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You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON K3HB. You'll find the answers to all your questions on the OMRON K3HB in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual OMRON K3HB
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OMRON

Digital Indicators
K3HB Series

Distinct by Design,
Distinguished in Performance

DeviceNet

Innovation
in the Solution Age
OMRON INDUSTRIAL AUTOMATION

The advertisement features a dark background with several OMRON K3HB digital indicators. The indicators are arranged in a vertical stack on the left, with a larger one at the bottom. To the right, there are four smaller indicators arranged in a 2x2 grid. A green line labeled 'DeviceNet' connects the larger indicator to the smaller ones. The indicators display various numerical values in red and green. The OMRON logo is in the top right corner. The text 'Distinct by Design, Distinguished in Performance' is in the top right. The text 'DeviceNet' is in the middle right. The text 'Innovation in the Solution Age' and 'OMRON INDUSTRIAL AUTOMATION' is in the bottom left.



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Manual abstract:

) Comparative set value HH Comparative set value H Comparative set value L Comparative set value LL MAX/MIN LEVEL MODE SHIFT UP Many Measurement and Discrimination Functions Using External Event Input · Offers a wide variety of application possibilities, such detection and judgement while synchronizing on an external signal. Input Sampling hold value Standard Output Measurement Comparative value set value HH Higher Comparative set value H Comparative set value L Lower Comparative set value LL Level Output Measurement value Higher Lower Output HH Output H Output PASS Output L Output LL ON Output HH OFF Output H Output PASS Output L Output LL Measurement value Higher ON OFF Measurement value Time TIMING ON input OFF Input Measurement value Sampling measurement Peak hold value Comparative set value HH Comparative set value H Comparative set value L Comparative set value LL Zone Output Lower Output HH Output H Output PASS ON OFF Peak/bottom hold measurement TIMING OFF input ON Input (b1-a1) Measurement value a1 TIMING ON input OFF b1 'a2 'b2 Time Peak-to-peak value (b2-a2) Bottom hold value Time Output L Output LL Peak-to-peak hold measurement Note: The HH, H, L, or LL outputs must be set in that order for the zone outputs to output correctly. (This is because the comparative set values and outputs for standard and level outputs are in a 1-to-1 relationship, whereas the meaning of zone outputs depends on the settings of all the comparative set values.) High-speed Sampling at 50 Times per Second (20 ms) · Provides an input sampling cycle at least three times faster than earlier models (12.5 times faster for temperature input models) at 50 times/second (see note). In addition to improved response times for judgement output and transfer output, average processing can be used to increase the stability of measurements. Note: The K3HB-S Linear Sensor Indicator features high-speed response of 2,000 times/second. Sampling at 15 times/second Sampling at 50 times/second Lineup Includes DeviceNet Models Enabling High-speed Data Communications with PLCs without Special Programming · DeviceNet compliance enables high-speed data transmission by allocating setting and monitoring parameters in the I/O memory of the PLC. This capability greatly reduces labor spent in developing communications programs. Ethernet DeviceNet Master Peak value 96 Timing of internal sampling Time 0 100 Timing of internal sampling Time P Zero P H Zero K3HB Digital Indicators DeviceNet Configurator 2 Digital Indicators K3HB Series (Analog Input Series) Note: The applications provided in this catalog are intended as reference only.

Do not attempt to use any of them in real systems without first confirming machine and device functions and safety. For applications that require safety, ensure that there is sufficient leeway in ratings and performances, install fail-safe measures, and take any other safety measures required by the application.

In addition, contact your nearest OMRON representative and confirm specifications. K3HB-series Product Lineup K3HB-X Process Indicator (page 4) Indicates Measurements for Voltage/Current Signals Power supply ON signal H PASS Magnetic relay 0 AC to 5A L Event input · DC Voltage Input Type: K3HB-XVD (± 199.99 V, ± 19 .

999 V, ± 1.9999 V, 1.0000 to 5.0000 V) · DC Current Input Type: K3HB-XAD (± 199.99 mA, ± 19 .

999 mA, ± 1.9999 mA, 4.000 to 20.000 mA) · AC Voltage Input Type: K3HB-XVA (0.0 to 400.0 V, 0.00 to 199.99 V, 0.000 to 19.999 V, 0.

0000 to 1.9999 V) · AC Current Input Type: K3HB-XAA (0.000 to 10.000 A, 0.0000 to 1.9999 A, 0.00 to 199.99 mA, 0.000 to 19.999 mA) K3HB-X K3HB-V Weighing Indicator (page 8) Indicates Weight Measurements Using a Load Cell · K3HB-VLC (0.

00 to 199.99 mV, 0.000 to 19.999 mV, ± 100.00 mV, ± 199 .

99 mV) K3HB-V Load Cell Programmable Controller K3HB-H Temperature Indicator (page 12) Indicates Temperature Measurements · K3HB-HTA Platinum-resistance thermometer (Pt100: 2 ranges) Thermocouple (K: 2 ranges, J: 2 ranges, T, E, L, U, N, R, S, B, W) K3HB-H Industrial furnace HH: Upper limit alarm H: To heating control PASS output L: To cooling control LL: Lower limit alarm K3HB-S Linear Sensor Indicator (page 16) Measures and Discriminates Results at High Speed with High Accuracy Z4M-N30V2 TIMING input · K3HB-SSD 0.000 to 20.000 mA, 4.000 to 20.000 mA, 0.

000 to 5.000 V, 1.000 to 5.000 V, ± 5.000 V, ± 10.000 V, two-channel input K3HB-S Digital Indicators K3HB Series (Analog Input Series) 3 Process Indicator K3HB-X A Process Indicator Ideal for Discriminating and Displaying Measurements for Voltage/Current Signals · Easy recognition of judgement results using color display that can be switched between red and green. · Equipped with a position meter for monitoring operating status trends. · External event input allows use in various measurement and discrimination applications. · Series expanded to include DeviceNet models. · Short body with depth of only 95 mm (from behind the front panel), or 97 mm for DeviceNet models.

· UL certification approval (Certification Mark License). · CE Marking conformance by third party assessment body. · Water-resistant enclosure conforms to NEMA 4X (equivalent to IP66). · Capable of high-speed sampling at 50 times per second (20 ms) · Easy-to-set two-point scaling allows conversion and display of any userset values. Refer to Precautions on page 30. Model Number Structure Model Number Legend Base Units and Optional Boards can be ordered individually or as sets. Base Units K3HB-X@ 1 5 Base Units with Optional Boards K3HB-X@-@@@ 1 2 3 4 5 1. Input Sensor Codes VD: DC voltage input AD: DC current input VA: AC voltage input AA: AC current input 2. Sensor Power Supply/Output Type Codes None: None CPA: Relay output (PASS: SPDT) + Sensor power supply (12 VDC $\pm 10\%$, 80 mA) (See note 1.) LIA: Linear current output (DC0(4) - 20 mA) + Sensor power supply (12 VDC $\pm 10\%$, 80 mA) (See note 2.)

) L2A: Linear voltage output (DC0(1) - 5 V, 0 to 10 V) + Sensor power supply (12 VDC $\pm 10\%$, 80 mA) (See note 2.) A: Sensor power supply (12 VDC $\pm 10\%$, 80 mA) FLK1A: Communications (RS-232C) + Sensor power supply (12 VDC $\pm 10\%$, 80 mA) (See note 2.) FLK3A: Communications (RS-485) + Sensor power supply (12 VDC $\pm 10\%$, 80 mA) (See note 2.) 5. Supply Voltage 100-240 VAC: 100 to 240 VAC 24 VAC/VDC: 24 VAC/VDC Optional Board Sensor Power Supply/Output Boards 3.

Relay/Transistor Output Type Codes None: None C1: Relay contact (H/L: SPDT each) C2: Relay contact (HH/H/LL/L: SPST-NO each) T1: Transistor (NPN open collector: HH/H/PASS/L/LL) T2: Transistor (PNP open collector: HH/H/PASS/L/LL) BCD: BCD output + transistor output (NPN open collector: HH/H/PASS/L/LL) DRT: DeviceNet (See note 2.)



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) K33-@ 2 Relay/Transistor Output Boards K34-@ 3 Event Input Boards 4. Event input Type Codes None: None 1: 5 points (M3 terminal blocks) NPN open collector 2: 8 points (10-pin MIL connector) NPN open collector 3: 5 points (M3 terminal blocks) PNP open collector 4: 8 points (10-pin MIL connector) PNP open collector K35-@ 4 Note: 1. CPA can be combined with relay outputs only. 2.

Only one of the following can be used by each Digital Indicator: RS-232C/RS-485 communications, a linear output, or DeviceNet communications. Accessories (Sold Separately) K32-DICN: Special Cable (for event inputs, with 8-pin connector) K32-BCD: Special BCD Output Cable 4 Process Indicator K3HB-X Specifications Ratings Power supply voltage Allowable power supply voltage range Power consumption (See note 1.) Current consumption Input A/D conversion method External power supply Event inputs (See note 2.) Timing input 100 to 240 VAC (50/60 Hz), 24 VAC/VDC, DeviceNet power supply: 24 VDC 85% to 110% of the rated power supply voltage, DeviceNet power supply: 11 to 25 VDC 100 to 240 V: 18 VA max. (max. load) 24 VAC/DC: 11 VA/7 W max. (max. load) DeviceNet power supply: 50 mA max. (24 VDC) DC voltage, DC current, AC voltage, AC current Delta-Sigma method See Sensor Power Supply/Output Type Codes NPN open collector or no-voltage contact signal ON residual voltage: 3 V max. ON current at 0 : 17 mA max.

Max. applied voltage: 30 VDC max. OFF leakage current: 1.5 mA max. Startup compensa- NPN open collector or no-voltage contact signal tion timer input ON residual voltage: 2 V max. ON current at 0 : 4 mA max. Hold input Max. applied voltage: 30 VDC max. Reset input OFF leakage current: 0.1 mA max. Forced-zero input Bank input Output ratings (de- Relay output pends on the model) Transistor output Linear output 250 VAC, 30 VDC, 5 A (resistive load) Mechanical life expectancy: 5,000,000 operations, Electrical life expectancy: 100,000 operations Maximum load voltage: 24 VDC, Maximum load current: 50 mA, Leakage current: 100 µA max. Linear output 0 to 20 mA DC, 4 to 20 mA: Load: 500 max, Resolution: Approx. 10,000, Output error: ±0.5% FS Linear output 0 to 5 VDC, 1 to 5 VDC, 0 to 10 VDC: Load: 5 k max, Resolution: Approx. 10,000, Output error: ±0.

5% FS (1 V or less: ±0.15 V; not output for 0 V or less) Negative LCD (backlit LED) display 7-segment digital display (Character height: PV: 14.2 mm (green/red); SV: 4.9 mm (green) Scaling function, measurement operation selection, averaging, previous average value comparison, 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 Display method Main functions Ambient operating temperature Ambient operating humidity Storage temperature Altitude Accessories -10 to 55°C (with no icing or condensation) 25% to 85% -25 to 65°C (with no icing or condensation) 2,000 m max. Watertight packing, 2 fixtures, terminal cover, unit stickers, instruction manual.

DeviceNet models also include a DeviceNet connector (Hirose HR31-5.08P-5SC(01)) and crimp terminals (Hirose HR31-SC-121) (See note 3.) Note: 1. DC power supply models require a control power supply capacity of approximately 1 A per Unit when power is turned ON. Particular attention is required when using two or more DC power supply models. The OMRON S8VS-series DC Power Supply Unit is recommended. 2. PNP input types are also available. 3. For K3HB-series DeviceNet models, use only the DeviceNet Connector included with the product.

The crimp terminals provided are for Thin Cables. Process Indicator K3HB-X 5 Characteristics Display range Sampling period Linear output response time Insulation resistance Dielectric strength Noise immunity -19,999 to 99,999 20 ms (50 times/second) DC input: 150 ms max.; AC input: 420 ms max. 20 M min. (at 500 VDC) 2,300 VAC for 1 min between external terminals and case 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 edgeto the input error. 3. The value (0.5 VA CT) is the VA consumption of the internal CT (current transformer). E2 E3 ±1.9999 V + 1 M E4 E5 E6 COM - 4.

The K3HB-XVA@@ complies with UL standards when the applied input voltage is within the range 0 to 150 VAC. If the input voltage is higher than 150 VAC, install an external transformer or take other measures to drop the voltage to 150 VAC or lower. Process Indicator K3HB-X 7 Weighing Indicator K3HB-V An Ideal Indicator for OK/NG Judgements in Automated and Picking Machines, Measuring Factors such as Pressure, Load, Torque, and Weight Using Load Cell Signal Input. · Easy recognition of judgement results using color display that can be swi ched between red and green. · Equipped with a position meter for monitoring operating status trends.

· External event input allows use in various measurement and discrimination applications. · Series expanded to include DeviceNet models. · Short body with depth of only 95 mm (from behind the front panel), or 97 mm for DeviceNet models. · UL certification approval (Certification Mark License). · CE Marking conformance by third party assessment body.

· Water-resistant enclosure conforms to NEMA 4X (equivalent to IP66). · Capable of high-speed sampling at 50 times per second (20 ms) · Easy-to-set two-point scaling allows conversion and display of any user set values. Refer to Precautions on page 30. Model Number Structure Model Legend Base Units and Optional Boards can be ordered individually or as sets. Base Units K3HB-V@ 1 5 Base Units with Optional Boards K3HB-V@-@@@ 1 2 3 4 5 1.

Input Sensor Codes LC: Load cell input (DC low-voltage input) 5. Supply Voltage 100-240 VAC: 100 to 240 VAC 24 VAC/VDC: 24 VAC/VDC 2. Sensor Power Supply/Output Type Codes None: None CPB: Relay output (PASS: SPDT) + Sensor power supply (10 VDC +/-5%, 100 mA) (See note 1.) LIB: Linear current output (DC0(4) - 20 mA) + Sensor power supply (10 VDC +/-5%, 100 mA) (See note 2.) L2B: Linear voltage output (DC0(1) - 5 V, 0 to 10 V) + Sensor power supply (10 VDC +/-5%, 100 mA) (See note 2).

) B: Sensor power supply (10 VDC +/-5%, 100 mA) FLK1B: Communications (RS-232C) + Sensor power supply (10 VDC +/-5%, 100 mA) (See note 2.) FLK3B: Communications (RS-485) + Sensor power supply (10 VDC +/-5%, 100 mA) (See note 2.) Optional Board Sensor Power Supply/Output Boards 3. Relay/Transistor Output Type Codes None: None C1: Relay contact (H/L: SPDT each) C2: Relay contact (HH/H/LL/L: SPST-NO each) T1: Transistor (NPN open collector: HH/H/PASS/L/LL) T2: Transistor (PNP open collector: HH/H/PASS/L/LL) BCD: BCD output + transistor output (NPN open collector: HH/H/PASS/L/LL) DRT: DeviceNet (See note 2).



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) K33-@ 2 Relay/Transistor Output Boards K34-@ 3 Event Input Boards 4. Event input Type Codes None: None 1: 5 points (M3 terminal blocks) NPN open collector 2: 8 points (10-pin MIL connector) NPN open collector 3: 5 points (M3 terminal blocks) PNP open collector 4: 8 points (10-pin MIL connector) PNP open collector K35-@ 4 Note: 1. CPB can be combined with relay outputs only. 2. Only one of the following can be used by each Digital Indicator: RS-232C/RS-485 communications, a linear output, or DeviceNet communications. Accessories (Sold Separately) K32-DICN: Special Cable (for event inputs, with 8-pin connector) K32-BCD: Special BCD Output Cable 8 Weighing Indicator K3HB-V Specifications Ratings Power supply voltage Allowable power supply voltage range Power consumption (See note 1).

) Current consumption Input A/D conversion method External power supply Event inputs (See note 2.) Timing input 100 to 240 VAC (50/60 Hz), 24 VAC/VDC, DeviceNet power supply: 24 VDC 85% to 110% of the rated power supply voltage, DeviceNet power supply: 11 to 25 VDC 100 to 240 V: 18 VA max. (max. load) 24 VAC/DC: 11 VA/7 W max. (max. load) DeviceNet power supply: 50 mA max. (24 VDC) DC voltage Delta-Sigma method See Sensor Power Supply/Output Type Codes NPN open collector or no-voltage contact signal ON residual voltage: 3 V max. ON current at 0 : 17 mA max. Max. applied voltage: 30 VDC max.

OFF leakage current: 1.5 mA max. NPN open collector or no-voltage contact signal ON residual voltage: 2 V max. ON current at 0 : 4 mA max. Max. applied voltage: 30 VDC max. OFF leakage current: 0.1 mA max. Startup compensation timer input Hold input Reset input Forced-zero input Bank input Output ratings (depends Relay output on the model) Transistor output Linear output 250 VAC, 30 VDC, 5 A (resistive load) Mechanical life expectancy: 5,000,000 operations, Electrical life expectancy: 100,000 operations Maximum load voltage: 24 VDC, Maximum load current: 50 mA, Leakage current: 100 μ A max. Linear output 0 to 20 mA DC, 4 to 20 mA: Load: 500 max, Resolution: Approx.

10,000, Output error: $\pm 0.5\%$ FS Linear output 0 to 5 VDC, 1 to 5 VDC, 0 to 10 VDC: Load: 5 k max, Resolution: Approx. 10,000, Output error: $\pm 0.5\%$ FS (1 V or less: ± 0.15 V; not output for 0 V or less) Negative LCD (backlit LED) display 7-segment digital display (Character height: PV: 14.2 mm (green/red); SV: 4.9 mm (green) Scaling function, measurement operation selection, averaging, previous average value comparison, forcedzero, 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 Display method Main functions Ambient operating temperature Ambient operating humidity Storage temperature Altitude Accessories -10 to 55°C (with no icing or condensation) 25% to 85% -25 to 65°C (with no icing or condensation) 2,000 m max. Watertight packing, 2 fixtures, terminal cover, unit stickers, operation manual. DeviceNet models also include a DeviceNet connector (Hirose HR31-5.08P-5SC(01)) and crimp terminals (Hirose HR31-SC-121) (See note 3).

) Note: 1. DC power supply models require a control power supply capacity of approximately 1 A per Unit when power is turned ON. Particular attention is required when using two or more DC power supply models. The OMRON S8VS-series DC Power Supply Unit is recommended. 2. PNP input types are also available. 3. For K3HB-series DeviceNet models, use only the DeviceNet Connector included with the product. The crimp terminals provided are for Thin Cables. Weighing Indicator K3HB-V 9 Characteristics Display range Sampling period Linear output response time Insulation resistance Dielectric strength Noise immunity -19,999 to 99,999 20 ms (50 times/second) 150 ms max. 20 M min. (at 500 VDC) 2,300 VAC for 1 min between external terminals and case 100 to 240 VAC models: $\pm 1,500$ V at power supply terminals in normal or common mode (waveform with 1-ns rising edge and pulse width of 1 μ s/100 ns) 24 VAC/VDC models: $\pm 1,500$ V at power supply terminals in normal or common mode (waveform with 1-ns rising edge and pulse width of 1 μ s/100 ns) Frequency: 10 to 55 Hz; Acceleration: 50 m/s², 10 sweeps of 5 min each in X, Y, and Z directions 150 m/s² (100 m/s² for relay outputs) 3 times each in 3 axes, 6 directions Approx. 300 g (Base Unit only) Front panel Rear case Terminals Conforms to NEMA 4X for indoor use (equivalent to IP66) IP20 IP00 + finger protection (VDE0106/100) EEPROM (non-volatile memory) Number of rewrites: 100,000 UL61010C-1, CSA C22.2 No. 1010.1 (evaluated by UL) EN61010-1 (IEC61010-1): Pollution degree 2/Overvoltage category II EN61326: 1997, A1: 1998, A2: 2001 EMI: EN61326+A1 industrial applications Electromagnetic radiation interference CISPR 11 Group 1, Class A: CISPR116-1/-2 Terminal interference voltage CISPR 11 Group 1, Class A: CISPR116-1/-2 EMS: EN61326+A1 industrial applications Electrostatic Discharge Immunity EN61000-4-2: 4 kV (contact), 8 kV (in air) Radiated Electromagnetic Field Immunity EN61000-4-3: 10 V/m 1 kHz sine wave amplitude modulation (80 MHz to 1 GHz) Electrical Fast Transient/Burst Immunity EN61000-4-4: 2 kV (power line), 1 kV (I/O signal line) Surge Immunity EN61000-4-5: 1 kV with line (power line), 2 kV with ground (power line) Conducted Disturbance Immunity EN61000-4-6: 3 V (0.15 to 80 MHz) Voltage Dips and Interruptions Immunity EN61000-4-11: 0.5 cycle, 0°/180°, 100% (rated voltage) Comparative output response time 100 ms max. Vibration resistance Shock resistance Weight Degree of protection Memory protection Applicable standards EMC 10 Weighing Indicator K3HB-V Input Ranges (Measurement Range and Accuracy) Input type Range Set value Measurement range Input impedance Accuracy Allowable instantaneous overload (30 s) ± 200 V K3HB-VLC Load Cell, mV A B C D a Ud b Ud c Ud d Ud 0.00 to 199.

99 mV 0.000 to 19.999 mV ± 100.00 mV ± 199.99 mV 1 M min. $\pm 0.1\%$ rdg ± 1 digit max. $\pm 0.1\%$ rdg ± 5 digits max. $\pm 0.1\%$ rdg ± 3 digits max. $\pm 0.1\%$ rdg ± 1 digit max. Note: 1. The accuracy is for an ambient temperature of 23 \pm 5°C. For all ranges, 10% or less of max. input $\pm 0.1\%$ FS. 2. The letters "rdg" mean "reading."
" Input type Connected terminals (mV) 200.000 150.000 100.000 50.000 0.00 -50.00 -100.00 -150.00 -200.00 0.

00 a lc E2 E6 b lc E3 E6 c lc E4 E6 d lc E5 E6 199.99 100.00 19.999 0.000 199.99 -100.00 -199.99 The area shown in dark shading indicates the factory setting. Load Cell Wiring Example B E +10 V Scaling Example Using Range A Indicated on the K3HB-V as 0 to 49N in the load cell specifications (rated load 49N, recommended applied voltage 10 V, rated output 2 mV/V) (See note.) E2 E3 E4 B5 B6 E5 E6 - + +OUT +IN Display value 49 N Scaling values: Load cell -OUT -IN inp.



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a1=000.00 dsp.a1=00000 inp.a2=020.00 dsp.

a2=49000 dp decimal point position: 00.000 20 mV Input value 0V Note: 2 mV/V indicates a load cell output of 2 mV for 1 V applied voltage for the rated load (when using a load of 1 N). When the applied voltage is 10 V, the load cell output is 20 mV (2 mV × 10). Weighing Indicator K3HB-V 11 Temperature Indicator K3HB-H New High-speed, High-precision Temperature Indicator · Easy recognition of judgement results using color display that can be switched between red and green. · Equipped with a position meter for monitoring operating status trends.

· External event input allows use in various measurement and discrimination applications. · Series expanded to include DeviceNet models. · Short body with depth of only 95 mm (from behind the front panel), or 97 mm for DeviceNet models. · UL certification approval (Certification Mark License). · CE Marking conformance by third party assessment body. · Water-resistant enclosure conforms to NEMA 4X (equivalent to IP66). · Capable of high-speed sampling at 50 times per second (20 ms). · High-resolution of 0.01°C with platinum-resistance thermometer Pt100 input. Thermocouple sensor inputs also support a resolution of 0.

1°C for all ranges. · Temperature input shift is easily set using two points. Refer to Precautions on page 30. Model Number Structure Model Number Legend Base Units and Optional Boards can be ordered individually or as sets. Base Units K3HB-H@ 1 5 Base Units with Optional Boards K3HB-H@-@@@ 1 2 3 4

5 1. Input Sensor Codes TA: Temperature input Thermocouple input/Platinum-resistance thermometer input 2. Sensor Power Supply/Output Type Codes None: None CPA: Relay output (PASS: SPDT) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 1.) LIA: Linear current output (DC0(4) - 20 mA) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 2.) L2A: Linear voltage output (DC0(1) - 5 V, 0 to 10 V) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 2.) A: Sensor power supply (12 VDC +/-10%, 80 mA) FLK1A: Communications (RS-232C) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 2.)

) FLK3A: Communications (RS-485) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 2.) 5. Supply Voltage 100-240 VAC: 100 to 240 VAC 24 VAC/VDC: 24 VAC/VDC Optional Board Sensor Power Supply/Output Boards 3. Relay/Transistor Output Type Codes None: C1: C2: T1: T2: BCD: DRT: None: 1: 2: 3: 4: None Relay contact (H/L: SPDT each) Relay contact (HH/H/LL/L: SPST-NO each) Transistor (NPN open collector: HH/H/PASS/L/LL) Transistor (PNP open collector: HH/H/PASS/L/LL) BCD output + transistor output (NPN open collector: HH/H/PASS/L/LL) DeviceNet (See note 2.) None 5 points (M3 terminal blocks) NPN open collector 8 points (10-pin MIL connector) NPN open collector 5 points (M3 terminal blocks) PNP open collector 8 points (10-pin MIL connector) PNP open collector K33-@ 2 Relay/Transistor Output Boards K34-@ 3 Event Input Boards 4.

Event input Type Codes K35-@ 4 Note: 1. CPA can be combined with relay outputs only. 2. Only one of the following can be used by each Digital Indicator: RS-232C/RS-485 communications, a linear output, or DeviceNet communications. Accessories (Sold Separately) K32-DICN: Special Cable (for event inputs, with 8-pin connector) K32-BCD: Special BCD Output Cable 12 Temperature Indicator K3HB-H Specifications Ratings Power supply voltage Allowable power supply voltage range Power consumption (See note 1.)

) Current consumption Input A/D conversion method External power supply Event inputs (See note 2.) Timing input 100 to 240 VAC (50/60 Hz), 24 VAC/VDC, DeviceNet power supply: 24 VDC 85% to 110% of the rated power supply voltage, DeviceNet power supply: 11 to 25 VDC 100 to 240 V: 18 VA max. (max. load) 24 VAC/DC: 11 VA/7 W max. (max. load) DeviceNet power supply: 50 mA max. (24 VDC) Platinum-resistance thermometer: Pt100 Thermocouple: K, J, T, E, L, U, N, R, S, B, W Delta-Sigma method See Sensor Power Supply/Output Type Codes NPN open collector or no-voltage contact signal ON residual voltage: 3 V max. ON current at 0: 17 mA max. Max. applied voltage: 30 VDC max.

OFF leakage current: 1.5 mA max. Startup compensa- NPN open collector or no-voltage contact signal tion timer input ON residual voltage: 2 V max. ON current at 0: 4 mA max. Hold input Max. applied voltage: 30 VDC max. OFF leakage current: 0.1 mA max. Reset input Bank input Output ratings (depends on the model) Relay output Transistor output Linear output 250 VAC, 30 VDC, 5 A (resistive load) Mechanical life expectancy: 5,000,000 operations, Electrical life expectancy: 100,000 operations Maximum load voltage: 24 VDC, Maximum load current: 50 mA, Leakage current: 100 µA max. Linear output 0 to 20 mA DC, 4 to 20 mA: Load: 500 max, Resolution: Approx.

10,000, Output error: ±0.5% FS Linear output 0 to 5 VDC, 1 to 5 VDC, 0 to 10 VDC: Load: 5 k max, Resolution: Approx. 10,000, Output error: ±0.5% FS (1 V or less: ±0.15 V; not output for 0 V or less) Negative LCD (backlit LED) display 7-segment digital display (Character height: PV: 14.

2 mm (green/red); SV: 4.9 mm (green) Scaling function, measurement operation selection, averaging, previous average value comparison, zero-limit, output hysteresis, output OFF delay, output test, display value selection, display color selection, key protection, bank selection, display refresh period, maximum/minimum hold, reset Display method Main functions Ambient operating temperature Ambient operating humidity Storage temperature Altitude Accessories -10 to 55°C (with no icing or condensation) 25% to 85% -25 to 65°C (with no icing or condensation) 2,000 m max. Watertight packing, 2 fixtures, terminal cover, unit stickers, instruction manual. DeviceNet models also include a DeviceNet connector (Hirose HR31-5.08P-5SC(01)) and crimp terminals (Hirose HR31-SC-121) (See note 3.)

) Note: 1. DC power supply models require a control power supply capacity of approximately 1 A per Unit when power is turned ON. Particular attention is required when using two or more DC power supply models. The OMRON S8VS-series DC Power Supply Unit is recommended. 2. PNP input types are also available. 3. For K3HB-series DeviceNet models, use only the DeviceNet Connector included with the product. The crimp terminals provided are for Thin Cables. Temperature Indicator K3HB-H 13 Characteristics Display range Accuracy Sampling period -19,999 to 99,999 Thermocouple input: (±0.

3% PV or ±1°C, whichever is larger) ± 1 digit max. (See note.) Platinum resistance thermometer input: (±0.2% PV or ±0.8°C, whichever is larger) ± 1 digit max. 20 ms (50 times/second) Comparative output response time Platinum-resistance thermometer input range: 120 ms max. Thermocouple input range: 180 ms max. Linear output response time Insulation resistance Dielectric strength Noise immunity Platinum-resistance thermometer input range: 170 ms max.



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Thermocouple input range: 230 ms max. 20 M min.

(at 500 VDC) 2,300 VAC for 1 min between external terminals and case 100 to 240 VAC models: $\pm 1,500$ V at power supply terminals in normal or common mode (waveform with 1-ns rising edge and pulse width of 1 μ s/100 ns) 24 VAC/VDC models: $\pm 1,500$ V at power supply terminals in normal or common mode (waveform with 1-ns rising edge and pulse width of 1 μ s/100 ns) Frequency: 10 to 55 Hz; Acceleration: 50 m/s², 10 sweeps of 5 min each in X, Y, and Z directions 150 m/s² (100 m/s² for relay outputs) 3 times each in 3 axes, 6 directions Approx. 300 g (Base Unit only) Conforms to NEMA 4X for indoor use (equivalent to IP66) IP20 IP00 + finger protection (VDE0106/100) EEPROM (non-volatile memory) Number of rewrites: 100,000 UL61010C-1, CSA C22.2

No. 1010.1 (evaluated by UL) EN61010-1 (IEC61010-1): Pollution degree 2/Overvoltage category II EN61326: 1997, A1: 1998, A2: 2001 EMI:

EN61326+A1 industrial applications Electromagnetic radiation interference CISPR 11 Group 1, Class A: CISPR116-1/-2 Terminal interference voltage CISPR 11 Group 1, Class A: CISPR116-1/-2 EMS: EN61326+A1 industrial applications Electrostatic Discharge Immunity EN61000-4-2: 4 kV (contact), 8 kV (in air) Radiated Electromagnetic Field Immunity EN61000-4-3: 10 V/m 1 kHz sine wave amplitude modulation (80 MHz to 1 GHz) Electrical Fast Transient/Burst Immunity EN61000-4-4: 2 kV (power line), 1 kV (I/O signal line) Surge Immunity EN61000-4-5: 1 kV with line (power line), 2 kV with ground (power line) Conducted Disturbance Immunity EN61000-4-6: 3 V (0.

15 to 80 MHz) Voltage Dips and Interruptions Immunity EN61000-4-11: 0.5 cycle, 0°/180°, 100% (rated voltage) Vibration resistance Shock resistance Weight Degree of protection Front panel Rear case Terminals Memory protection Applicable standards EMC Note: K, T, N (100°C or less): $\pm 2^\circ\text{C} \pm 1$ digit max. U, L: $\pm 2^\circ\text{C} \pm 1$ digit max. B (400°C max.): Nothing specified.

R, S (200°C max.): $\pm 3^\circ\text{C} \pm 1$ digit max. W: ($\pm 0.3\%$ PV or $\pm 3^\circ\text{C}$ whichever is larger) ± 1 digit max. 14 Temperature Indicator K3HB-H Input Ranges Platinum-resistance Thermometer/Thermocouple Input type Platinum-resistance thermometer Pt100 K J T Thermocouple Name E L U N R S B W (W/Re 5-26) Connected terminals Temperature range (°C) 2300 1800 1300 900 800 700 600 400 200 100 0 E4 E5 E6 E5 E6 2300.0 1700.0 1700.0 1800.0 1300.0 850.

0 850.0 850.0 1300.0 500.0 400.0 150.00 400.0 600.0 400.0 100.

0 0.0 0.0 0.0 0.0 -100 -200 Setting code Minimum setting unit (comparative set value) -20.

0 -100.0 -200.0 -150.00 -200.0 0-pt 1-pt 2-k 3-k 4-j -20.

0 -200.0 5-j 6-t 7-e -100.0 -200.0 -200.0 8-l 0.1°C 9-u 10-n 11-r 12-s 13-b 14-w 0.1°C 0.01°C The range shown in dark shading indicates the factory setting.

Celsius/Fahrenheit Correlation Values and Setting/Specified Ranges Input type Setting range Indication range °C Pt100 (1) Pt100 (2) K (1) K (2) J (1) J (2) T E L U N R S B W -200.0 to 850.

0 -150.00 to 150.00 -200.0 to 1300.0 -20.0 to 500.0 -100.0 to 850.0 -20.0 to 400.

0 -200.0 to 400.0 0.0 to 600.0 °F -300.

0 to 1500.0 -199.99 to 300.00 -300.0 to 2300.

0 0.0 to 900.0 °C -305.0 to 955.0 -180.00 to 180.00 -350.0 to 1450.0 -72.0 to 552.

0 -195.0 to 945.0 -62.0 to 442.0 -260.0 to 460.0 -60.0 to 660.0 -195.0 to 945.

0 -260.0 to 460.0 -350.0 to 1450.0 -170.

0 to 1870.0 -170.0 to 1870.0 -70.0 to 1970.

0 -230.0 to 2530.0 °F -480.0 to 1680.0 -199.99 to 350.00 -560.0 to 2560.0 -90.0 to 990.

0 -260.0 to 1660.0 -75.0 to 825.0 -400.0 to 800.0 -110.0 to 1210.0 -260.0 to 1660.

0 -400.0 to 800.0 -560.0 to 2560.0 -300.

0 to 3300.0 -300.0 to 3300.0 10.0 to 3490.

0 -100.0 to 1500.0 0.0 to 750.0 -300.0 to 700.0 0.0 to 1100.0 -100.0 to 850.

0 -200.0 to 400.0 -200.0 to 1300.0 0.0 to 1700.0 0.0 to 1700.0 100.0 to 1800.

0 0.0 to 2300.0 -100.0 to 1500.0 -300.

0 to 700.0 -300.0 to 2300.0 0.0 to 3000.

0 0.0 to 3000.0 300.0 to 3200.0 0.0 to 4100.0 -410.0 to 4510.0 Temperature Indicator K3HB-H 15 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 output response time of 1 ms max.

· Easy recognition of judgement results using color display that can be switched between red and green. · Equipped with a position meter that represents measured amounts and relative positions. · Zero calibration can be performed easily with the forced zero function. · Series expanded to include DeviceNet models. · Short body with depth of only 95 mm (from behind the front panel), or 97 mm for DeviceNet models. · UL certification approval (Certification Mark License). · CE Marking conformance by third party assessment body. · Water-resistant enclosure conforms to NEMA 4X (equivalent to IP66). Refer to Precautions on page 30. Model Number Structure Model Number Legend Base Units and Optional Boards can be ordered individually or as sets.

Base Units K3HB-S@ 1 5 Base Units with Optional Boards K3HB-S@-@@@ 1 2 3 4 5 1. Input Sensor Codes SD: DC Process input 2. Sensor Power Supply/Output Type Codes None: None CPA: Relay output (PASS: SPDT) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 1.) LIA: Linear current output (DC0(4) - 20 mA) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 2.) L2A: Linear voltage output (DC0(1) - 5 V, 0 to 10 V) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 2.)

) A: Sensor power supply (12 VDC +/-10%, 80 mA) FLK1A: Communications (RS-232C) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 2.) FLK3A: Communications (RS-485) + Sensor power supply (12 VDC +/-10%, 80 mA) (See note 2.) 5. Supply Voltage 100-240 VAC: 100 to 240 VAC 24 VAC/VDC: 24 VAC/VDC Optional Board Sensor Power Supply/Output Boards 3. Relay/Transistor Output Type Codes None: None C1: Relay contact (H/L: SPDT each) C2: Relay contact (HH/H/LL/L: SPST-NO each) T1: Transistor (NPN open collector: HH/H/PASS/LL) T2: Transistor (PNP open collector: HH/H/PASS/LL) BCD: BCD output + transistor output (NPN open collector: HH/H/PASS/L/LL) DRT: DeviceNet (See note 2.)

) K33-@ 2 Relay/Transistor Output Boards K34-@ 3 4. Event input Type Codes None: None 1: 5 points (M3 terminal blocks) NPN open collector 2: 8 points (10-pin MIL connector) NPN open collector 3: 5 points (M3 terminal blocks) PNP open collector 4: 8 points (10-pin MIL connector) PNP open collector Event Input Boards K35-@ 4 Note: 1. CPA can be combined with relay outputs only. 2. Only one of the following can be used by each Digital Indicator: RS-232C/RS-485 communications, a linear output, or DeviceNet communications. Accessories (Sold Separately) K32-DICN: Special Cable (for event inputs, with 8-pin connector) K32-BCD: Special BCD Output Cable 16 Linear Sensor Indicator K3HB-S Specifications Ratings Power supply voltage Allowable

power supply voltage range Power consumption (See note 1.)



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) Current consumption Input A/D conversion method External power supply Event inputs (See note 2.) Timing input 100 to 240 VAC (50/60 Hz), 24 VAC/VDC, DeviceNet power supply: 24 VDC 85% to 110% of the rated power supply voltage, DeviceNet power supply: 11 to 25 VDC 100 to 240 V: 18 VA max. (max. load) 24 VAC/DC: 11 VA/7 W max.

(max. load) DeviceNet power supply: 50 mA max. (24 VDC) DC voltage/current Sequential comparison system See Sensor Power Supply/Output Type Codes NPN open collector or no-voltage contact signal ON residual voltage: 3 V max. ON current at 0 : 17 mA max. Max. applied voltage: 30 VDC max. OFF leakage current: 1.5 mA max. NPN open collector or no-voltage contact signal ON residual voltage: 2 V max. ON current at 0 : 4 mA max.

Max. applied voltage: 30 VDC max. OFF leakage current: 0.1 mA max. Startup compensation timer input Hold input Reset input Forced-zero input Bank input Output ratings (deRelay output depends on the model) Transistor output Linear output 250 VAC, 30 VDC, 5 A (resistive load) Mechanical life expectancy: 5,000,000 operations, Electrical life expectancy: 100,000 operations Maximum load voltage: 24 VDC, Maximum load current: 50 mA, Leakage current: 100 μ A max.

Linear output 0 to 20 mA DC, 4 to 20 mA: Load: 500 max, Resolution: Approx. 10,000, Output error: $\pm 0.5\%$ FS Linear output 0 to 5 VDC, 1 to 5 VDC, 0 to 10 VDC: Load: 5 k max, Resolution: Approx. 10,000, Output error: $\pm 0.5\%$ FS (1 V or less: ± 0 .

15 V; not output for 0 V or less) Negative LCD (backlit LED) display 7-segment digital display (Character height: PV: 14.2 mm (green/red); SV: 4.9 mm (green) Scaling function, 2-input calculation function, measurement operation selection, averaging, previous average value comparison, 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 Display method Main functions Ambient operating temperature Ambient operating humidity Storage temperature Altitude Accessories -10 to 55°C (with no icing or condensation) 25% to 85% -25 to 65°C (with no icing or condensation) 2,000 m max. Watertight packing, 2 fixtures, terminal cover, unit stickers, instruction manual. DeviceNet models also include a DeviceNet connector (Hirose HR31-5.08P-5SC(01)) and crimp terminals (Hirose HR31-SC-121) (See note 3.) Note: 1. DC power supply models require a control power supply capacity of approximately 1 A per Unit when power is turned ON. Particular attention is required when using two or more DC power supply models. The OMRON S8VS-series DC Power Supply Unit is recommended.

2. PNP input types are also available. 3. For K3HB-series DeviceNet models, use only the DeviceNet Connector included with the product. The crimp terminals provided are for Thin Cables. Linear Sensor Indicator K3HB-S 17 Characteristics Display range Sampling period Comparative out- One input put response times (transistor Two inputs outputs) Linear output re- One input sponse time Two inputs Insulation resistance Dielectric strength Noise immunity -19,999 to 99,999 One input: 0.5 ms; Two inputs: 1.0 ms OFF to ON: 1 ms max., ON to OFF: 1.5 ms max.

OFF to ON: 2 ms max., ON to OFF: 2.5 ms max. 51 ms max. 52 ms max.

20 M min. (at 500 VDC) 2,300 VAC for 1 min between external terminals and case 100 to 240 VAC models: $\pm 1,500$ V at power supply terminals in normal or common mode (waveform with 1-ns rising edge and pulse width of 1 μ s/100 ns) 24 VAC/VDC models: $\pm 1,500$ V at power supply terminals in normal or common mode (waveform with 1-ns rising edge and pulse width of 1 μ s/100 ns) Frequency: 10 to 55 Hz; Acceleration: 50 m/s², 10 sweeps of 5 min each in X, Y, and Z directions 150 m/s² (100 m/s² for relay outputs) 3 times each in 3 axes, 6 directions Approx. 300 g (Base Unit only) Conforms to NEMA 4X for indoor use (equivalent to IP66) IP20 IP00 + finger protection (VDE0106/100) EEPROM (non-volatile memory) Number of rewrites: 100,000 UL61010C-1, CSA C22.2 No. @ @1 M min.

@ @Two inputs: $\pm 0.2\%$ F.S. @ @ @ @ @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. @ @Approx. 10,000 $\pm 0.5\%$ FS 4 to 20 mA 0 to 5 V 5 k min. @ @level OFF voltage 3 V min. @ @ @ @ @ @ @Allocate any I/O data using the Configurator. @ @Input area: 2 blocks, 60 words max. Output area: 1 block, 29 words max.

@ @ @ @ @ @current (mA) 140 With 10 V Max. @ @The above values are for standard mounting. The derating curve differs depending on the mounting conditions. 2. @ @ @ @ @Turns OFF if it is not executed or is cleared.

Turns ON when the forced-zero function is executed. Turns OFF if it is not executed or is cleared. @ @Otherwise OFF. @ @ @ @When changing a set value, this key is used to move along the digits. UP Key When changing a set value, this key is used to change the actual value.

When a measurement value is displayed, this key is used to execute or clear the forced-zero function or to execute teaching. 22 Digital Indicators K3HB-X/V-/H-/S BCD Output Timing Chart A REQUEST signal from a Programmable Controller or other external device is required to read BCD data. Single Sampling Data Output 20-ms pulse min. (50 ms max.) REQ. MAX.MIN. DATA All data "High" Data All data "High" Continuous Data Output REQ. MAX.MIN.

DATA All data "High" Data 1 Data 2 DATA VALID Approx. 30 ms 40 ms 16 ms DATA VALID Approx. 30 ms 40 ms 64 ms 24 ms 40 ms 64 ms 24 ms The data is set in approximately 30 ms from the rising edge of the REQUEST signal and the DATA VALID signal is output. When reading the data from a Programmable Controller, start reading the data when the DATA VALID signal turns ON. The DATA VALID signal will turn OFF 40 ms later, and the data will turn OFF 16 ms after that. Measurement data is output every 64 ms while the REQUEST signal remains ON. Note: If HOLD is executed when switching between data 1 and data 2, either data 1 or data 2 is output depending on the timing of the hold signal. The data will not go LOW. REQ. (1) K3HB (1) Programmable Controller K3HB (2) REQ.

(2) REQ. (3) DATA (including POL and OVER) and DATA VALID can be used in a wired OR. RUN, HH, H, PASS, L, and LL are always output, with or without a REQUEST signal. Do not used a wired OR connect for these signals. DATA (1) (2) (3) K3HB (3) DATA VALID (See note.

) (See note.) (See note.) Note: Leave 20 ms min. between DATA VALID turning OFF and the REQUEST signal. Programmable Controller Connection Example Digital Indicator Connector pin No.

(See note.) 1.COMMON 2.1 3.2 4.4 5.8 10° IN IN COM IN IN Internal circuit SYSMAC Programmable Controller DC Input Unit Display Unit Connection Example Digital Indicator Connector pin No. (See note.) 1.COMMON 2.



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1 3.2 4.4 5.8 10° 23.DATA VALID 24.RUN IN IN 23.DATA VALID 24.RUN To 101 To 102 25.COMMON 26.REQUEST +5 V 240 240 30.
RESET 240 240 31.POLARITY (+/- polarity) Transistor Output Unit OUT Internal circuit Internal circuit +5 V 240 240 25.COMMON Short26.REQUEST
circuit OUT COM (0 V) 24 VDC +24 V 0V 30.RESET 240 31.

POLARITY (+/- polarity) V O D C B A DP LE V O D C B A DP LE V O D C B A DP LE V O 240 8 8 8 SEC M7E-01D@N2, 01H@N2 <M7E Digital Display
Unit> DC power supply Note: The BCD output connector pin number is the D-sub connector pin number when the BCD Output Cable (sold separately) is
connected. This number differs from the pin number for the Digital Indicator narrow pitch connector (manufactured by Honda Tsushin Kogyo Co., Ltd.).
Refer to the following User's Manual for application precautions and other information required when using the Digital Indicator: K3HB-S/-X/-V/-H Digital
Indicator User's Manual (Cat.

No. N128) The manual can be downloaded from the following site in PDF format: OMRON Industrial Web <http://www.fa.omron.co.jp> Digital Indicators
K3HB-X/-V/-H/-S 23 Connections Terminal Arrangement Note: Insulation is used between signal input, event input, output, and power supply terminals. A B
C D E A Operating Power Supply 100 to 240 VAC 24 VAC/VDC A1 A2 1 2 3 4 5 6 *Check the required power supply type. B Sensor Power Supply/Output
Sensor power supply + PASS output B1 PASS B2 Sensor power supply C Relays, Transistors, BCD and DeviceNet Relay Outputs <C1> C1 H C2 C3 C4 L C5
C6 Relay Outputs <C2> HH H C1 C2 HH H Transistor Outputs <T1> <T2> C1 C2 NPN PNP DeviceNet Connector (Included) <DRT> 12345 B3 10 VDC
100 mA 12 VDC 80 mA N/C B4 + B5 - B6 COM C3 L LL C4 C5 PASS C3 L LL C4 C5 <K33CPB> Sensor power supply + linear output + 0-5/1-5/ N/C 0-10
V 0-20/ 4-20 mA 12 VDC 80 mA <K33CPA> COM C6 COM C6 0-5/1-5/ N/C 0-10 V B1 N/C 10 VDC 100 mA 10 VDC 100 mA 12 VDC 80 mA - B4 + B5 - B6
<K33L2B> <K33L1B> <K33L2A> <K33L1A> Sensor power supply 0-20/ N/C 4-20 mA - B2 + B3 BCD (NPN Open Collector): BCD Applicable Connector
(Sold separately) HDR-E50MAG1 (HONDA TSUSHIN KOGYO CO., LTD.) Special Cable (Sold separately) K32-BCD (OMRON) (HDR-E50MAG1 with 0.

3-m cable) 1: V- (Power supply cable: Black) 2: CAN L (Communications cable: Blue) 3: Shield 4: CAN H (Communications cable: White) 5: V+ (Power
supply cable: Red) Applicable Connector: HR31-5.08P-5SC (01) (HIROSE ELECTRIC CO., LTD.) * Attach the provided crimp terminals. Sensor power
supply B1 B2 N/C B4 12 VDC 80 mA The BCD COMMON is shared. The pins indicated in the above diagram as blank (white) boxes have been removed. *
Only one of the following can be used for each Digital Indicator: communications, BCD, or DeviceNet. 10 VDC 100 mA + - Sensor power supply B3 Contact
output Transistor Output (NPN Open Collector) B5 B6 5V HH H L LL PASS HH H L LL PASS <K33-B> <K33-A> Sensor power supply + communications B
(+) A (-) B (+) A (-) 10 VDC 100 mA SD RD SG N/C 10 VDC 100 mA B (+) SD A (-) RD B (+) SG A (-) N/C 12 VDC 80 mA 12 VDC 80 mA B1 B2 Sensor
power supply B3 B4 + - B5 B6 Safety Standards Conformance · Always use a EN/IEC-compliant power supply with reinforced insulation or double insulation
for the DeviceNet power supply. · The product must be used indoors for the above applicable standards to apply. · The K3HB-XVA@@ complies with UL
standards when the applied input voltage is within the range 0 to 150 VAC.

RS-485 RS-232C RS-485 RS-232C <K33- <K33<K33- <K33FLK3B> FLK1B> FLK3A> FLK1A> 24 Digital Indicators K3HB-X/-V/-H/-S E Analog Input
Process Indicator K3HB-X AC voltage only Weighing Indicator K3HB-V E1 N/C E2 E3 E4 E5 A B C D Temperature Indicator K3HB-H E1 N/C E2 E3 A Pt B
TC E6 COM E4 E5 Linear Sensor Indicator K3HB-S E1 Input B Current input E2 Input A E3 COM Voltage input E4 Input A E5 Input B N/C E6 E1 N/C E2
E3 E4 E5 A B C D A, B N/C C D N/C COM E6 COM E6 COM B' + D Event Input Models with Terminal Blocks <K35-1><K35-3> D1 TIMING D2 S-TMR
D3 HOLD D4 RESET D5 ZERO 3.9 k S-TMR: D2 HOLD: D3 RESET: D4 ZERO: D5 12 V 12 V · Use terminal pin D6 as the common terminal. · Use NPN
open collector or no-voltage contacts for event input. PNP types are also available. 4.

7 k TIMING D1 560 750 D6 COM Models with Connectors <K35-2><K35-4> 1: TIMING 1 3: HOLD 5: ZERO 7: BANK4 9: BANK1 9 2: S-TMR 4: RESET
6: COM 8: BANK2 10 10: COM 2 D6 D6 COM COM · Applicable Connector (Sold separately) XG4M-1030 (OMRON) · Special Cable (Sold separately)
K32-DICN (OMRON) (XG4M-1030 with 3 m cable) BCD Output Cable Model K32-BCD K3HB end Shape Connected device end (PLC, display device, etc.)
COMMON Pin arrangement 1 38 mm Cover: 300 mm 46.5 mm D-sub connector (37-pin female) Cover: 17JE-37H-1A (manufactured by DDK) Connector:
Equivalent to 17JE-13370-02 (manufactured by DDK) Stand: 17L-002A (manufactured by DDK) HDR-E50LPA5 (manufactured by Honda Tsushin Co., Ltd)
Connector: HDR-E50MAG1 (manufactured by Honda Tsushin Co., Ltd) 1 100 2 4 8 1 2 101 4 8 1 2 102 4 8 1 32 10 4 8 41 10 2 2 3 4 5 6 7 8 9 10 11 12 13 14
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 4 104 8 OVER DATA VALID RUN COMMON REQUEST MAX REQ.

MIN REQ. HOLD RESET POLARITY HH H PASS L LL COMMON Note: The BCD Output Cable has a D-sub plug. Cover: 17JE-37H-1A (manufactured by
DDK); Connector: equivalent to 17JE-23370-02 (D1) (manufactured by DDK) Special Cable (for Event Inputs with 8-pin Connector) Model K32-DICN 9 1
10 2 Cable marking Appearance Wiring Pin No. 1 2 3 4 5 6 7 8 9 10 Signal name N/C S-TMR HOLD RESET N/C COM BANK4 BANK2 BANK1 COM 3,000
mm (3 m) Digital Indicators K3HB-X/-V/-H/-S 25 Main Functions Measurement Input Calculation S · Two input circuits are provided. The input ranges for
these circuits can be set independently. For example, one can be set to 4 to 20 mA and the other can be set to 1 to 5 V. · In addition to calculations such as K
(constant)A (input for one circuit), it is possible to perform calculations based on the inputs for both circuits, such as A+B and AB, making it possible to
perform thickness measurement and level-difference measurement using displacement and length-measuring sensors. Timing Hold A K K-A XVHS Sampling
Hold · Holds the measurement at the rising edge of the TIMING signal. Input Input Sampling hold value Normal · Continuously performs measurement and
always outputs based on comparative results. H comparative set value Measurement value Measurement value Time Time H output TIMING ON input OFF
Peak Hold/Bottom Hold · Measures the maximum (or minimum) value in a specified period.



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Input Peak hold value Peak-to-peak Hold · Measures the difference between the maximum and minimum values in a specified period. Input Peak-to-peak value (b2-a2) (b1-a1) Measurement value Bottom hold value Time TIMING ON input OFF Measurement value a1 b1 'a2 'b2 Time TIMING ON input OFF Scaling XVS Average Processing XVS Scaling converts input signals in any way required before displaying them. The values can be manipulated by shifting, inverting, or +/- reversing. Display value Display value 2 (dsp.a2) Display value Display value 2 (dsp.a2) Turns the comparative output OFF until the measurement value enters the PASS range. Average processing of input signals with extreme changes or noise smooths out the display and makes control stable. Previous Average Value Comparison XVHS Display value 1 (dsp.a1) Display value 1 (dsp.a1) Input value 1 Input value 2 Input value (inp.a2) (inp.a1) (Scaling) Input value 2 Input value 1 (inp.a2) (inp.a1) (Reverse scaling) Input value Slight changes can be removed from input signals to detect only extreme changes. Temperature Input Shift H Teaching XVS Shifts the temperature input value.

Settings for scaling can be made using the present measurement values instead of inputting values with the SHIFT and UP Keys. This is a convenient function for making the settings while monitoring the operating status. Standby Sequence Supported Models The models that support the functions shown here are indicated by symbols as follows: XVHS X V H S K3HB-X K3HB-V K3HB-H K3HB-S 26 Digital Indicators K3HB-X/-V/-H/-S Input Compensation/Display Forced-zero XVS Display Value Selection XVHS Forces the present value to 0. (Convenient for setting reference values or deducting tares for weight measurement.) Tare Zero The current display value can be selected from the present value, the maximum value, and the minimum value.

Step Value VS XVHS Shifts the current value measured with a forced zero to 0 again. It is possible to measure two or more compounds separately and then, by releasing the tare zero and forced-zero, measure the combined total. Zero-trimming It is possible to specify (i.e., restrict) the values that the smallest displayed digit can change by. For example, if the setting is 2, the smallest digit will only take the values 0, 2, 4, 6, or 8 and if the setting is 5, it will only take the values 0 or 5. If the setting is 10, it will only take the value of 0. XVHS Compensates for mild fluctuations in input signals due to factors such as sensor temperature drift, based on OK (PASS) data at measurement. (This function can be used with sampling hold, peak hold, or bottom hold.) Zero-limit XVHS Changes the display value to 0 for input values less than the set value.

It is enabled in normal mode only. (This function can be used, for example, to stop negative values being displayed or to eliminate flickering and minor inconsistencies near 0.) Display Zero-limit setting Input Display Refresh Period XVHS The display refresh period can be lengthened to reduce flickering and thereby make the display easier to read. Display Color Selection XVHS Values can be displayed in either red or green. With comparative output models, the display color can also be set to change according to the status of comparative outputs (e.g., green to red or red to green). Example) Setting: gm-r Red H 110.01 Comparative set value H 110.00 Green P Comparative set value L 100.

05 110.00 L 99.87 110.00 Red Digital Indicators K3HB-X/-V/-H/-S 27 Output Comparative Output Pattern XVHS Hysteresis XVHS The output pattern for comparative outputs can be selected. @@(Use the type of output pattern appropriate for the application.

) Comparative set value HH Comparative set value H Comparative set value L Comparative set value LL Prevents comparative output chattering when the measurement value fluctuates slightly near the set value. Example: Comparative Output Pattern (Standard Output) Comparative set value H Comparative set value L Comparative output H Comparative output L Hysteresis Hysteresis Standard Output Measurement Comparative value set value HH Higher Comparative set value H Comparative set value L Lower Comparative set value LL Level Output Measurement value Higher Lower Output HH Output H Output PASS Output L Output LL ON Output HH OFF Output H Output PASS Output L Output LL Measurement value Higher ON OFF Startup Compensation Timer XVHS Measurement can be stopped for a set time using external input. Input H comparative set value Comparative set value HH Comparative set value H Comparative set value L Comparative set value LL Zone Output Lower Output HH Output H Output PASS Output L Output LL ON OFF H output H input Startup compensation time set time Time Output Logic XVHS PASS Output Change XVHS Reverses the output operation of comparative outputs for comparative results. Comparative results other than PASS and error signals can be output from the PASS output terminal.

Dimensions 101.

2 91 Terminal cover (included) Character Size for Main Display (mm) PV display SV display 14.2 100 (112) 7.6 4.9 Panel Cutout Dimensions 120 min. 3.5 75 min. 92+0.8 0 12 1.3 96 2 95* 45+0.6 0 48 44.

8 *DeviceNet models: 97 mm Terminal: M3, Terminal Cover: Accessory 28 Digital Indicators K3HB-X/-V/-H/-S Wiring Precautions · For terminal blocks, use the crimp terminals suitable for M3 screws. · Tighten the terminal screws to the recommended tightening torque of approx. 0.5 Nm. · To prevent inductive noise, separate the wiring for signal lines from that for power lines. Mounting Method 1. Insert the K3HB into the mounting cutout in the panel. 2. Insert watertight packing around the Unit to make the mounting watertight. Watertight packing Wiring · Use the crimp terminals suitable for M3 screws shown below.

5.8 mm max. 5.8 mm max. Unit Stickers · Select the appropriate units from the unit sticker sheets provided and attach the sticker to the Indicator. 3. Insert the adapter into the grooves on the left and right sides of the rear case and push until it reaches the panel and is fixed in place. Adapter LCD Field of Vision Note: When using for meters, such as weighing meters, use the units specified by regulations on weights and measures. The K3HB is designed to have the best visibility at the angles shown in the following diagram. 10° 30° Waterproof Packing The waterproof packing ensures a level of waterproofing that conforms to NEMA 4X.

Depending on the operating environment, deterioration, contraction, or hardening may occur and replacement may be necessary. In this case, consult your OMRON representative. Digital Indicators K3HB-X/-V/-H/-S 29 Precautions !WARNING Do not touch the terminals while power is being supplied.



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Doing so may possibly result in electric shock. Make sure that the terminal cover is installed before using the product. Always provide protective circuits in the network. Without protective circuits, malfunctions may possibly result in accidents that cause serious injury or significant property damage. Provide double or triple safety measures in external control circuits, such as emergency stop circuits, interlock circuits, or limit circuits, to ensure safety in the system if an abnormality occurs due to malfunction of the product or another external factor affecting the product's operation. Precautions for Safe Use 1. Do not use the product in the following locations.

· Locations subject to direct radiant heat from heating equipment · Locations where the product may come into contact with water or oil · Locations subject to direct sunlight · Locations where dust or corrosive gases (in particular, sulfuric or ammonia gas) are present · Locations subject to extreme temperature changes · Locations where icing or condensation may occur · Locations subject to excessive shocks or vibration 2. Do not use the product in locations subject to temperatures or humidity levels outside the specified ranges or in locations prone to condensation. If the product is installed in a panel, ensure that the temperature around the product (not the temperature around the panel) does not go outside the specified range. 3. Provide sufficient space around the product for heat dissipation. 4. Use and store the product within the specified temperature and humidity ranges. If several products are mounted side-by-side or arranged in a vertical line, the heat dissipation will cause the internal temperature of the products to rise, shortening the service life. If necessary, cool the products using a fan or other cooling method. 5.

The service life of the output relays depends on the switching capacity and switching conditions. Consider the actual application conditions and use the product within the rated load and electrical service life. Using the product beyond its service life may result in contact welding or burning. 6. Install the product horizontally.

7. Mount to a panel between 1 and 8-mm thick. 8. Use the specified size of crimp terminals (M3, width: 5.8 mm max.) for wiring. To connect bare wires, use AWG22 (cross section: 0.326 mm²) to AWG14 (cross section: 2.081 mm²) to wire the power supply terminals and AWG28 (cross section: 0.081 mm²) to AWG16 (cross section: 1.309 mm²) for other terminals. (Length of exposed wire: 6 to 8 mm) 9. In order to prevent inductive noise, wire the lines connected to the product separately from power lines carrying high voltages or currents. Do not wire in parallel with or in the same cable as power lines. Other measures for reducing noise include running lines along separate ducts and using shield lines.

10. Ensure that the rated voltage is achieved no longer than 2 s after turning the power ON. 11. Allow the product to operate without load for at least 15 minutes after the power is turned ON. 12. Do not install the product near devices generating strong high-frequency waves or surges. When using a noise filter, check the voltage and current and install it as close to the product as possible. 13. Do not use thinner to clean the product. Use commercially available alcohol.

14. Be sure to confirm the name and polarity for each terminal before wiring the terminal block and connectors. 15. Use the product within the noted supply voltage and rated load. 16.

Do not connect anything to unused terminals. 17. Output turns OFF when the mode is changed or settings are initialized. Take this into consideration when setting up the control system. 18.

Install an external switch or circuit breaker that complies with applicable IEC60947-1 and IEC60947-3 requirements and label them clearly so that the operator can quickly turn OFF the power. 19. Use the specified cables for the communications lines and stay within the specified DeviceNet communications distances. Refer to the User's Manual (Cat. No. N129) for details on communications distance specifications and cables. 20. Do not pull the DeviceNet communications cables with excessive force or bend them past their natural bending radius. !CAUTION Do not allow pieces of metal, wire clippings, or fine metallic shavings or filings from installation to enter the product. Doing so may occasionally result in minor electric shock, fire, or malfunction.

Do not use the product in locations where flammable or explosive gases are present. Doing so may occasionally result in explosion, causing minor or moderate injury, or property damage. Do not attempt to disassemble, repair, or modify the product. Doing so may occasionally result in minor or moderate injury due to electric shock. Do not use the equipment for measurements within Measurement Categories III and IV for K3HB-X and II, III, and IV for K3HB-S, K3HB-V, and K3HB-H (according to IEC61010-1). Doing so may occasionally cause unexpected operation, resulting in minor or moderate injury, or damage to the equipment. Use the equipment for measurements only within the Measurement Category for which the product is designed. Perform correct setting of the product according to the application. Failure to do so may occasionally cause unexpected operation, resulting in minor or moderate injury, or damage to the equipment. Ensure safety in the event of product failure by taking safety measures, such as installing a separate monitoring system. Product failure may occasionally prevent operation of comparative outputs, resulting in damage to the connected facilities and equipment. Tighten the screws on the terminal block and the connector locking screws securely using a tightening torque within the following ranges. Loose screws may occasionally cause fire, resulting in minor or moderate injury, or damage to the equipment. Terminal block screws: 0.43 to 0.

58 N·m Connector locking screws: 0.18 to 0.22 N·m Make sure that the product will not be adversely affected if the DeviceNet cycle time is lengthened as a result of changing the program with online editing. Extending the cycle time may cause unexpected operation, occasionally resulting in minor or moderate injury, or damage to the equipment. Before transferring programs to other nodes or changing I/O memory of other nodes, check the nodes to confirm safety. Changing the program or I/O memory of other nodes may occasionally cause unexpected operation, resulting in minor or moderate injury, or damage to the equipment. 30 Digital Indicators K3HB-X/-V/-H/-S 21. Do not connect or remove connectors while the DeviceNet power is being supplied. Doing so will cause product failure or malfunction. 22. Use cables with a heat resistance of 70°C min. Noise Countermeasures 1. Do not install the product near devices generating strong high-frequency waves or surges, such as high-frequency welding and sewing machines. 2. @@@@ Do not wire in parallel with or in the same cable as power lines.



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