Current/Voltage Inputs

Super Compact at 48 x 24 mm

1/32 DIN Digital Panel Meter

K3GN

NEW

Easy Setup with Interactive Inputs

Process Indicator

K3HB-X

Process Meter

K3MA-J

Display only DC input

Digital Panel Meter

K3TE

Display only AC input

Digital Panel Meter

K3TF

Display only

Subminiature Digital Panel Meter

K3TG

High-speed response

NEW

Linear Sensor Indicator

K3HB-S

Load Cell Inputs

NEW

Weighing Indicator

K3HB-V

Pulse Inputs

Rotations/ Pulse

NEW

Rotary Pulse Meter

K3HB-R

Frequency/Rate Meter

K3MA-F

Time Intervals

NEW

Time Interval Meter

K3HB-P

Up/Down Pulses

NEW

Up/Down Counting Pulse Meter

K3HB-C

Temperature/ Process Inputs

Temperature/ process calculation and display

NEW

Temperature Indicator

K3HB-H

Temperature display

Temperature Meter

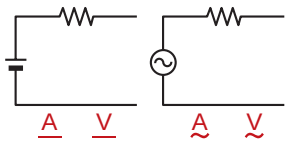
K3MA-L

Display, Alarms, Monitoring, Data Transfer, High-Speed Inspection, High-speed Discrimination, and Much More OMRON Digital Panel Meters for advanced control.

Digital Panel Meters digitally process measurement data, such as voltages, currents, analog signals from linear sensors, and pulse signals, to convert and display the data. They can also act as interfaces by performing operations such as comparisons with user-set set values and transmission of judgment results.
Various types of inputs can be accepted to display operating status for monitoring, make judgments, and log or manage measurement values for process-control systems. OMRON Digital Panel Meters also solve sophisticated control problems, such as measuring the height of a workpiece using displacement sensors for inline inspection/discrimination of dimensions.

Input Devices

A Wide Range of Voltages/Currents



Load Cell Signals

- Load Cell Sensors

mV/V

Rotation/Pulse Signals

- Photoelectric Sensors
- Proximity Sensors
- Rotary Encoders

E3X ON/OFF E2E ON/OFF E6A2 rpm

Inputs

- Voltages/currents
- Pulses
- Sensors
- 1 to 5 V
- 4 to 20 mA

Interfaces

Compact Digital Panel Meters

Digital Panel Meters

Temperature Sensors

- Thermocouples, Platinum-Resistance Thermometers

E52 Series

- Infrared Temperature Sensors

ES1 ES1B

Signal Converters and Other Products

K3HFM Series K3F□ Series

Inverter 3G3MV

Displacement, Length Measurement, and Linear Output Sensors

- Laser Displacement Sensors

Z4M

- Parallel Beam Linear Sensors

Z4LA

E4PA Ultrasonic Displacement Sensor

E2CA Inductive Proximity Sensor

E8□ Pressure Sensor

■ The Role of Digital Panel Meters

Digital Panel Meters read and process input signals, such as those from a sensor, and display and output the results.
Outputs can be made using any of six different types of output: relay contact, transistor, BCD, linear, and DeviceNet (display-only Digital Panel Meters do not output signals). Therefore, circuits can be controlled directly, or BCD outputs used to transmit data to a host computer or PLC.

Output Devices

Digital Indicators

Output
- Contacts
- Transistors
- BCD
- Linear
- Communications
- DeviceNet


Power Relays


Contactors


Computer


Solenoid, solenoid valve


E55A Recorder


3G3MV Inverter


PLC

Programmable Terminal
NS Series


M7E Display Units


Lamps, Alarm lamps


Signal Lamps


Buzzer

Advanced Digital Indicators Based on a Smart Concept

NEW

Smart stands for:
Outstanding visibility and ease of operation
Applicability in advanced applications
Compact size that enables machine downsizing
Safety and expandability features for networking, global usage
Diverse selection of models meeting a wide range of objectives and applications
Born of an intelligent design, the K3HB
Comprehensive series comprising both analog and digital signal input models

- Clear contrast, high visibility
- Display color switchable between green and red
- Bar graph display of present level/deviation
- SV display for convenient settings changes, operation

Details

Digital Indicators
K3HB-series

Process Indicators	K3HB-X·····Cat. No. N131
Linear Sensor Indicator	K3HB-S·····Cat. No. N131
Weighing Indicator	K3HB-V·····Cat. No. N131
Temperature Indicator	K3HB-H·····Cat. No. N131
Rotary Pulse Meter	K3HB-R·····Cat. No. N135
Time Interval Meter	K3HB-P·····Cat. No. N135
Up/Down Counting Pulse Meter	K3HB-C·····Cat. No. N135

- Sampling cycle of 50 times per second (High-speed response of 2,000 times per second)
- Measurement resolution of 0.01ºC
- Versatile measurement capabilities using external event inputs

Powerful | User-Friendly | Smart | Slim | Network & Global

- Depth of 95 mm
- Modular design adaptable to a wide range of specifications

- DeviceNet compatible
- CE marking by third party assessment body
- UL certification

It's Smart.

Selection range expanded by adding models for digital and analog signals.

K3HB-C
Up/Down Counting Pulse Meter

K3HB-H
Temperature Indicator

K3HB-S
Linear Sensor Indicator

K3HB-R
Rotary Pulse Meter

K3HB-P
Time Interval Meter

K3HB-X
Process Indicator

K3HB-V
Weighing Indicator

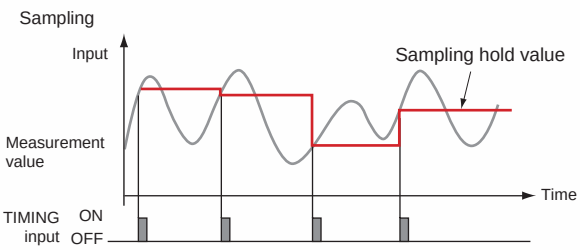
Models with Digital Signal Inputs

Easy to Use

- Bar graph position meter facilitates easy recognition of measurement values (full-scale), or deviations from the set value.
- Green-red display color switching enables recognition of judgment status at a glance.
- SV display is provided as standard feature, improving setting modifications and operability.

Versatile Measurements Enabling Discrimination Applications.

- External event inputs support high-speed applications, such as sampling in synchronization with external signals, and peak/bottom hold operations.

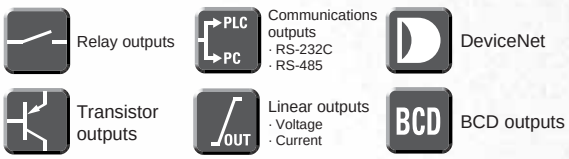


*Excluding Models with digital inputs.

Models with Analog Signal Inputs

Many I/O Variations

- I/O variations to meet discrimenation, control, and information needs.



Easy to Assemble

- Short body (depth of 95 mm)
  *DeviceNet-compatible models are 97 mm in depth.
- Modular design adaptable to a wide variety of applications

Ideal for Export

- CE marking conformance by third party assessment body
- UL certification

The Quality of Expression

Displayed values can be easily read in bright locations or dark fields.

Moreover, the display color changes in response to the comparative output operation.

Clearly visible display even in bright locations

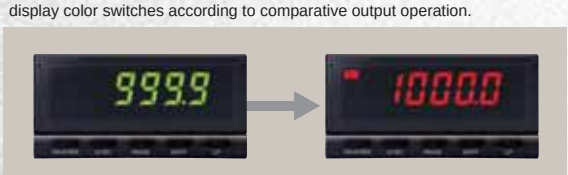
Backlit LCD display provides high visibility.

The backlit LCDs of the K3MA provide better visibility than 7-segment LEDs because light emission is at the surface, enables you to build optimal measuring environments.

Two Color Display: Red and Green

Bright, switchable red/green display colors enable conditions to be grasped easily.

Changes in the conditions can be grasped from a distance because the display color switches according to comparative output operation.



Digital Panel Meter

K3MA Series

Details

Process Meter	K3MA-J····· Cat. No. N108
Frequency/Rate Meter	K3MA-F····· Cat. No. N107
Temperature Meter	K3MA-L····· Cat. No. N109

CE

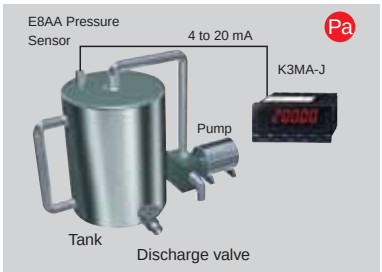
Front-panel Operation, Large Display, Global Standards

Operations and designs are the same for all countries. CE marking conformance, UL certification (Certification Mark License)

Application

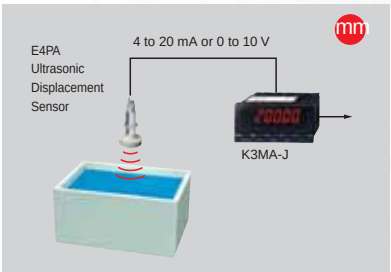
Measurement Displays and Monitoring: K3MA-J Process Meter

Monitoring interior tank pressure



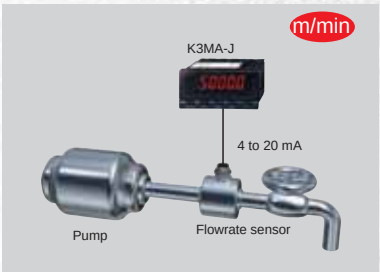
- Monitoring gas pressure.
- Inspection instruments in food or pharmaceutical plants.

Displaying/outputting liquid level



- Monitoring liquid level in cleaning tanks.
- Water tanks, devices using chemicals, etc.

Flowrate sensor

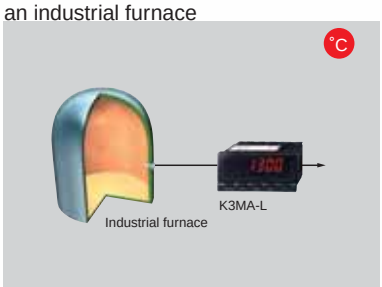


- Monitoring sendout flowrate.
- Water processing devices, etc.

Application

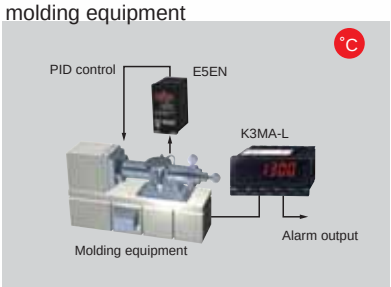
Temperature Displays and Alarms: K3MA-L Temperature Meter

Monitoring the temperature of an industrial furnace



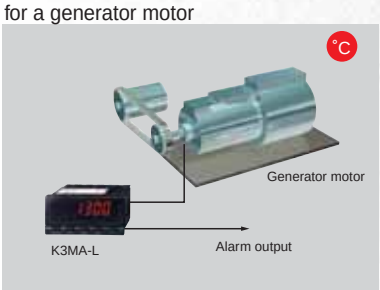
- Monitoring the temperature of an industrial furnace/sintering furnace.
- Monitoring/alarm function for disinfecting equipment.

Sending a temperature alarm for molding equipment



- Monitoring (failsafe checking) abnormal temperatures in molding equipment.
- Monitoring the liquid temperature for cleaning devices.

Monitoring the bearing temperature for a generator motor

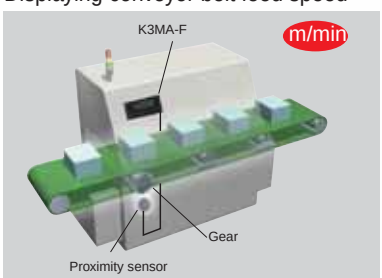


- Monitoring temperature rise in electric power generating facilities.
- Checking temperatures in machines and device.

Application

Speed/Flowrate Displays and Alarms: K3MA-F Frequency/Rate Meter

Displaying conveyor belt feed speed

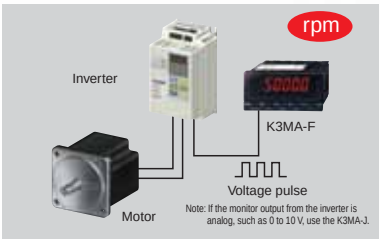


- Monitoring line speed for a reflow furnace.
- Displaying feed speed for food processing, conveying, or sintering.

Monitoring the rotations of a mixer or churner

- Mixers for resin molding.
- Powdering/pelleting machines, centrifugal separators.

Displaying the monitor output from an inverter as rotations or line speed



- Monitoring conveyor speed.
- Machining equipment (grinders, polishers).

The 1/32 DIN Digital Panel Meters are born!

Compact Digital Panel Meters
- Multiple inputs
- Communications
- Dust-proof, waterproof
- UL/CSA conformance
- CE Marking

A smaller, short-body design has been achieved, saving space to meet the demands of smaller equipment and control panels.

This ECO label is indicated on products that meet the environmental standards established by OMRON.

Perfect for use with other space-saving products in OMRON's 48 x 24 mm series.

Miniature Total Counters
H7E Series

Digital Temperature Controller
E5GN

1/32 DIN Digital Panel Meter
K3GN

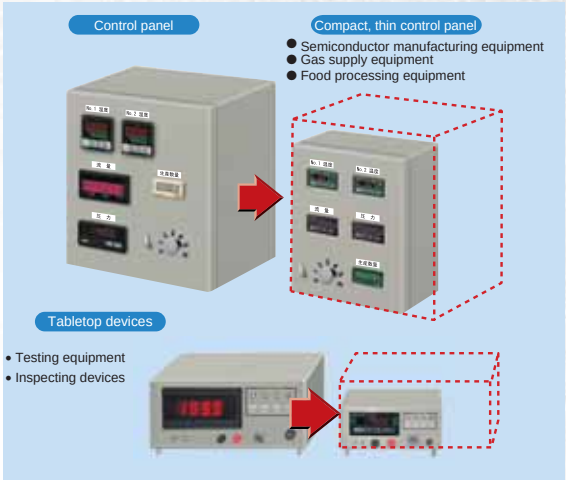
Details
Cat. No. N101

Display Color Changes from Green to Red Make Changes Visible at a Glance.

The display color can also be set to change according to the comparative output operation, improving visual confirmation of conditions even from a distance.

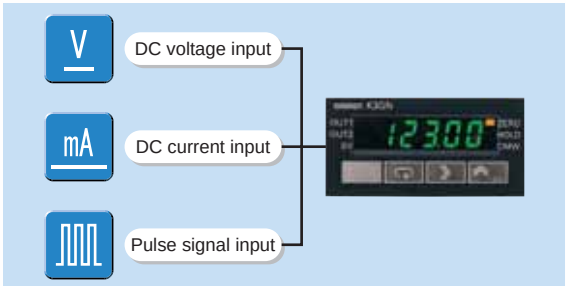
Downsizing Can Be Achieved for Equipment and Control Panels.

With a DIN size of 48 x 24 mm, mounting to even small machines is possible.



Multiple Inputs for Improved Convenience

A single model can be used as a process signal display, tachometer, or speedometer.

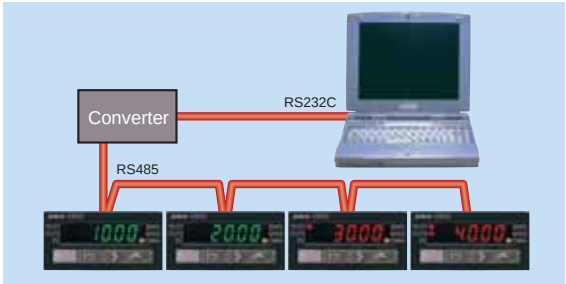


Dust-proof, waterproof design

The waterproof and dust-proof enclosure conforms to NEMA4X (equivalent to) IP66). When used in applications such as food processing, operation with wet hands is not a problem.

The K3GN is Compact and Equipped with Communications

K3GN models with communications have been added to the series to enable transmitting measurement data to enable remote monitoring of the operation status of installations and equipment using a computer or PLC to transmit measurement data.



Remote Display Using Communications

K3GN models with communications can display data that is remotely transmitted to them from a PLC.

OMRON Digital Panel Meters Accelerate the Integration of Control and Information.

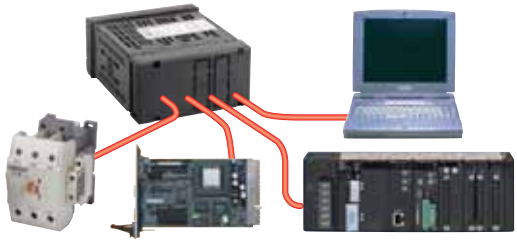
OMRON Digital Panel Meters for mounting in control boards and machines have good visibility in the field, are easy to use, are waterproof, and conform to international standards. Communications with host computers or PLCs have been improved to provide functionality, such as data collection, to increase operating rates and data recording capabilities to provide for implementing measures for PL laws and ISO through the achievement of advanced information systems.

A wide selection of Digital Panel Meters supporting a wide array of input elements are available, supporting more sophisticated control of operations such as measurement, inline inspection, and monitoring. With the addition of convenient functions even better matched to objectives, construction of efficient control systems is simple.

1 Green ⟷ Red Displays Allow Easy Recognition of Judgment Results

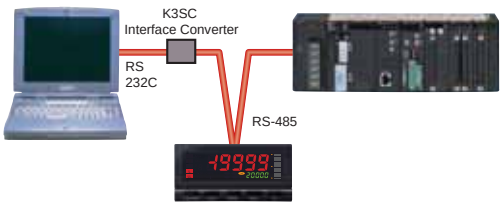
For example, if the display color is green and turns red when the set value is reached, the comparative judgment status can be confirmed at a glance.

2 Wide Variety of Control Outputs



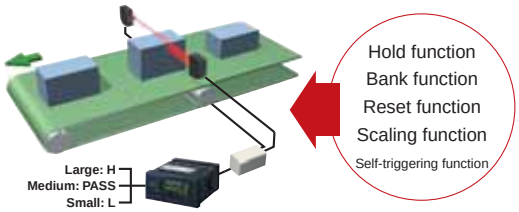
Outputs can be in the form of relay contacts, transistors, BCD, or communications, enabling you to select the best output type for your objective.

3 Easy Systemization with the Communications Functions.



The capacity to transmit analog data, such as measurement results, to a computer or PLC boosts process management power in applications such as data logging using a computer, remote monitoring, and establishing compliance with PL laws or ISO.

4 Many Control Functions that Improve Sensor Functionality



Using sophisticated control functions and high speed sampling to get the most out of precision sensor functions, such as those of displacement sensors and parallel beam sensors, enables application in a wide range of measurement and discrimination controls.

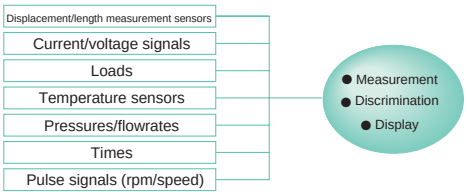
5 Water-resistance equivalent to IP66

The water-resistant enclosure conforms to NEMA4X (equivalent to IP66), allowing washing Digital Panel Meters or operation with wet hands.

6 OMRON has a Comprehensive Lineup of Sensors and Controllers.

From linear output sensors to control components, OMRON makes a complete line of control products spanning from input devices to system devices. This ensures efficient operation from connectability to inputs to compatibility with PLCs.

7 Wide Range of Applications



A wide variety of models to choose from, supporting not only voltage/current inputs, but also temperature/process, rotary pulse, time interval, up/down counting, load cell, and linear sensor input signals.

8 Conforms to EN and IEC standards

*Excluding certain models and ranges

With UL/CSA CE marking conformance, OMRON Digital Panel Meters are ideal for incorporation into devices for export.

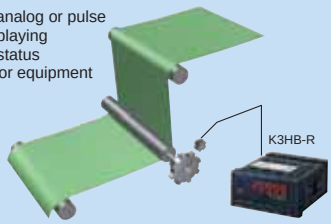
OMRON Digital Panel Meters achieve control objectives.

Digital Panel Meters are used in a wide range of applications, from the display of electric measurement values, the operating status of equipment, and monitoring/alarms, to host interfaces for control systems. OMRON offers a comprehensive lineup of control products designed to meet customer control requirements across a wide variety of input and control output applications, including analog signals or pulse signals and a wide variety of sensors. Applications include voltage/current measurements and physical quantification using scaling functions, as well as load, rotation, speed, time, accumulation, and temperature measurement. An explanation of how to go about selecting the Digital Panel Meter best suited to your objectives and application is provided below.

1 Determine the measurement objective.

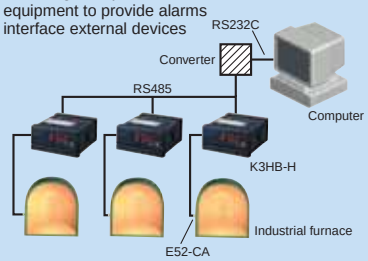
Displaying measurement values

Receiving an analog or pulse signal and displaying the operation status of the system or equipment



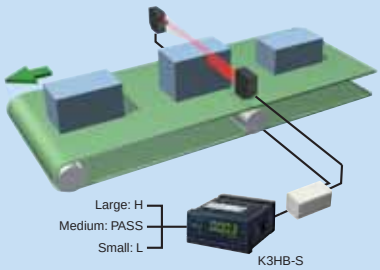
Recording/monitoring applications

Determining the operation status of installations or equipment to provide alarms or interface external devices



Judgment/inspection applications

Judging levels with a characteristics inspection or displacement sensor



2 Select the input element.

- Voltage/current input
- Load cell signal input
- Pulse signal input
- Temperature/process input

3 Select the output form.

- Relay output
- Transistor output
- BCD output
- Linear output
- Communications output
- DeviceNet

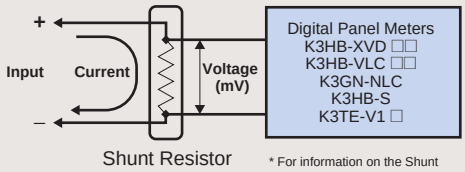
4 Select the Digital Panel Meter.

	Model/appearance	Display digits			Supply voltage		Output form						Calculation functions	
		3½	4	5	100 to 240 VAC	12 to 24 VDC	Relay	Transistor	BCD	Linear	Communications	DeviceNet	Scaling	Prescaling
Voltage/current input	K3HB-X			●	●	●	●	●	●	●	●	●	●	
	K3MA-J			●		●	●						●	
	K3GN			●		● 24 VDC	●	●			●		●	
	K3TE	●			100 to 120 VAC 200 to 240 VAC	● 24 VDC								
	K3TF	●			100 to 120 VAC 200 to 240 VAC									
	K3TG	●				● 5 VDC								
High-speed response input	K3HB-S			●	●	●	●	●				●	●	
Load cell signal input	K3HB-V			●	●	●	●	●	●	●	●	●	●	
Pulse signal input	K3HB-R			●	●	●	●	●	●	●	●	●		●
	K3HB-P			●	●	●	●	●	●	●	●	●		●
	K3HB-C			●	●	●	●	●	●	●	●	●		●
	K3MA-F			●	●	●	●							●
	K3GN			●		● 24 VDC	●	●			●		●	
Temperature /process input	K3HB-H			●	●	●	●	●	●	●	●	●		
	K3MA-L		●		●	●	●							

Application examples for measuring a signal that exceeds the measurement range

1 Measuring High DC Currents

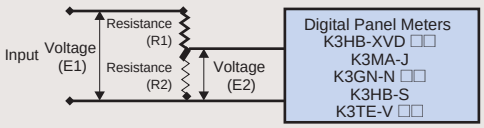
For some OMRON products, Shunt Resistors can be used in the input section to convert a DC current to a DC voltage to measure high DC voltages when the measurement range is exceeded (e.g., 2 A).



* For information on the Shunt Resistor, SDV-SH□, refer to the Model Number Legend on page 72 of the Measuring & Motor Protective Relays Group Catalog (Cat. No. X070). Select the Shunt Resistor considering the largest current that will be applied to it.

2 Measuring DC Voltages

To measure a DC current that exceeds the measurement range of the OMRON product, install an external voltage dividing circuit to divide the voltage.



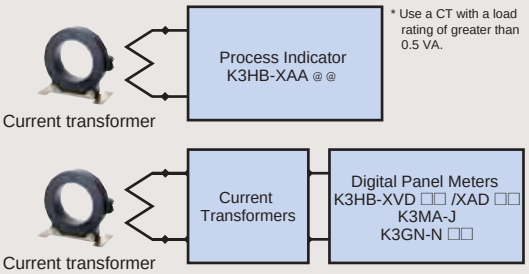
* Formula to use for dividing the voltage.

$$E2 = \frac{R2}{R1 + R2} \times E1$$

* Use the following formula to estimate the capacity (W) of R1 and R2.
$W = 3\ (I^2 \times (R1 \text{ or } R2))$
* I is the current flow to R1 or R2.

3 Measuring High AC Currents

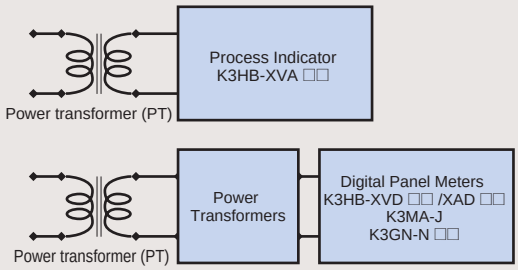
To measure an AC current that exceeds the measurement range of the OMRON product, install an external current transformer (CT) to reduce the current flow. Also, install an external current transformer (CT) to convert a DC voltage to a DC current signal for measurement.



* Use a CT with a load rating of greater than 0.5 VA.

4 Measuring High AC Voltages

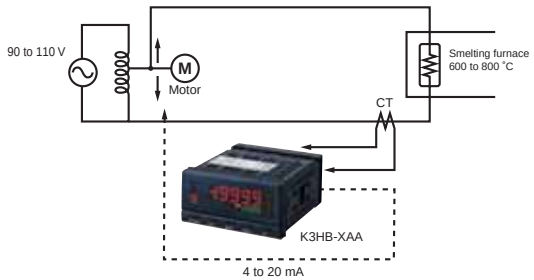
To measure an AC voltage that exceeds the measurement range of the OMRON product, install an external power transformer (PT) to reduce the voltage. Also, install a power transformer (PT) to convert a DC voltage to a DC current signal for measurement.



Voltage/Current Inputs

Monitoring and Controlling the Temperature of a Smelting Furnace

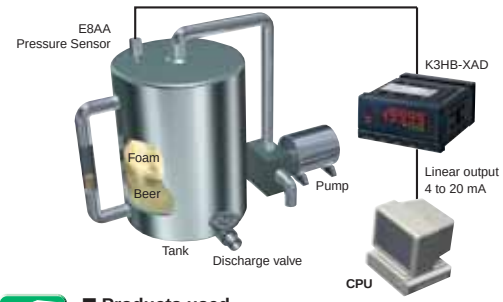
To eliminate temperature variations to due voltage changes, the current to the heater is monitored to control the position of the slidac.



■ **Products used**
- K3HB-X Process Indicator

Monitoring Interior Tank Pressure

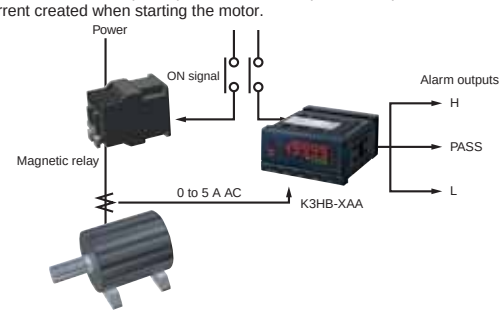
Centralized monitoring is performed by converting and displaying the output of a pressure sensor as a pressure value on the K3HB-X, and transmitting the linear output data of the K3HB-X to the CPU.



■ **Products used**
- E8AA Pressure Sensor
- K3HB-X Process Indicator

Monitoring Motor Load Currents

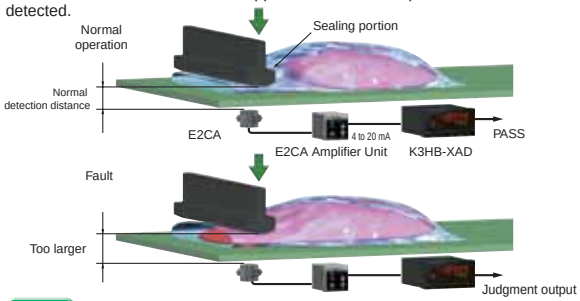
Excessive loads on the motor are monitored by monitoring the current to the motor. Use the startup compensation timer to prevent output due to the inrush current created when starting the motor.



■ **Products used**
- K3HB-X Process Indicator

Detecting Malfunctions in a Packaging Machine

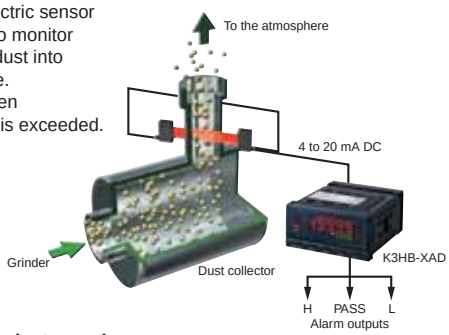
The distance between the sealing portion of a bag fill and seal machine is detected with a linear proximity sensor, and measured with the Process Indicator. The machine can be stopped or an alarm output if a malfunction is detected.



■ **Products used**
- E2CA Inductive Proximity Sensor
- K3HB-X Process Indicator

Detecting Exhaust Dust

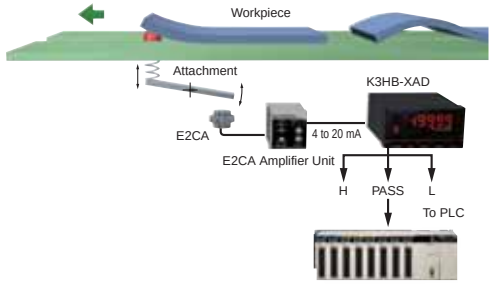
Changes in the amount of passing dust are detected with a photoelectric sensor at 4 to 20 mA to monitor the release of dust into the atmosphere.
An alarm is given if the set value is exceeded.



■ **Products used**
- E3SA Photoelectric Sensor
- K3HB-X Process indicator

Detecting Workpiece Warpage

Workpiece warpage of products, such as molded goods, is monitored with an attachment that transfers the action of a metal piece for detection by a linear proximity sensor and discriminated by the K3HB-X.

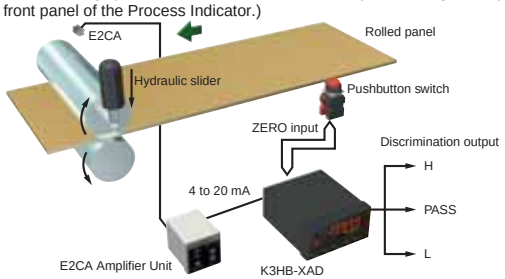


■ **Products used**
- E2CA Inductive Proximity Sensor
- K3HB-X Process Indicator
- CS1 Programmable Controller

Voltage/Current Inputs

Displaying the Position of Pressure Rollers and Detecting Position Errors

The position of the rollers is displayed and position errors are detected during operation using a device for moving the position of the rollers according to the panel pressure of the panel. A forced zero input can be used to easily return to the reference setting. (The forced zero control can be keyed in using the keys on the front panel of the Process Indicator.)

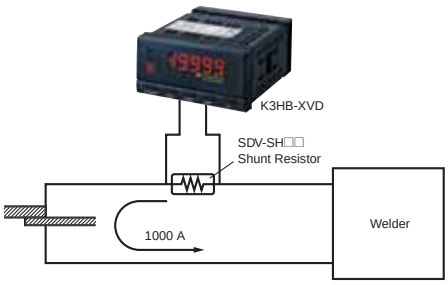


■ Products used

- E2CA Inductive Proximity Sensor
- A22 Pushbutton Switch
- K3HB-X Process Indicator

Monitoring the Current of an Electric Welder

Fluctuations in the current of an electric welder during operation are measured and monitored using a Shunt Resistor.

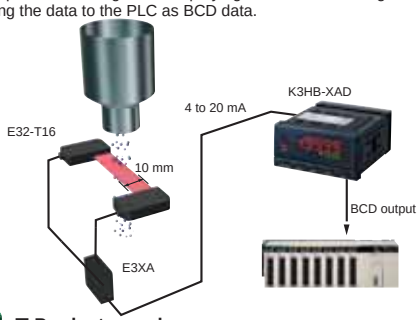


■ Products used

- Shunt Resistor
- K3HB-X Process Indicator

Detecting the Amount of Dust Expelled

The amount of expelled dust is detected, displayed, and monitored by detecting the amount of dust expelled with a photoelectric sensor, scaling the linear output, converting and displaying the result as digital data, and transmitting the data to the PLC as BCD data.



■ Products used

- E3XA Fiber-Optic Sensor
- E32-T16 Fiber-Optic Cable
- CS1 Programmable Controller
- K3HB-X Process Indicator

Using as a Display Device for Inspection and Testing Devices

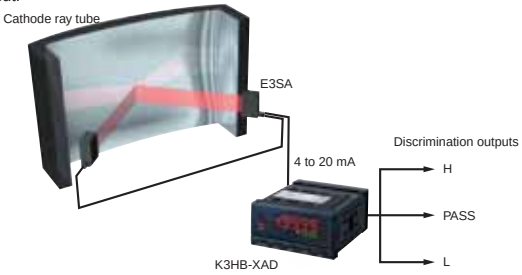
Downsizing is achieved when the K3GN is used as the display device for measurement, inspection, and testing devices.

■ Products used

- K3GN Digital Panel Meter

Detecting Aluminum Evaporation in a Vacuum Deposition Process

The amount of aluminum evaporation is detected using the reflectance amount detected by a photoelectric sensor.
The value is converted and displayed as a percentage by scaling the linear output.

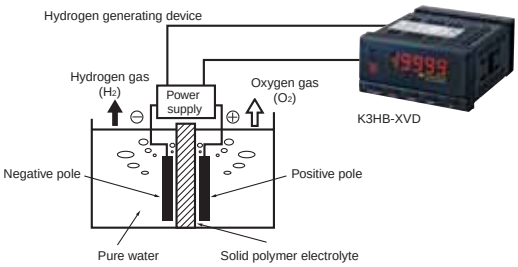


■ Products used

- E3SA Photoelectric Sensor
- K3HB-X Process Indicator

Displaying the Resistance of a Liquid or Chemical

A liquid, such as a liquid chemical, can be monitored by measuring and displaying the resistance of the liquid.



■ Products used

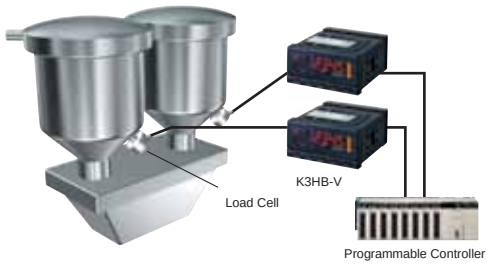
- K3HB-X Process Indicator

Application examples are for reference only. In actual application, confirm the functionality and safety of all equipment in advance. In particular, when considering an application requiring a high degree of safety, take into account all ratings, performance capacities, failsafe measures, and other safety measures required by the application, and consult with your OMRON representative to confirm specifications and capabilities.

Load Cell Signal Inputs

Controlling a Weighing and Mixing Device

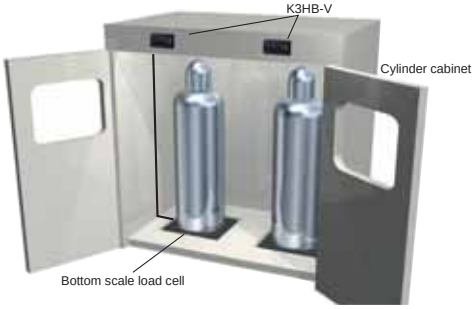
The output of the load cell of the weighing hopper is measured and control outputs transferred to the PLC for hopper control.



■ **Products used**
- CS1 Programmable Controller
- K3HB-V Weighing Indicator

Measuring the Amount of Residual Liquid Gas

The amount of gas remaining is measured and displayed by detecting the amount of residual gas with a load cell.



■ **Products used**
- K3HB-V Weighing Indicator

Controlling the Pressure of a Pressurizer

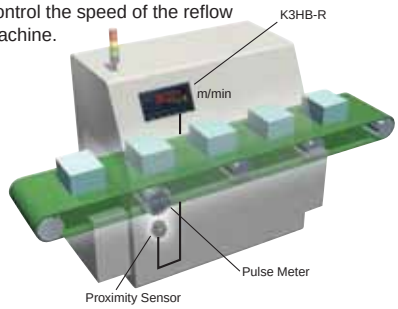
Pressurization of the workpiece is detected with a load cell, the result is measured and displayed, and the pressurization is controlled based on the set value.

■ **Products used**
- K3HB-V Weighing Indicator

Pulse Signal Input

Displaying the Speed of Reflow Soldering and Washers

The speed of a reflow washing machine is detected with a proximity sensor, and converted and displayed by a Rotary Pulse Meter as m/min to control the speed of the reflow washing machine.



■ **Products used**
- E2E Short-Barrel 2-Wire AC Proximity Sensor
- K3HB-R Rotary Pulse Meter

Displaying the Speed of a Mixer

The speed of a mixer is detected with a proximity sensor, and converted and displayed by the Rotary Pulse Meter.

■ **Products used**
- E2E Short-Barrel 2-Wire AC Proximity Sensor
- K3HB-R Rotary Pulse Meter

Displaying the Flowrate of a Liquid

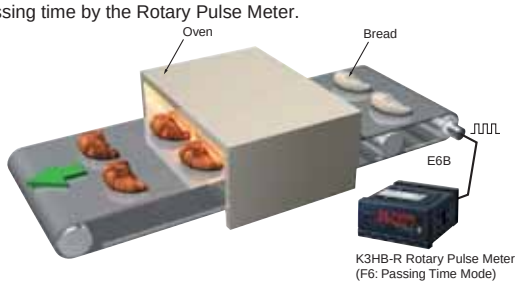
The flowrate of a liquid, such as oil or water, is displayed in a unit such as l/min or l/h for monitoring and control.

■ **Products used**
- K3HB-R Rotary Pulse Meter

Pulse Signal Input

Displaying Bread Baking Time

To monitor and control the baking status of bread on a conveyor based on the oven passing time, the speed of the conveyor is detected with a rotary encoder, and converted and displayed as a passing time by the Rotary Pulse Meter.

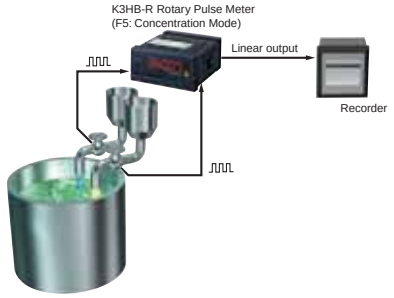


■ **Products used**

- E6C2-C Incremental Rotary Encoder
- K3HB-R Rotary Pulse Meter

Monitoring the Concentration of a Liquid Mixture

The concentration of a liquid mixture is monitored by detecting the flow rates of the two liquids, converting the mixture ratio for the two liquids in the Concentration Mode, and displaying the results.

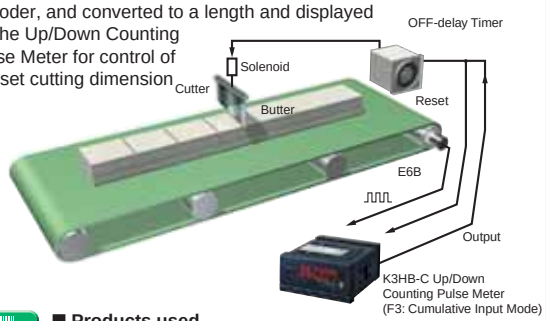


■ **Products used**

- K3HB-R Rotary Pulse Meter

Controlling the Preset Cutter of a Butter Manufacturing Machine

Butter fed continuously on a conveyor is cut into pieces having set dimensions. The conveyor feed distance is detected with a rotary encoder, and converted to a length and displayed by the Up/Down Counting Pulse Meter for control of the set cutting dimension.

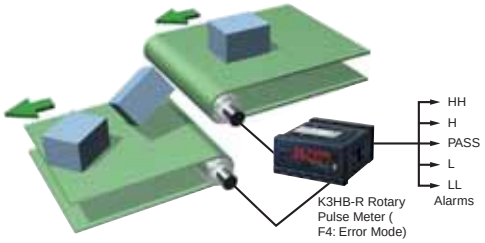


■ **Products used**

- E6C2-C Incremental Rotary Encoder
- K3HB-C Up/Down Counting Pulse Meter
- H3CR-H OFF-delay Timer

Measuring the Rotational (rpm)/Circumferential Speed Error (Absolute Error) between Two Conveyors

The rotational speed of conveyors is detected with a rotary encoder to measure and control the rotational (rpm)/circumferential speed error between two conveyors.

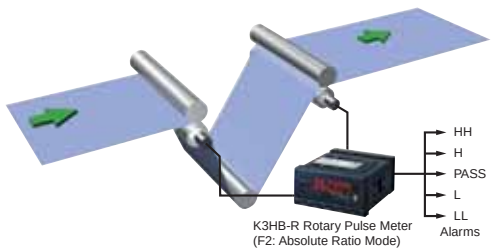


■ **Products used**

- E6C2-C Incremental Rotary Encoder
- K3HB-R Rotary Pulse Meter

Comparing the Rotational Speeds of Two Rollers

Stretching and sagging of materials such as film, cloth, paper, and cotton that are being subjected to a process such as winding are monitored and controlled by measuring and comparing the speeds of two rollers.

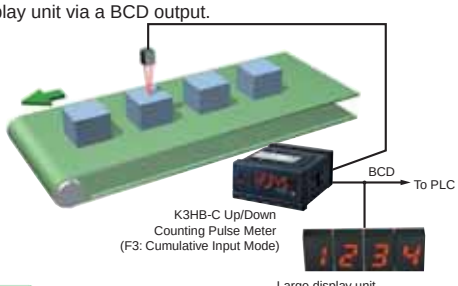


■ **Products used**

- E6C2-C Incremental Rotary Encoder
- K3HB-R Rotary Pulse Meter

Counting Workpieces

Production is controlled by detecting the workpieces on a conveyor, displaying the count in the Cumulative Input Mode on the Up/Down Counting Pulse Meter, and transmitting the count to a PLC or large display unit via a BCD output.



■ **Products used**

- E3S-CL2 Background Suppression Sensor
- K3HB-C Up/Down Counting Pulse Meter
- M7E Digital Display Unit

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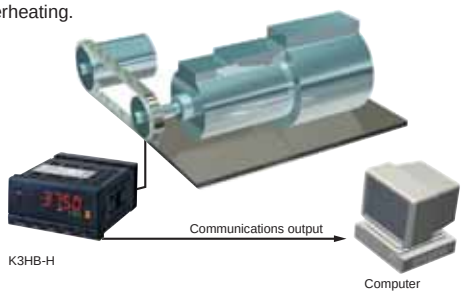
Temperature/Process Inputs

Monitoring the Roller Bearing Temperature of a Power Generator or Motor

The temperature of the roller bearing is detected by a temperature sensor and displayed on the Temperature Indicator. The output is transmitted to a computer via a communications link to monitor overheating.

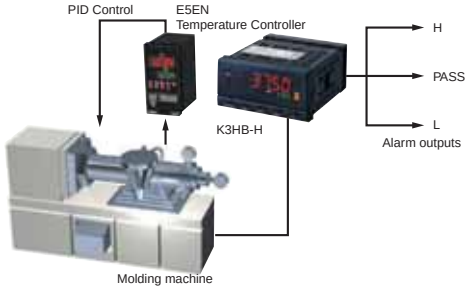


■ **Products used**

- E52 Temperature Sensor
- K3HB-H Temperature Indicator

Application as a Temperature Alarm Indicator for a Molding Machine

The temperature of a molding machine is displayed and monitored, and an alarm is output if a temperature error occurs.

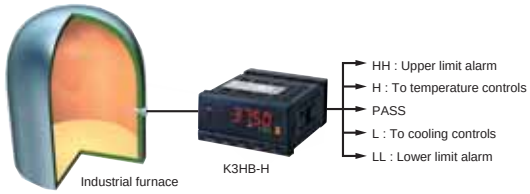


■ **Products used**

- E52-CA/-IC Thermocouple
- K3HB-H Temperature Indicator

Application as a Multi-output Temperature Control /Monitoring Interface

Using the multi-output capacity of the Temperature Indicator, the temperature of an industrial furnace is monitored and controlled according to the interior temperature of the furnace by detecting the interior temperature of the furnace with a thermocouple.

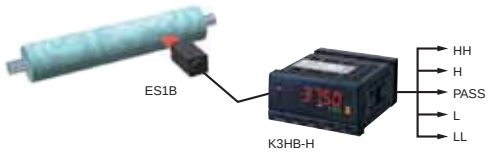


■ **Products used**

- E52-PR Thermocouple
- K3HB-H Temperature Indicator

Measuring Temperature Changes in the Roller of a Copying Machine

Temperature changes are monitored by detecting the surface temperature of the roller with an infrared temperature sensor. This process can be used to inspect the characteristics of the roller.

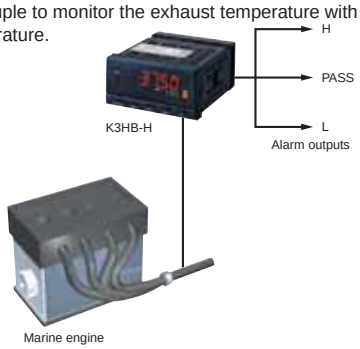


■ **Products used**

- E1B Infrared Thermosensor
- K3HB-H Temperature Indicator

Monitoring the Exhaust Temperature of a Marine Engine

The temperature of the exhaust duct of an engine is detected with a thermocouple to monitor the exhaust temperature with respect to the set temperature.

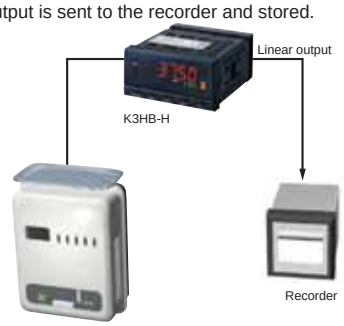


■ **Products used**

- E52-P2GS Thermocouple
- K3HB-H Temperature Indicator

Inspection Lines for Gas Appliance

In a gas appliance inspection process, combustion is detected with an infrared temperature sensor, the temperature is displayed, and the linear output is sent to the recorder and stored.



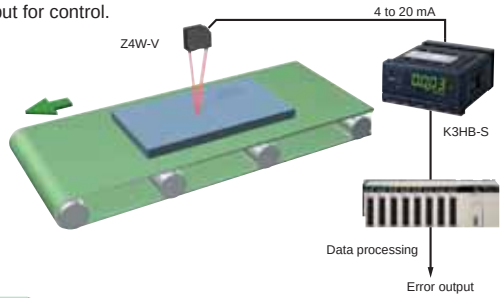
■ **Products used**

- ES1B Infrared Thermosensor
- K3HB-H Temperature Indicator
- 55A-E/-F Recorder

High-speed Response Inputs

Measuring the Thickness of a Decorative Laminate Sheet

The thickness of a decorative laminate sheet is detected with a displacement sensor. The result is judged and displayed on the Linear Sensor Indicator, and data is also sent to the PLC by BCD output for control.

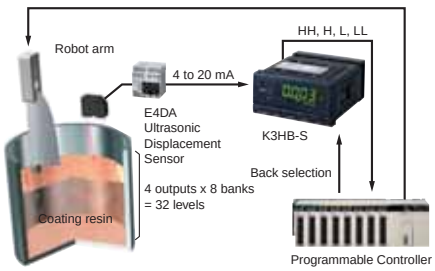


■ Products used

- Z4W-V LED Displacement Sensor
- CS1 Programmable Controller
- K3HB-S Linear Sensor Indicator

Application in a Machine for Coating Resin on Knife Handles

The coating position for applying a resin coat to the handles of a knifes, which are held by a robot arm, is controlled in 32 steps. Four outputs and bank condition calculations are performed by the PLC.

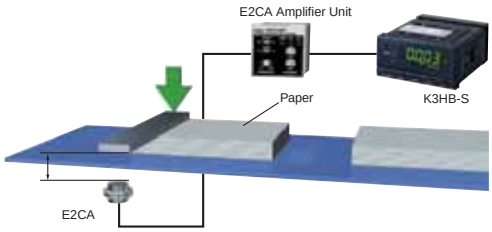


■ Products used

- CS1 Programmable Controller
- E4DA Ultrasonic Displacement Sensor
- K3HB-S Linear Sensor Indicator

Measuring Paper Thickness in a Binding Machine

In the process preceding cutting, thickness is detected with a proximity sensor while the paper is in a bundled state. The thickness is measured and error judgment performed.



■ Products used

- E2CA Inductive Proximity Sensor
- K3HB-S Linear Sensor Indicator