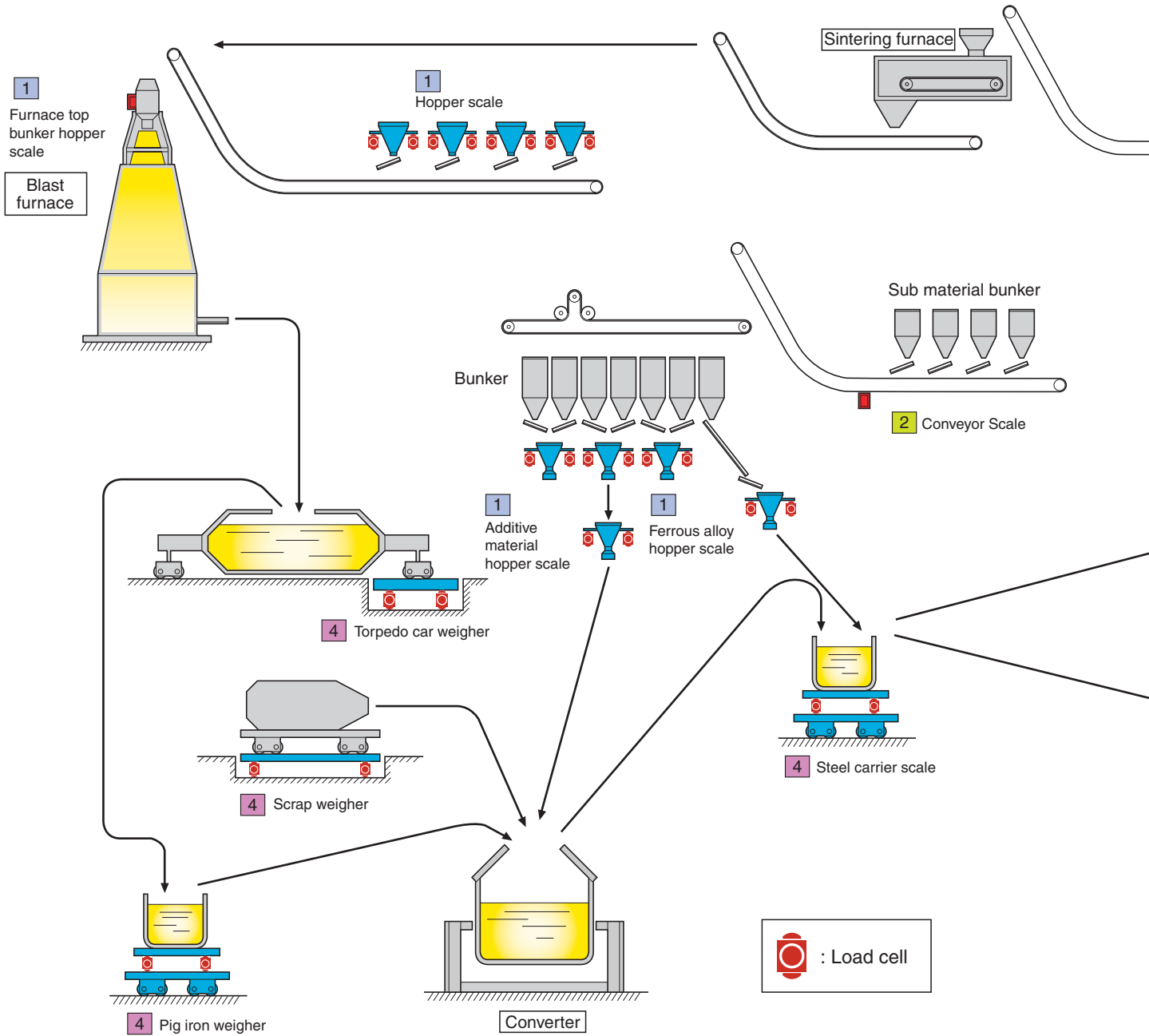
Main Specifications

Control method	Maintains fixed volume through continuous control of conveyor speed.
Belt width	400 to 2000 mm
Weighing capacity	0.1 to 1500 t/h
Control range	1:5 (standard specification)
Weighing accuracy	±1/200 of full scale
Control accuracy	±1/100 of full scale
State of weighed substance	Ranging from powders to blocks
Controller	ERM-300DP/-300DL integrated controller for integration and control of transport quantity

Weighing System

Our prominent weighers and scales have been brought up from satisfying severe demands from various facilities of steel industry. Automating each process achieves smooth and consistent process management. Our unique technology affords a rational and efficient system.

Weighing Devices Used for Iron and Steel Processes



15

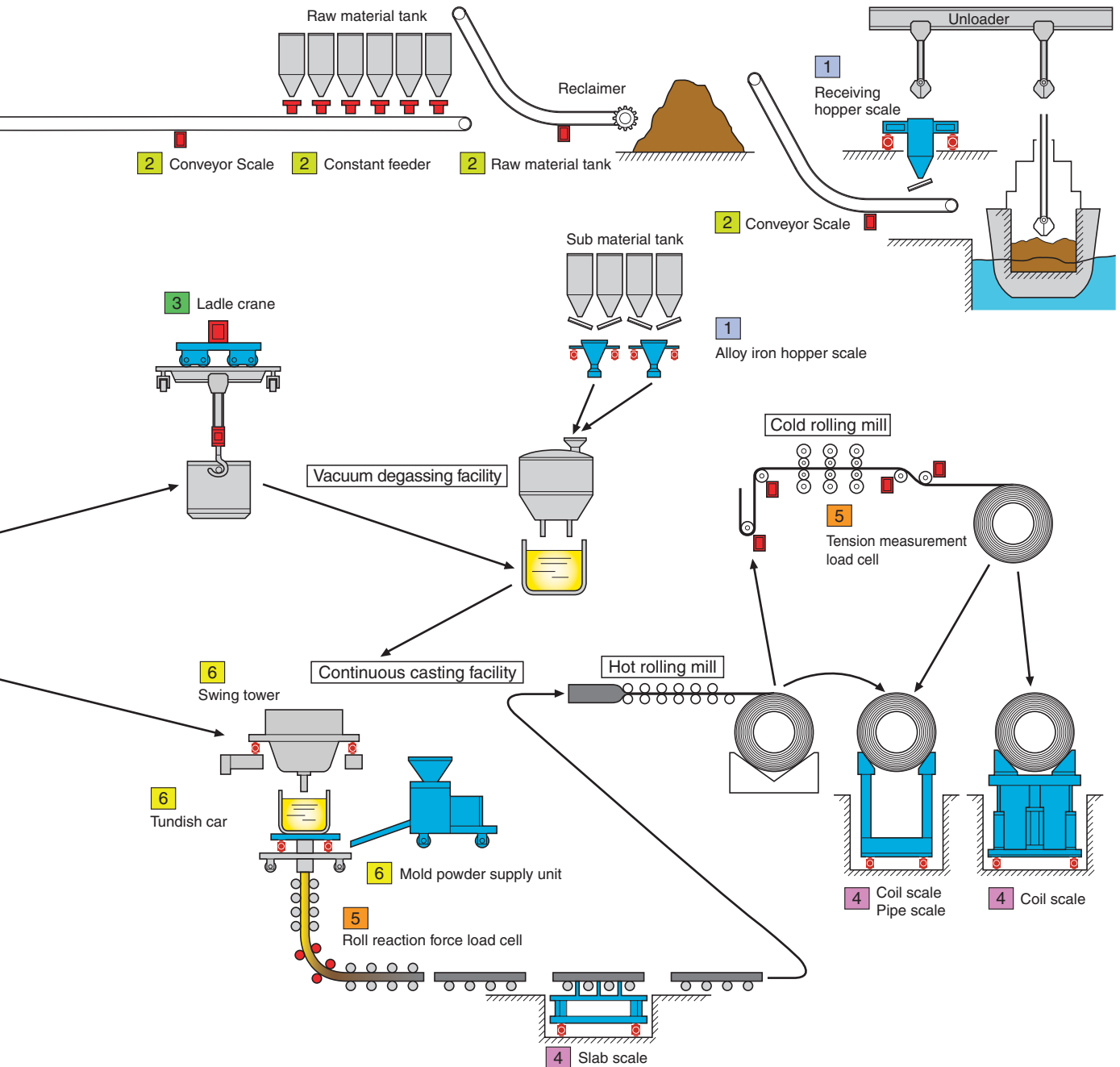
	1 Hopper-type Weigher	2 Conveyor Scale	3 Crane-type Weigher
Unit Name	Hopper weigher Hopper scale Hopper-type continuous fixed-volume feeder	Belt weigher Conveyor-type continuous fixed-volume feeder (Constant feeder)	Crane scales Direct-reading crane scale Crane overload detector
Figure			



Ladle Crane/Steel carrier

Rolling facility

Continuous casting facility



Unit Name	4 Platform weigher	5 Force measurement	6 Special weigher
	Coil scale Pipe Scale Platform weigher	Downward force measurement Torque reaction force measurement	Swing tower molten steel weigher Tundish weigher Mold powder supply unit
Figure	 	 	Please contact us for information on other special-purpose weighers.

Online Machine Diagnosis System

This system contributes to enhanced facility efficiency across a wide range of industries, by realizing efficient maintenance through detecting signs of anomaly, analyzing, and prediction of deterioration.

CMS-6100 Online Machine Diagnosis System

This system enhances the efficiency of diagnostics by contributing to complete automation from monitoring of facility abnormalities to creation of diagnosis reports.

Advantage 1 A wide variety of sensors

The system incorporates a variety of sensors to handle deterioration prediction, operation diagnosis, and quality diagnosis of the facility.

Advantage 2 A wide range of measurements

Many types of local stations are available including multiple-channel oscillation, analog, digital, multiple, temperature-resistant, and flame-proof.

Advantage 3 Real-time measurement

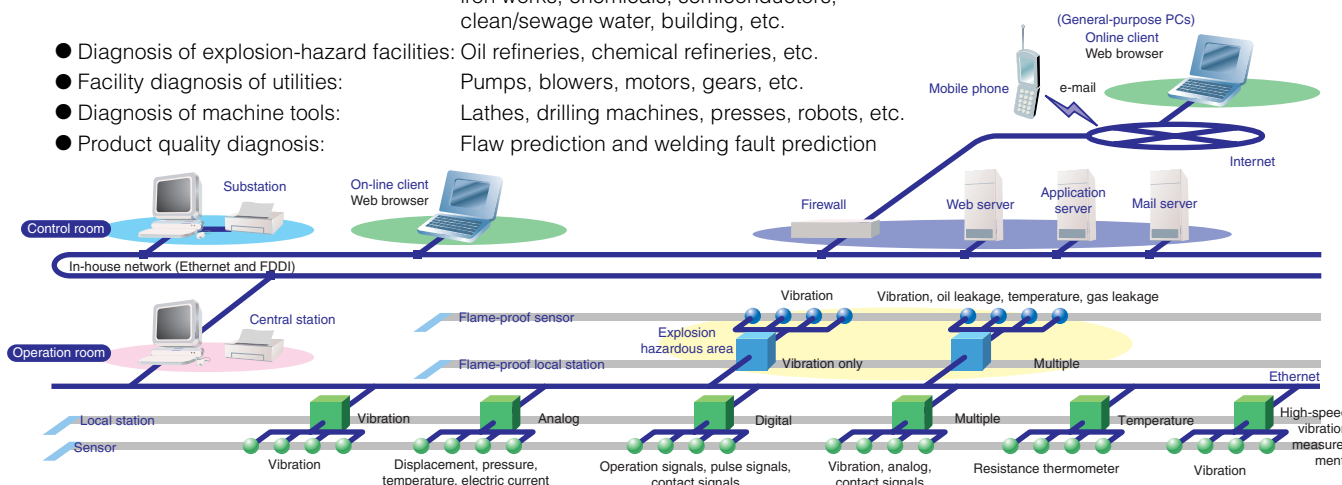
The system can handle parallel measurement of up to 32 channels of oscillation at one-second intervals. By measuring vibration behavior in real time, the system enables effective quality control and analysis of emergencies.

Advantage 4 Web-based remote diagnosis

You can monitor facility conditions through Web browser on the online client. Alarms can also be issued via e-mail.

Applicable Facilities

- Continuous 24-hour facility diagnosis: Pulp and paper, aluminum, copper, iron works, chemicals, semiconductors, clean/sewage water, building, etc.
- Diagnosis of explosion-hazard facilities: Oil refineries, chemical refineries, etc.
- Facility diagnosis of utilities: Pumps, blowers, motors, gears, etc.
- Diagnosis of machine tools: Lathes, drilling machines, presses, robots, etc.
- Product quality diagnosis: Flaw prediction and welding fault prediction



Local Station

Stores local monitor, isolator, relay, and terminals.



Wall-mounted local station

Our wide product line covers a variety of requirements.

Functions

The local station receives online signals from sensors. The station receives signals from sensors, processes data, sends information, and transmits the results to the central station. Distributed processing enables the system to expand according to increase in facilities.

Product Line

Item	Model	Maximum Number of Input Channels			
		Vibration	Analog	Contact Points	Temperature
Vibration	MW-6110	64 ch	8 ch *	8 ch *	—
Analog	MW-6120	—	64 ch	8 ch *	—
Digital	MW-6130	—	—	64 ch	—
Multiple	MW-6140	32 ch	32 ch	32 ch	—
Temperature	MW-6150	—	8 ch *	8 ch *	64 ch
High-speed vibration measurement	MW-6160	64 ch **	8 ch *	8 ch *	—
Flame-proof vibration	(Custom order)	16 ch	2 ch (gas detection)	—	—
Flame-proof multiple	(Custom order)	4 ch	—	4 ch (oil leakage)	6 ch

*Used as the measuring condition.

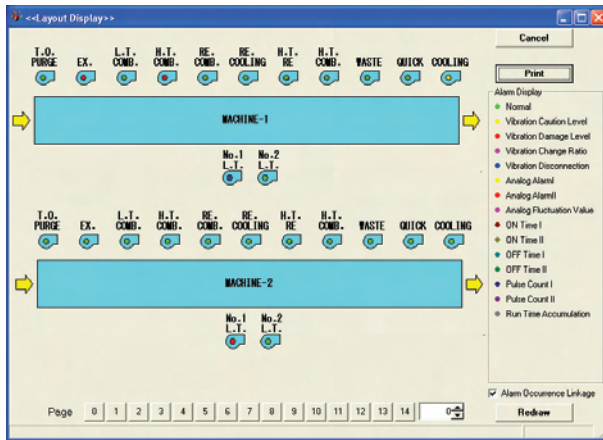
**When two MP-170 high-speed vibration conversion units are connected.

Typical Screens Displayed at the Central Station and Diagnosis Reports

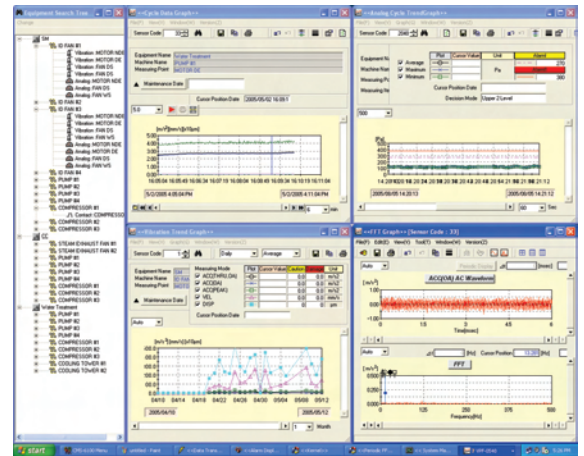
The system provides easily viewable windows and accurate diagnostic reports.

Functions

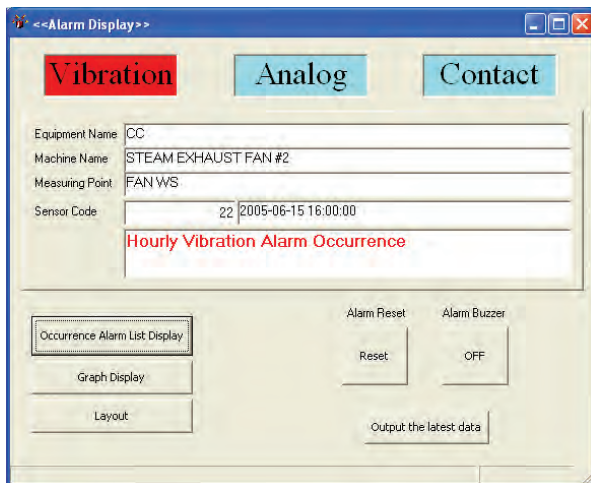
The central station receives various types of data that are processed by the local station through the LAN. It gives alarms and offers simple diagnoses through trend monitoring and prediction. The central station can also display facility conditions on a monitor or produce printed output using various types of data.



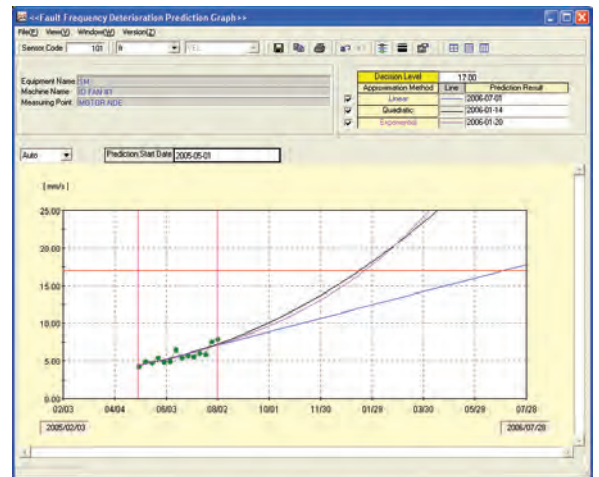
Layout display



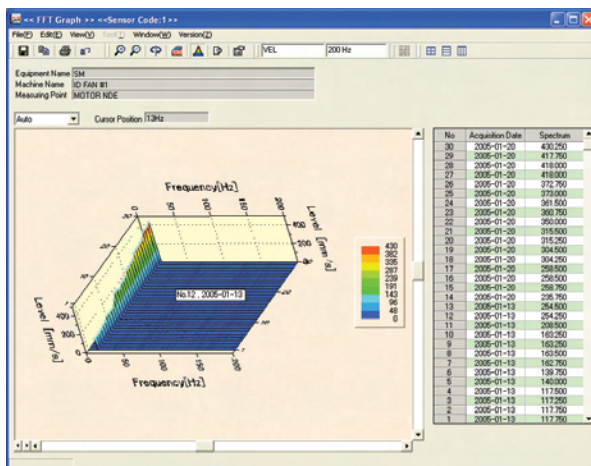
Multi-window display



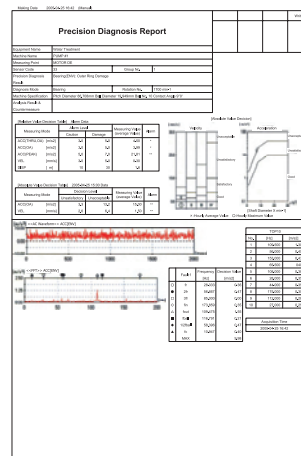
Alarm display



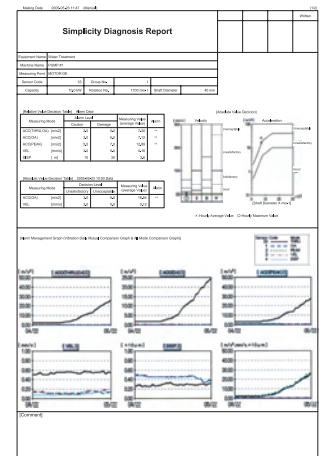
Deterioration forecast graph



3-dimensional FFT



Precision diagnosis report



Simple diagnosis report

Machine Diagnosis Instrument

These instruments enable maintenance staff to detect deteriorations and analyze their causes. The collected data can easily be transferred to a PC for prediction.

MK-210HEII Vibration Data Management System for Windows



This advanced diagnosis tool improves machine diagnosis. It offers enhanced visibility, ease of use, and network integration.

Advantage 1 Only one instrument is required for patrol inspections.

This instrument improves the efficiency of inspection work because only one tool can handle all data gathering during patrol inspections, including temperature measurements, vibration data management, and on-site indicators.

Advantage 2 You can determine maintenance actions on-site.

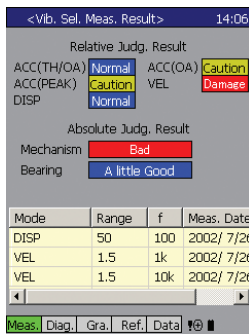
Maintenance staff can determine maintenance actions on-site because analysis of the causes of abnormal vibrations is automatically performed simply by inputting device specifications.

Advantage 3 The high-resolution display is easy to read.

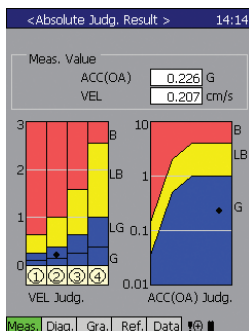
The instrument displays color-coded results of the diagnosis and inspection. The high-resolution window display ensures high visibility.

Advantage 4 Robust design ensures durability and weather resistance.

Robust construction makes this unit impervious to dusty factory environments. What's more, the instrument is operable even in the rain.



Results of vibration-specific measurements



Results of absolute value judgment

Precision Diagnostic Functions

MK-210HEII can detect:

- **Bearings** Damage to inner race, outer race, and balls; defect with retainer
- **Gears** Single-side contact, shaft center misalignment, tooth wear, defaced teeth, local defects
- **Mechanisms** Imbalance, misalignment, bent shafts, insufficient rack rigidity, shaft wear, play/looseness, misalignment on installation
- **Pumps and fans** Pressure pulsations, uniform wear, uneven wear, local defects
- **Motors** High-frequency vibrations, electromagnetic unbalance

Specifications

● Vibration Meter Unit

Input signal	Acceleration pickup signal, 1 channel		
Measurement mode	Measurement mode	Measurement frequency range	Measurement range
	Acceleration ACC (TH/OA)	5 Hz to 20 kHz	0.5, 1.5, 5, 15, 50 G _{r,p} (1G = 9.8 m/s ²)
	Acceleration ACC (OA)	1 Hz to 20 kHz	
	Acceleration ACC (PEAK)	1 Hz to 20 kHz	
Measurement frequency range	Acceleration ACC (ENV)	1 Hz to 20 kHz	
Measurement range	Velocity (VEL)	5 Hz to 1 kHz	0.5, 1.5, 5, 15, 50 cm/s _{r,p}
	Displacement (DISP)	5 Hz to 250 Hz	50, 150, 500, 1500, 5000 μm _{r,p}
Analysis frequency range	100 Hz, 200 Hz, 500 Hz, 1 kHz, 2 kHz, 5 kHz, 10 kHz, 20 kHz (full scale)		
Resolution	1/400 and 1/800 of the analysis frequency range		

Specifications

Main power source	Rechargeable battery pack (lithium ion rechargeable batteries) Charging specifications: Input 100 to 240 V AC, 50/60 Hz
Continuous operation time	5 hours minimum (with no backlight use)
Recharge time	About 1 hour to full recharge
Enclosure robustness	Dust-resistant and water-resistant construction (comparable to IP66)
Operating temperature	0 to 50 °C (90% RH, condensation-free)
Storage temperature	-10 to 60 °C (90% RH, condensation-free)
Dimensions (main body)	97 x 50 x 170 (W x D x H) mm
Weight	550 g (main body + rechargeable battery pack)

Note: "Windows" is a registered trademark of Microsoft Corporation of the U.S.A.



A portable, easy-to-operate vibrometer with diagnostic functions

Advantage 1 Features three measurement modes: acceleration, velocity, and displacement.

The required diagnostic functions are now integrated into a compact unit.

Advantage 2 Incorporates diagnostic functions compliant with ISO 10816-1 (JIS B 0906).

This unit automatically diagnoses the status of rotating machinery according to the vibration severity standard.

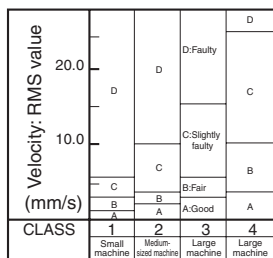
Advantage 3 Ensures easy, on-site bearing diagnosis.

You can easily diagnose bearings according to the judgment criteria displayed on the back of the unit.

Advantage 4 Incorporates a vibration pick-up with a magnet to ensure stable measurement accuracy.

Achieves accurate measurement by eliminating error factors caused by hand holding.

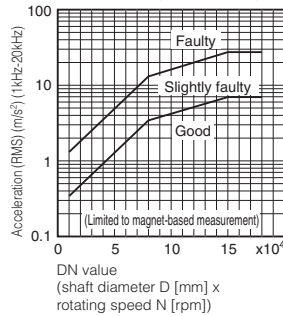
Velocity – assessment diagram



The Model MK-21 Vibrometer for Simple Diagnosis is equipped with an automatic diagnosis function compliant with vibration severity standards (ISO-10816, JIS B 0906). This allows even complete novices to use the vibrometer to diagnose their facilities.

The assessment diagram provided on the back of the MK-21 also allows you to assess whether a rotary bearing is in conformance.

Acceleration - rotary bearing assessment diagram

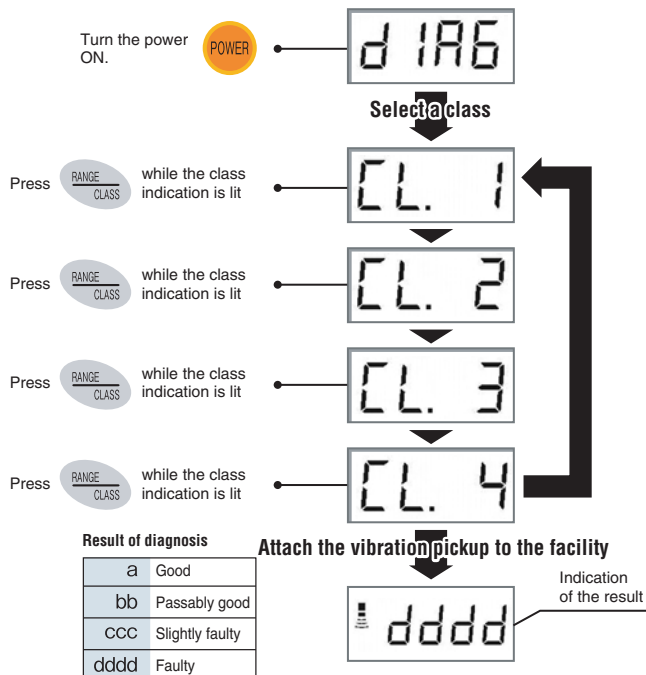


Note: The rotary bearing assessment diagram is an original standard of JFE Advantech Co., Ltd.

Specifications

Sensor	Piezoelectric vibration pick-up (with magnet)		
Measuring modes	Acceleration (ACC) Acceleration peak (ACC PEAK) Velocity (VEL) Displacement (DISP)		
Measuring range		Low range	High range
	Acceleration Acceleration peak Velocity Displacement	0.0 to 20.0 m/s ² 0.0 to 20.0 m/s ² 0.0 to 20.0 mm/s ² 0.0 to 200 μm	0 to 200 m/s ² 0 to 200 m/s ² 0 to 200 mm/s ² 0 to 1990 μm
Measurement frequency range	Acceleration: 1 kHz to 20 kHz Acceleration peak: 1kHz to 20 kHz Velocity: 10 Hz to 1 kHz Displacement: 10 Hz to 1 kHz		
Arithmetic processing	Acceleration: RMS value Acceleration peak: PEAK value Velocity: RMS value Displacement: P-P value		
Display type	4-digit LCD with backlight		
Low battery indication	Low-battery mark appears on LCD.		
Service temperature range	0 to 50 °C (90% RH, condensation-free)		
Storage temperature range	-10 to 60 °C (90% RH, condensation-free)		
Power source	AA alkaline dry battery (x 1)(continuously operable for at least eight hours.)		
Dimensions	69 x 154 x 30 (W x H x D) mm		
Weight	140 g (main body + battery)		

Flow of diagnostic operation



Standard configuration

Main unit	MK-21	x1
Piezoelectric vibration pick-up	PU-626D	x1
Magnet	MK-9002	x1
Curl cord	CD-C1-3N	x1
AA dry battery	LR-6	x1
Carry case		x1
Instruction manual		x1

Option

Vibration pick-up (hand-held)	PU-601R-A
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*Bearing diagnosis with the assessment table is not available if the hand-held vibration pick-up is used.



MK-64

This on-line vibrometer accurately detects equipment abnormalities. The new digital meter offers higher visibility.

Advantage 1 Digital meter display for higher visibility

This innovation enables instant checking of the signal level.

Advantage 2 Easy alarm setting with digital display

The digital setting switch allows you to easily set any value in 1% units.

Advantage 3 Includes level signal and alarm output functions.

The vibrometer outputs level signals (4 to 20 mA DC) and alarms (relay output).

Advantage 4 Obtain precise diagnoses by connecting a portable diagnostic instrument.

Connecting a MK-210HEII vibration data management system makes it possible to obtain precise diagnoses, perform frequency analysis, and output reports.

Advantage 5 Accommodates multiple voltages for global applications.

The MK-64 supports power source voltages ranging from 85 to 264 V AC for global applications.

Applications

- Continuous vibration monitoring of a motor, pump, or fan
- Collection of vibration data for a DCS
- Diagnosis of a rotating machine

Specifications

Sensor	Piezoelectric acceleration type 5.1 mV/(m/s ²)(50 mV/G)		
Measurement mode range *	Measurement modes	Measurement frequency range	Measuring range*
	Acceleration (RMS)	5 Hz to 20 kHz	5, 15, 50, 150, 500 m/s ²
	Acceleration (RMS)	1 kHz to 20 kHz	5, 15, 50, 150, 500 m/s ²
	Acceleration (PEAK)	1 kHz to 20kHz	5, 15, 50, 150, 500 m/s ²
	Velocity (RMS)	5 Hz to 1kHz	5, 15, 50, 150, 500 m/s ²
	Displacement (p-p)	5 Hz (or 15Hz) to 1 kHz	50, 100, 200, 500, 1000 μm
Alarm output	Upper limit: 1 level for each measurement mode Relay contact point: 1a Contact point capacity: 20 W, 110 V AC max. Permissible setting delay: 0 to 15 seconds		
Signal output	DC (level output)*: 4 to 20 mA DC Permissible load resistance: 500 ohms max. AC (waveform output): Pickup signal through output 5.1 mV/(ms ²)		
Power source	85 to 264 V AC, 50/60 Hz, 10 W max.		
Dimensions	54 x 180 x 160 (W x H x D) mm (excluding mounting bracket and projections)		
Weight	890 g		
Operating temperature range	-10 to 60 °C (condensation-free)		

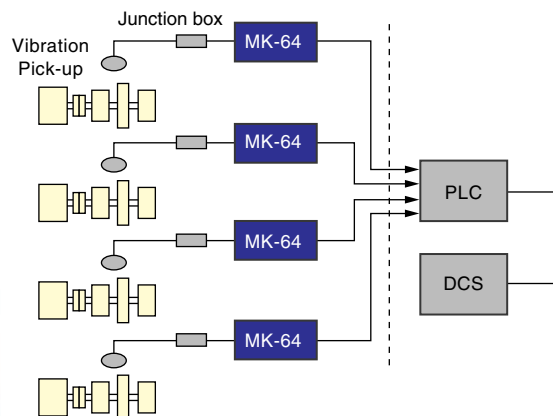
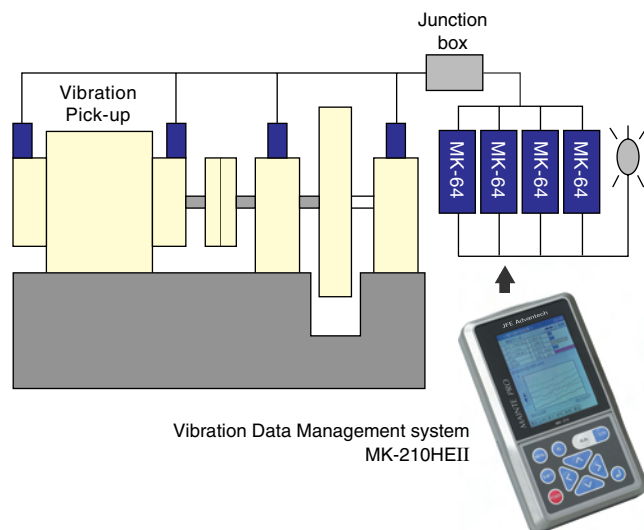
*An overall value system (optional) is also available for the operation method. Two measurement modes can be selected from the five modes available. (Two identical modes can be selected for setting two levels of alarms.)

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Application example

Constant monitoring & precision diagnosis for rotating machines

Vibration data analysis for factory management



Piezoelectric Vibration Pick-up

We offer a wide array of types to match various needs.
Our factory produces the best value possible.

Advantage 1 Compact design and robust construction


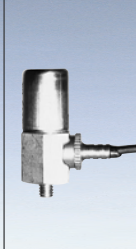

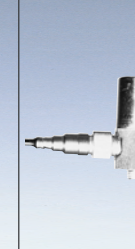
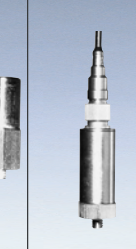
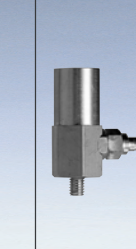
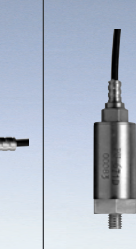
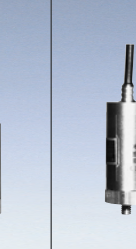
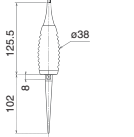
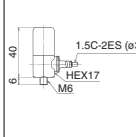
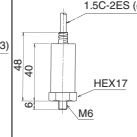
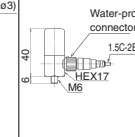
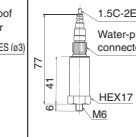
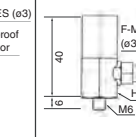
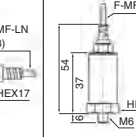
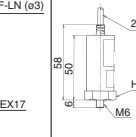
The use of a piezoelectric element contributes to compactness, toughness, and a wide band.

Advantage 2 Wide variety of configurations.

We offer a wide selection of products that include high-temperature, waterproof, and explosion-proof models.

Advantage 3 Noise-resistant design

Each model is insulated and incorporates a preamplifier.
This construction ensures high resistance to noise.
(Note: Models for high temperature applications require external preamplifiers.)

Model	PU-601R	PU-611D	PU-621D	PU-616D	PU-626D	PU-661D	PU-671D	PU-430
Type	Hand-held	Side cable type	Top cable type	Side cable type Connector	Top cable type Connector	Side cable type	Top cable type	Top cable type
Features	• General purpose	• General purpose • Water-proof IPX7	• General purpose • Water-proof IPX7	• General purpose • Water-proof IPX6	• General purpose • Water-proof IPX6	• High temperature • Water-proof IPX6	• High temperature • Water-proof IPX7	• Intrinsically safety i3aG4 • Water-proof IPX7
Appearance								
Voltage sensitivity	5.1 mV (m/s ²) (50 mV/G)	5.1 mV (m/s ²) (50 mV/G)	5.1 mV (m/s ²) (50 mV/G)	5.1 mV (m/s ²) (50 mV/G)	5.1 mV (m/s ²) (50 mV/G)	5.1 mV (m/s ²) (50 mV/G)	5.1 mV (m/s ²) (50 mV/G)	5.1 mV (m/s ²) (50 mV/G)
Frequency range (±3 dB)	5 to 5,000 Hz	5 to 10,000 Hz	5 to 17,000 Hz	5 to 10,000 Hz	5 to 10,000 Hz	5 to 10,000 Hz	5 to 10,000 Hz	5 to 12,000 Hz
Max. measuring acceleration	490 m/s ² (50 G)	490 m/s ² (50 G)	490 m/s ² (50 G)	490 m/s ² (50 G)	490 m/s ² (50 G)	343 m/s ² (35 G)	343 m/s ² (35 G)	490 m/s ² (50 G)
Max. allowable acceleration	9,800 m/s ² (1,000 G)	9,800 m/s ² (1,000 G)	9,800 m/s ² (1,000 G)	9,800 m/s ² (1,000 G)	9,800 m/s ² (1,000 G)	9,800 m/s ² (1,000 G)	9,800 m/s ² (1,000 G)	9,800 m/s ² (1,000 G)
Resonance frequency	25 kHz min.	17 kHz min.	20 kHz min.	20 kHz min.	20 kHz min.	18 kHz min.	17 kHz min.	14 kHz min.
Temperature range	-10 to 60°C	-10 to 80°C	-10 to 80°C	-10 to 80°C	-10 to 80°C	-10 to 150°C	-10 to 150°C	-10 to 60°C
Spanner screw	M6 × 6L	M6 × 6L	M6 × 6L	M6 × 6L	M6 × 6L	M6 × 6L	M6 × 6L	M6 × 6L
Case material	Hard plastic	SUS316	SUS303	SUS316	SUS303	SUS303	SUS303	SUS303
Cable	Curl cord	1.5C-2ES	1.5C-2ES	1.5C-2ES	1.5C-2ES	F-MF-LN	F-MF-LN	2.5C-2VS
Cable length	1 m	5,10 m	5,10 m*	5,10 m	5,10 m	5,10,20 m	5,10,20 m	5,10 m*
Cable protection (optional)	—	Flexible cover of SUS steel	Flexible cover of SUS steel	Flexible cover of SUS steel	Flexible cover of SUS steel	Flexible cover of SUS steel	Flexible cover of SUS steel	Flexible cover of SUS steel
Preamplifier	Built-in	Built-in	Built-in	Built-in	Built-in	Exist outside Additionally	Exist outside Additionally	Built-in
Isolation	Case isolation	Case isolation	Case isolation	Case isolation	Case isolation	Case isolation	Case isolation	Case isolation
Weight	170 g	55 g	45 g	52g	50 g	60 g	55 g	80 g
Dimensions (mm)								

* 20 m by special order

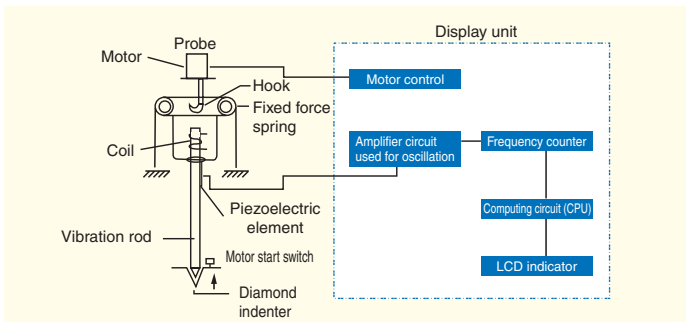
Ultrasonic Hardness Tester

The SONOHARD® Ultrasonic Hardness Tester measures hardness effectively by positioning a vibrating rod with diamond indenter on a material and applying a constant load.

SONOHARD SH-21 (with arithmetic operation and output features and a motorized probe.)



■ Measurement Principle



■ Applications

- Evaluation of carburizing, standard quenching and high-frequency quenching
- Weld hardness measurement for welded structures (tanks, hulls, bridges, steel towers, etc.)
- Hardness measurement for gear tooth flank (confined area)
- Measurement of structural strength or hardness of a facility
- 100% online inspection of components (engine valves, rack bars, crankshafts, bearings, etc.)

■ Specifications

- Measuring indenter: Diamond indenter for Micro-Vickers (with an angle of 136° between opposite planes)
- Measuring load: 20 N (Approx. 2 kgf) Minimum indentation type 10 N (Approx. 1 kgf), for casting 40N (Approx. 4 kgf)
(The above loads indicate those in typical applications. As the specification varies according to the object to be measured, please contact JFE ADVANTECH for details.)
- Measuring range: HV100 to 999, HRC10.0 to 70.0, HS20.0 to 99.9, HB85 to 550
- Reproducibility: HV: (±3%rdg) HV, HRC: ±1.0 HRC, HB: (±3%rdg) HB, HS: ±1.0%HS
- Power supply: 100 to 240 V AC or rechargeable lithium ion battery
- Minimum object size: 15 (width) x 15 (length) x 7 (thick) mm

Note: To measure other objects, place the object on a 50-mm-dia. x 15-mm plate, ensure close contact by applying oil.

*Excel is a registered trademark of Microsoft Corporation of the U.S.A.

This high-performance hardness checker is equipped with four hardness scales. It provides highly accurate measurements with simple operation.

■ Advantage 1 Four scales

Can indicate the hardness values in four scales — HV, HRC, HS, and HB.

■ Advantage 2 Ample memory functions

The 2,000-point data memory function provides adequate supports for high-volume measurement tasks. A 10-point memory function is also available for measurement calibration values. With additional data processing, the checker can display average values and standard deviations.

■ Advantage 3 Upper and lower limit setting

It is possible to set up alarms to notify the allowable limits of a work piece have been surpassed. An alarm signal can also be output (optional).

■ Advantage 4 Numerous options

Several options are available, including a measuring stand and dedicated printer. With PC processing software, data can be transferred in CSV file format for use in a spreadsheet program such as Microsoft Excel*.

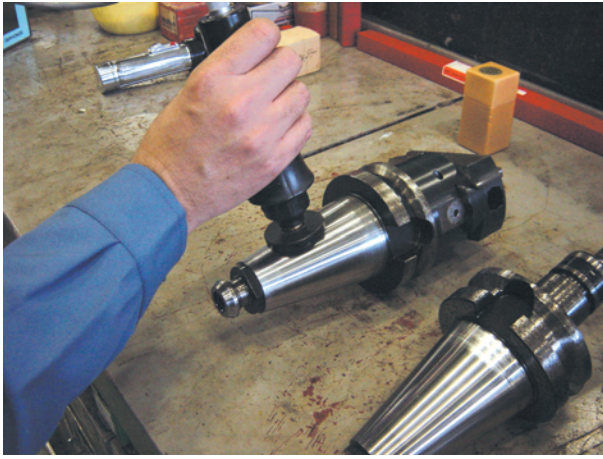
■ Advantage 5 Designed for handheld use

The handheld design provides ease of use at the worksite. The improved display offers enhanced visibility.

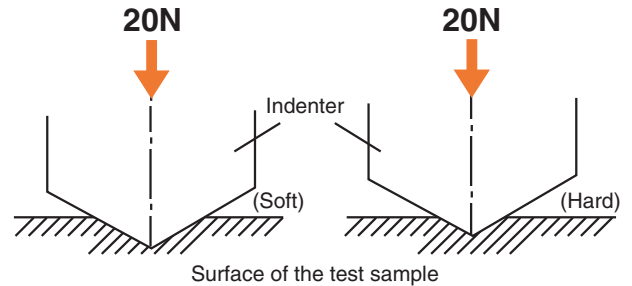
■ Advantage 6 Flexible measurement

This tester can measure in any direction and enables effective checking under various conditions.

Measurement principle of SH-21



When the vibrating rod is applied to a soft-surfaced test sample with identical qualities and at a fixed force, it makes a deep indentation and gets locked into the groove. Due to this, the resonance frequency increases. Conversely, it does not get locked in when used on hard test samples and the resonance frequency drops. The test sample's hardness can be calculated using the correlation between this deviation and the tested hardness.



Calculation values of SH indentation

Load P = approx. 2 kgf (approx. 20N)

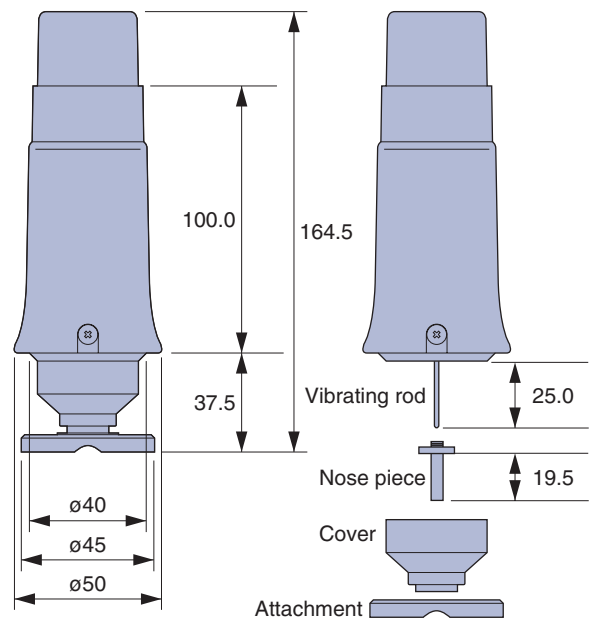
Hardness HV	Calculation value, Size of indentation (mm)	Calculation value, Depth of indentation (mm)	Conversion value, HRC
100	0.193	0.028	—
200	0.136	0.019	15
300	0.111	0.016	31
400	0.096	0.014	41
500	0.086	0.012	49
600	0.079	0.011	55.5
700	0.073	0.010	60.5
800	0.068	0.010	64.5
900	0.064	0.009	67.5

Load P = approx. 1 kgf (approx. 10N)

Hardness HV	Calculation value, Size of indentation (mm)	Calculation value, Depth of indentation (mm)	Conversion value, HRC
100	0.136	0.019	—
200	0.096	0.014	15
300	0.079	0.011	31
400	0.068	0.010	41
500	0.061	0.009	49
600	0.056	0.008	55.5
700	0.051	0.007	60.5
800	0.048	0.007	64.5
900	0.045	0.006	67.5

Probe dimensions

unit / mm



Precautions on measurements

1. The affect of surface roughness

\bar{X} : Average value σ : Standard deviation Measurement frequency per 100

Hardness	Surface roughness	0.8a	1.6a	3.2a
HRC31.5	\bar{X}	31.5	31.7	30.9
	σ	0.4	0.5	0.8
HRC50.8	\bar{X}	50.5	50.5	50.3
	σ	0.3	0.3	0.6
HRC65.5	\bar{X}	65.4	65.3	65.1
	σ	0.2	0.2	0.4

• For items with a roughness of 3.2a or greater, you will need to polish the surface before making measurements. If decarbonization occurs, make measurements after having removed it.

2. Measurable dimensions (For loading of 2 kgf/approx. 20N)

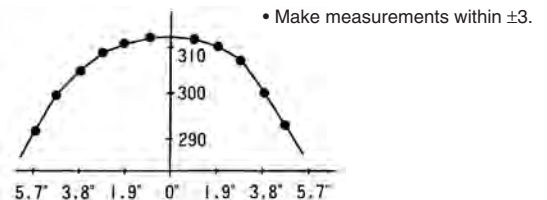
1 Size: 15 mm wide × 15 mm long or greater

2 Thickness t = 7 mm or greater

• For items smaller in dimension than those listed above, you will need to use a stand with dimensions of $\phi 50 \times 15$ mm or greater, and make measurements after securing the item to the stand by applying oil and after the virtual mass.

• For loading of 1 kgf/ approx. 10N, it is possible to make measurements even at t = 7 mm or less.

3. Angles and deviations



4. Reproducibility

When making measurements on a standard test block using a measuring stand

		Standard block	Standard measurement	Hand-held measurement
HV hardness	Average value	HV200	199	201
		500	504	508
		800	806	790

* 30 measurements

Ultrasonic Thickness Gauge

You can instantly measure the thickness of a material simply by positioning a probe. This innovative gauge is widely used and is capable of measuring a variety of materials including iron, stainless steel, glass, and ceramics.

■ Applications

- Maintenance tasks:
 - Checking corrosion of pipes, water tanks, and bridges
 - Checking wear of construction machinery and ship hulls
 - Verifying the accuracy of metal molds and precision components
- Product inspection:
 - Ferrous metals: steel plates, pressed products, automobile parts, and cast metals
 - Nonferrous metals: processed copper products, copper alloy, and aluminum parts
 - Plastics: gas pipe, water pipe, plastic containers, and various other molded parts
 - Other: glass products, lenses, and ceramics

TI-45 Series Ultrasonic Thickness Gauge



This high-precision portable ultrasonic thickness gauge has a display precision of 1/100 mm. It efficiently supports quality control and precision control tasks.

|| Features

- Advantage 1** Resolution of 0.01 mm
- Advantage 2** Extremely compact & lightweight
- Advantage 3** Switch-selectable units – mm or inches
- Advantage 4** Built-in calibration test plate
- Advantage 5** Quick display update with last reading retained on the display
- Advantage 6** Display symbols that alert user to poor coupling and low battery conditions

|| Specifications

	TI-45N	TI-45B	TI-45C
Applications	Thick plate	Thin plate	Small-diameter pipe
Measuring range	1.00 to 199.99 mm	0.40 to 15.00 mm	0.50 to 19.00 m
Pipe	Minimum diameter	ø30.00 mm	ø8.00 mm
	Minimum thickness	1.50 mm	0.80 mm
Resolution accuracy*	±0.05 mm or ±0.2% rdg		±0.03 mm
Probe	Model	5Z10NDT-M (5MHz)	10Z10NDT-B (10MHz)
	Diameter	ø13.0 mm	ø13.0 mm
Display	4.5-digit LCD display with pushbutton backlight		
Display resolution*	0.01 mm		
Velocity range	1,000 to 12,000 m/s		
Cable	1 m cable with locking/quick-release connection		
Battery	AA battery x 1		
Calibration plate	5.00-mm steel plate integrated into front of housing		
Dimensions	69 x 144 x 30 (W x H x T) mm		
Weight	Gauge: 150 g, Probe: 50 g		
Operating and material temperatures	-5 to 50°C		
Warranty	Gauge: 1 year, Probe: 6 months		

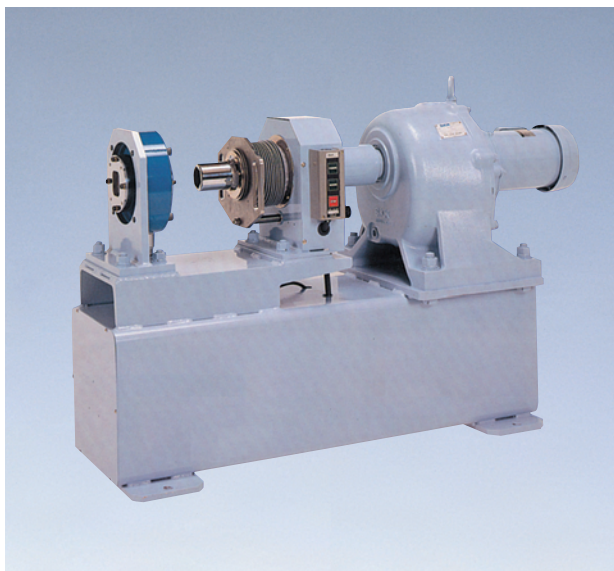
*When measuring steel

Bolt Testing Machine

These testing machines measure characteristics of bolts used in various areas with high accuracy.

We also offer a torque-split bolt testing machine that determines the friction coefficients of the helicoidal surface and bearing surface through arithmetic operations.

BIS-520 Bolt Testing Machine



This device measures tightening axial forces, torques, and rotational angles up to the breaking point for various bolts. It displays each characteristic curve and produces printed output.

|| Bolts that can be tested

Torshear high-strength bolts, high-tensile strength bolts, and special bolts used in construction, bridges, and automobiles
Sizes: M12 to M24, Maximum axial force: 500 kN, Torque: 2000 N-m

|| Data processing equipment (device configuration)

PC, LCD monitor, and printer

|| Options

Supports bolt sizes M6 to M42 (at least two testing machines are required.)

BTC-400 Bolt Axial Force Meter



This axial force measurement instrument uses high-precision, high-response load cells to measure bolt properties. With its compact design and lightweight aluminum alloy construction, it provides user-friendly features for on-site work. (Supports both digital and analog displays.)

|| Applications

- Confirmation of tightening axial force of torshear high-tensile strength bolts
- On-site adjustment of wrench tightening force of high-strength hexagonal bolts
- Compatible with the proof strength point engineering method

|| Bolts that can be measured

Torshear high-strength bolts and high-tensile strength bolts used in construction, bridges, construction machinery, and automobiles
Size: M16 to M24, Maximum axial force: 400 kN

Analog Indicator (Option)

ISO9001



JQA-0950

- Submersion Level Detector
- Crane Scale
- Truck Scale
- Machine Diagnosis Instrument
- Piezoelectric vibration pick-up
- Ultrasonic Hardness Tester
- Ultrasonic Thickness Gauge

ISO14001



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Kawatetsu Advantech Co., Ltd. was renamed JFE Advantech Co., Ltd. as of April 1, 2004.