

+New

OMRON

Linear Sensor Indicator

K3HB-S

Visual clarity and instantaneous measurement.
Control status and judgement results can be ascertained
at a glance using the display color and position meter.



***Innovation
in the Solution Age***

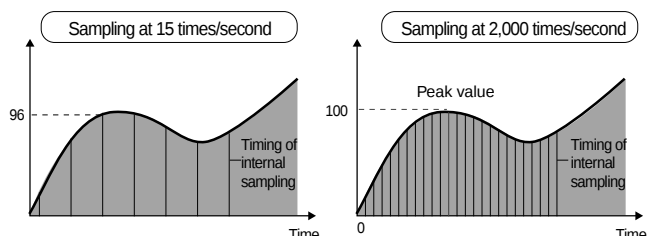
OMRON INDUSTRIAL AUTOMATION

Features

■ Intelligent

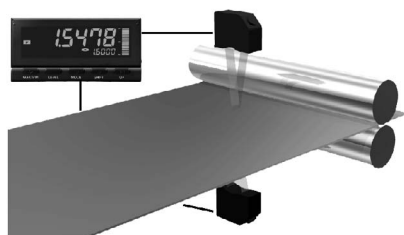
● High-speed Response at 2,000 Times per Second

Capable of high-speed sampling at 2,000 times/second. Peak-hold and bottom-hold functions allow accurate measurement of peak and bottom values.



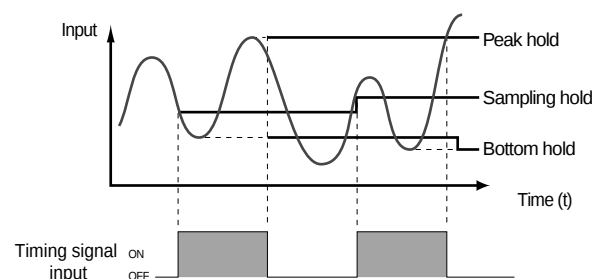
● Calculations Based on Two Input Signals

Calculations, such as $K-A$, $A+B$, $A-B$, and $K-(A+B)$, can be performed on two analog input signals. This enables highly precise thickness and level-difference measurement. The input ranges can be set independently so, for example, signals between 4 and 20 mA can be handled by one input while signals between 1 and 5 V are handled by the other.



● A Wide Variety of Measurement Functions Including Timing Signal Input

Choose the input processing method suitable for the application from a selection of five measurement modes, such as sampling hold, peak hold, and bottom hold.



● Modular Construction for Adapting to Various Specifications



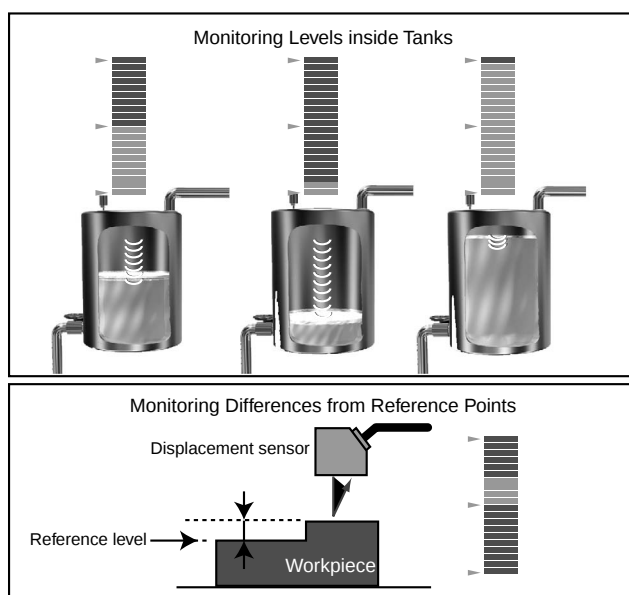
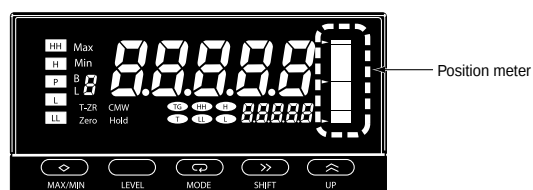
■ Clear

● Red-Green Display Allows Easy Recognition of Judgment Results

The measurement value display can be set to switch between red and green in accordance with the status of comparative outputs. This means that the status can be ascertained at a distance.

● Position Meter Enables Easy Monitoring of Operating Status Trends

The present value with respect to the measurement or display range (full scale) can be viewed on a bar display. This means that the operating status can be grasped intuitively, allowing easy judgement of levels and threshold values.

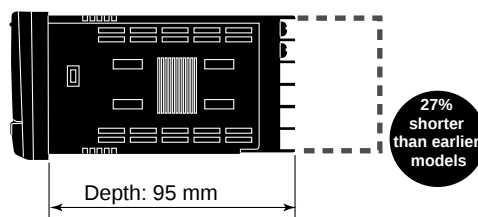


● Equipped with SV Display for Reliable Setting

Both the parameter name and value set for that parameter can be viewed at the same time in setting mode.

● Short Body with Depth of Only 95 mm (from Behind the Front Panel)

A short body of only 95 mm contributes to the development of slimmer and smaller control panels and installations.



Linear Sensor Indicator

K3HB-S

A Linear Sensor Indicator Capable of High-speed Response at 2,000 Times per Second

- Effective for high-speed measurement and discrimination with a sampling period of 0.5 ms and an output response time of 1 ms max.
- Allows OK/NG judgement using display that can be switched between green or red.
- Equipped with a position meter that represents measured amounts and relative positions.
- Zero calibration can be performed easily with the forced zero function.
- Short body with depth of only 95 mm (from behind the front panel).
- Recognized to U.S. and Canadian requirements under the component Recognition Program of UL.
- Conforms to CE marking.



Model Number Structure

■ Model Number Legend

Base Units and Optional Boards can be ordered individually or as sets.

Base Units

K3HB-S
1 5

1. Input Sensor Codes

SD: DC voltage/current input

5. Supply Voltage

100-240VAC: 100 to 240 VAC

24VAC/VDC: 24 VAC/VDC

Optional Board

- Sensor Power Supply/Output Boards

K33-
2

- Relay/Transistor Output Boards

K34-
3

- Event Input Boards

K35-
4

Base Units with Optional Boards

K3HB-S
1 2 3 4 5

2. Sensor Power Supply/Output Type Codes

CPA: 12-VDC 80-mA model with PASS-output (PASS: SPDT)

A: 12-VDC 80-mA model

3. Relay/Transistor Output Type Codes

C1: H/L models with relay outputs (H, L: SPDT)

C2: HH/H/L/LL models with relay outputs (HH, H, L, LL: SPST-NO)

T1: 5 comparative transistor outputs (NPN open collector)

T2: 5 comparative transistor outputs (PNP open collector)

4. Event Input Type Codes

1: Models with terminal blocks (NPN open collector)

2: Models with terminal blocks (PNP open collector)

3: Models with connectors (NPN open collector)

4: Models with connectors (PNP open collector)

Ordering Information

■ DC Voltage/Current Input (for All Models)

(Each model has a multirange, thus corresponding to the following voltage and current ranges.)

Current measurement range	Voltage measurement range
0.000 to 20.000 mA or 4.000 to 20.000 mA	0.000 to 5.000 V or 1.000 to 5.000 V or –5.000 to 5.000 V or –10.000 to 10.000 V

■ Base Units

Model	Supply voltage	Part number	Applicable sensor power supply/ output boards	Applicable relay/ transistor output boards	Applicable event input boards
	100 to 240 VAC	K3HB-SSD 100-240VAC	K33-CPA K33-A	K34-C1 K34-C2 K34-T1 K34-T2	K35-1 K35-2 K35-3 K35-4
	24 VAC/VDC	K3HB-SSD 24VAC/VDC			

Specifications

■ Ratings

Power supply voltage		100 to 240 VAC (50/60 Hz)	24 VAC (50/60 Hz) or 24 VDC
Permissible power supply voltage range		85% to 110% of the rated power supply voltage	
Power consumption (with maximum load) (See note.)		18 VA max.	24 VAC: 11 VA max. 24 VDC: 7 W max.
Input signals		DC voltage/current (0 to 20 mA, 4 to 20 mA, 0 to 5 V, 1 to 5 V, ± 5 V, ± 10 V), 2 channels	
Measurement method		Sequential comparison system	
Sensor power supply		12 VDC $\pm 10\%$, 80 mA (only for models with sensor power supply)	
Event input	Timing input	NPN open collector or no-voltage contact signal (Refer to <i>Event Input Ratings</i> on page 7 for details.) PNP open collector	
	Startup compensation timer input		
	Hold input		
	Reset input		
	Forced-zero input		
	Bank input		
Output (Depends on model.)	Relay contact output	H/L, 2 outputs, both SPDT 250 VAC/30 VDC, 5 A (resistive load), electrical life expectancy of 100,000 operations HH/H/L/LL, 4 outputs, all SPST-NO 250 VAC/30 VDC, 5 A (resistive load), electrical life expectancy of 100,000 operations PASS, 1 output, SPDT 250 VAC/30 VDC, 5 A (resistive load), electrical life expectancy of 100,000 operations	
	Transistor output	HH/H/PASS/L/LL (NPN open collector; Maximum load voltage: 24 VDC; Maximum load current: 50 mA; Leakage current: 100 μ A max.) HH/H/PASS/L/LL (PNP open collector; Maximum load voltage: 24 VDC; Maximum load current: 50 mA; Leakage current: 100 μ A max.)	
Display method		Negative LCD (backlit LED) display 7-segment digital display (PV character height: 14.2 mm (green/red); SV character height: 4.9 mm (green))	
Main functions		Scaling function, 2-input calculation function, measurement operation selection, averaging, high pass filter, forced-zero, zero-limit, output hysteresis, output OFF delay, output test, teaching, display value selection, display color selection, key protection, bank selection, display refresh period, maximum/minimum hold, reset	
Ambient operating temperature		-10 to 55 °C (with no icing or condensation)	
Ambient operating humidity		25% to 85%	
Storage temperature		-25 to 65 °C (with no icing or condensation)	
Altitude		2,000 m max.	
Accessories		Waterproof packing, 2 fixtures, terminal cover, unit stickers, operation manual	

Note: A control power supply capacity greater than the rated value is required when power is turned ON. Particular attention is required when using two or more DC power supply models. When power is turned ON or when the startup compensation timer operates, all outputs will turn OFF if the Unit is not performing measurement.

■ Characteristics

Sampling period		0.5 ms (1 input), 1.0 ms (2 inputs)
Maximum number of display digits		5 digits (–19,999 to 99,999)
Comparative output response time (transistor output)	1 input	ON to OFF: 1 ms max.; OFF to ON: 1.5 ms max.
	2 inputs	ON to OFF: 2 ms max.; OFF to ON: 2.5 ms max.
Insulation resistance		20 MΩ min. (at 500 VDC)
Dielectric strength		2,300 VAC for 1 min between terminals and case
Noise immunity		100 to 240-VAC models: ±1,500 V at power supply terminals in normal or common mode (waveform with 1-ns rising edge and pulse width of 1 μs/100 ns) 24-VAC/VDC models: ±1,500 V at power supply terminals in normal or common mode (waveform with 1-ns rising edge and pulse width of 1 μs/100 ns)
Vibration resistance		Frequency: 10 to 55 Hz; Acceleration: 50 m/s ² ; 10 sweeps of 5 min each in X, Y, and Z directions
Shock resistance		Transistor output models: 150m/s ² , 3 times each in 3 axes, 6 directions Contact output models: 100m/s ² , 3 times each in 3 axes, 6 directions
Weight		Approx. 230 g (Base Unit only)
Enclosure ratings		Front panel: Conforms to NEMA 4X for indoor use (equivalent to IP66) Rear case: IP20 Terminals: IP00 + finger protection (VDE0106/100)
Memory protection		EEPROM (non-volatile memory); Number of rewrites: 100,000 times
Installation environment		Overvoltage category II, pollution degree 2 (as per IEC61010-1)
Safety standards		UL3121-1, CSA C22.2 No. 1010.1 (evaluated by UL) EN61010-1 (IEC61010-1): Pollution degree 2/overvoltage category 2 (evaluated by TÜV Product Service.) EN61326: 1997, A1: 1998, A2: 2001
EMC		EMI: EN61326+A1 industrial applications Terminal interference wave voltage CISPR 11 Group 1, Class A: CISPR16-1/-2 Electromagnetic interference wave CISPR 11 Group 1, Class A: CISPR16-1/-2 EMS: EN61326+A1 industrial applications Electrostatic discharge (ESD) EN61000-4-2: 4 kV (contact), 8 kV (in air) Radiating radio-frequency electromagnetic field EN61000-4-3: 10 V/m 1 kHz sine wave amplitude modulation (80 MHz to 1 GHz) Burst EN61000-4-4: 2 kV (power line), 1 kV (I/O signal line) Surge EN61000-4-5: 1 kV with line (power line), 2 kV with ground (power line) Radio-frequency electric interference EN61000-4-6: 3 V (0.15 to 80 MHz) Momentary power interruptions from voltage dips EN61000-4-11: 0.5 cycle, 0°, 180°, 100% (rated voltage)

■ Input Ranges (or Measurements Ranges and Accuracy)

Input specification	Input type	Measurement range	Indication range	Accuracy (at 23±5°C)	Input impedance	Maximum absolute rated input
DC current/voltage input	0 to 20 mA	0.000 to 20.000 mA	−2.000 to 22.000 mA	One input: ±0.1% FS ±1 digit max.	120 Ω max.	±31 mA
	4 to 20 mA	4.000 to 20.000 mA	2.000 to 22.000 mA	Two inputs: ±0.2% FS ±1 digit max.	1 MΩ min.	±10 V
	0 to 5 V	0.000 to 5.000 V	−0.500 to 5.500 V			
	1 to 5 V	1.000 to 5.000 V	0.500 to 5.500 V			
	±5 V	±5.000 V	±5.000 V			
	±10 V	±10.000 V	±11.000 V			±14.5 V

■ Event Input Ratings

Input type	S-TMR, HOLD, RESET, ZERO, BANK1, BANK2, BANK4	TIMING
Contact input	ON: 1 kΩ max. OFF: 100 kΩ min.	---
No-contact input	ON residual voltage: 2 V max. OFF leakage current: 0.1 mA max. Load current: 4 mA max. Maximum applied voltage: 30 VDC max.	ON residual voltage: 3 V max. OFF leakage current: 1.5 mA max. Load current: 17 mA max. Maximum applied voltage: 30 VDC max.

■ Output Ratings

Contact Output

Item	Resistive loads (250 VAC, cosφ=1; 30 VDC, L/R=0 ms)	Inductive loads (250 VAC, cosφ=0.4; 30 VDC, L/R=7 ms)
Rated load	250 VAC, 5 A 30 VDC, 5 A	250 VAC, 1 A 30 VDC, 1 A
Rated through current	5 A	
Mechanical life expectancy	5,000,000 operations	
Electrical life expectancy	100,000 operations	

Transistor Output

Maximum load voltage	24 VDC
Maximum load current	50 mA
Leakage current	100 μA max.