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You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON K3MA-J. You'll find the answers to all your questions on the OMRON K3MA-J in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual OMRON K3MA-J
User guide OMRON K3MA-J
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Instruction manual OMRON K3MA-J

OMRON

Process Meter
K3MA-J

Highly Visible LCD Display with 2-color (Red and Green) LEDs

- Multi-range DC voltage/current input.
- Front-panel key operation for easy setting.
- Average processing function suppresses flicker.
- Scaling: front-panel forced-zero, zero-limit functions.
- Easy confirmation of max/min display.
- Short 80-mm depth (measured from edge of face plate).
- Finger protective cover (standard equipment) guards against electric shock.
- Water- and dust-proof NEMA-4X (IP66 equivalent) front panel.
- Recognized to U.S. and Canadian requirements under the Component Recognition Program of UL.
- CE marking.

Model Number Structure

■ **Model Number Legend**

K3MA-J-□□□

1. **Input Type**
 J: DC voltage/current
 2. **Output Type**
 None: No output
 A2: 2 relay contact outputs (SPST-NO)

3. **Supply Voltage**
 100-240 VAC: 100 to 240 VAC
 24 VAC/VDC: 24 VAC/VDC


Ordering Information

■ **List of Models**

Input type	Supply voltage	Output	Model
DC voltage/current	100 to 240 VAC	None	K3MA-J 100-240VAC
	24 VAC/VDC	2 relay contact outputs (SPST-NO)	K3MA-J-A2 100-240VAC
	24 VAC/VDC	None	K3MA-J 24 VAC/VDC
		2 relay contact outputs (SPST-NO)	K3MA-J-A2 24 VAC/VDC

■ **Accessories (Order Separately)**

Name	Shape	Model
Splash-proof Soft Cover		K32-49SC
Hard Cover		K32-49HC



UL CE

Process Meter **K3MA-J** 1



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Manual abstract:

· Front-panel key operation for easy setting. · Average processing function suppresses flicker. · Scaling, front-panel forced-zero, zero-limit functions. · Easy confirmation of max/min display. · Short 80-mm depth (measured from edge of face plate). · Finger protective cover (standard equipment) guards against electric shock. · Water- and dust-proof NEMA4X (IP66 equivalent) front panel. · Recognized to U.S. and Canadian requirements under the Component Recognition Program of UL.

· CE marking. Model Number Structure Model Number Legend K3MA-J-@ 12 3 3. Supply Voltage 100-240VAC: 100 to 240 VAC 24VAC/VDC: 24 VAC/VDC
1. Input Type J: DC voltage/current 2. Output Type None: No output A2: 2 relay contact outputs (SPST-NO) Ordering Information List of Models Input type DC voltage/current Supply voltage 100 to 240 VAC 24 VAC/VDC None 2 relay contact outputs (SPST-NO) None 2 relay contact outputs (SPST-NO) Output Model K3MA-J 100-240VAC K3MA-J-A2 100-240VAC K3MA-J 24VAC/VDC K3MA-J-A2 24VAC/VDC Accessories (Order Separately) Name Splash-proof Soft Cover Shape K32-49SC Model Hard Cover K32-49HC Process Meter K3MA-J 1 Specifications Ratings Model Supply voltage Operating voltage range Power consumption (under maximum load) Insulation resistance Dielectric strength Noise immunity K3MA-J 100-240VAC, K3MA-J-A2 100-240VAC 100 to 240 VAC 85% to 110% of the rated supply voltage 6 VA max.

4.5 VA max. (24 VAC) 4.5 W max. (24 VDC) K3MA-J 24VAC/VDC, K3MA-J-A2 24VAC/VDC 24 VAC/VDC 20 M min.

(at 500 VDC) between external terminal and case. Insulation provided between inputs, outputs, and power supply. 2,000 VAC for 1 min between external terminal and case. Insulation provided between inputs, outputs, and power supply. $\pm 1,500$ V on power supply terminals in normal or com- ± 480 V on power supply terminals in normal mode. mon mode. $\pm 1,500$ V in common mode. ± 1 μ s, or 100 ns for square-wave noise with 1 ns. ± 1 μ s, or 100 ns for square-wave noise with 1 ns. Vibration: 10 to 55 Hz, Acceleration: 50 m/s² 5 min each in X, Y, and Z directions for 10 sweeps.

150 m/s² (100 m/s² for relay contact outputs) 3 times each on 3 axes, 6 directions. Operating: -10°C to 55°C (with no condensation or icing) Storage: -25°C to 65°C (with no condensation or icing) Operating: 25% to 85% (with no condensation) UL3121-1, conforms to EN61010-1 (Pollution degree 2/overvoltage category II) Conforms to VDE0106/P100 (finger protection) EN61326+A1 Industry CISPR 11 Group 1 class A: CISRP16-1/-2 CISPR 11 Group 1 class A: CISRP16-1/-2 EN61326+A1 Industry EN61000-4-2: 4 kV contact discharge 8 kV air discharge Immunity RF-interference: EN61000-4-3: 10 V/m (amplitude-modulated, 80 MHz to 1 GHz) Electrical Fast Transient Noise: EN61000-4-4: 2 kV (power line) Immunity Burst Noise: 1 kV line to line (I/O signal line) Immunity Surge: EN61000-4-5: 1 kV (power line) 2 kV line to ground (power line) Immunity Conducted Disturbance: EN61000-4-6: 3 V (0.15 to 80 MHz) Immunity Voltage Dip/Interrupting: EN61000-4-11: 0.5 cycle, 0, 180°, 100% (rated voltage) Approx. @@@@Leading zeros are not displayed. @@The decimal point position can be set as desired. Max. hold (maximum value), Min. @@Forced-zero (with front-panel key) Zero-limit Scaling teach function Display color change (green (red), green, red (green), red) OUT type change (upper limit, lower limit, upper/lower limit) Average processing (simple average) Relays: 2 SPST-NO 750 ms max. Front panel: NEMA4X for indoor use (equivalent to IP66) Rear case: IEC standard IP20 Terminals: IEC standard IP00 + finger protection (VDE0106/100) Non-volatile memory (EEPROM) (possible to rewrite 100,000 times) Output Delay in comparative outputs Degree of protection Memory protection Measuring Ranges Process Voltage/Current Inputs Input DC voltage Measuring range 1.

000 to 5.000 V 0.000 to 5.000 V 5.000 to 5.

000 V 10.00 to 10.00 V DC current 4.00 to 20.00 mA/ 0.

00 to 20.00 mA Measuring accuracy Input impedance 1 M min. Displayable range 19999 to 99999 (with scaling function) $\pm 0.1\%$ FS ± 1 digit max. (at 23 $\pm 3^\circ$ C) $\pm 0.1\%$ FS ± 1 digit max. (at 23 $\pm 5^\circ$ C) $\pm 0.1\%$ FS ± 1 digit max. (at 23 $\pm 3^\circ$ C) 45 Input/Output Ratings Relay Contact Output Item Rated load (UL ratings) Rated carry current Max. contact voltage Max.

contact current Max. switching capacity Min. permissible load (P level, reference value) Mechanical life Electrical life (at an ambient temperature of 20°C) Resistive load (cos = 1) 5 A at 250 VAC, 5 A at 30 VDC 5 A max. (at COM terminal) 250 VAC, 150 VDC 5 A (at COM terminal) 1,250 VA, 150 W 10 mA at 5 VDC 5,000,000 times min. (at a switching frequency of 1,200 times/min) 100,000 times min. (at a rated load switching frequency of 10 times/min) 250 VA, 30

W Inductive load (cos = 0.4, L/R=7 ms) 1.5 A at 250 VAC, 1.5 A at 30 VDC Process Meter K3MA-J 3 Connections Terminal Arrangement Power supply Output terminals 100- to 240-VAC type or 24-VAC/ VDC type (No polarity for 24-VDC connection.) A1 A2 Models with comparative output OUT1 OUT2 E1 E2 E3 E4 E4 Input terminals Voltage input E5 E5 COM Current input E6 COM E6 For voltage input For current input Terminal No.

A1 - A2 E4 , E6 - E5 E1 , E2 - E3 Name Operation power Analog input Outputs Description Connects the operation power supply. Connects the voltage or current analog input. Outputs the relay outputs. Block Diagram Input circuit Microcomputer EEPROM Key Display Output circuit Contact output (See note.) X 5V 12 V Constant voltage circuit Power supply circuit Note: Relay output models only.

Input Circuits Analog Input (DC Voltage/Current) A Voltage input 4 B COM 5 To A/D Current input 6 45 COM 5 To A/D A+B=1 M 4 Process Meter K3MA-J Operation Main Functions Input Types and Ranges Input type (setting parameter) Input range (in-t) Function Selects DC voltage/current signal input Input range (setting parameters) 0 to 20 mA 4 to 20 mA 0 to 5 V 1 to 5 V (0-20) (4-20) (0-5) (1-5) (5) (10) Setting range Displayable from -19999 to 99999 with scaling function. The position of the decimal point can be set as desired. ± 5 V ± 10 V Note: The initial value for the input range is "4 to 20 mA (4-20)."

Scaling · Analog (Process) Inputs The K3MA-J converts input signals into desired physical values. INPUT2: DISPLAY2: INPUT1: DISPLAY1: Any input value Displayed value corresponding to INPUT2 Any input value Displayed value corresponding to INPUT1 When DISPLAY1 is set for INPUT1, and DISPLAY2 is set for INPUT2, a line will be displayed joining the two points.

(Raise shift, reverse scaling, plus/minus display, etc., can be adjusted as desired.) Parameter inp.1 dsp.1 inp.2 dsp.2 Setting value -19999 to 99999 -19999 to 99999 -19999 to 99999 -19999 to 99999 Meaning Input value for dsp.



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Maintain the load within the ratings specified in the specifications. 3. Check each terminal for correct number and polarity before connecting it. Incorrect or reverse connections may damage or burn out internal components in the product. 4.

Tighten the terminal screws securely. The recommended tightening torque is 0.43 to 0.58 Nm. Loose screws may cause fire or malfunction. 5. Do not connect anything to unused terminals. 6. @@Also provide appropriate indications of such devices. 7.

Do not attempt to disassemble, repair, or modify the product. 8. @@@@- Locations subject to exposure to water, oil, or chemicals. · Locations subject to direct sunlight. @@- Locations subject to severe changes in temperature. · Locations subject to icing or condensation. · Locations subject to shock or vibration. 2. @@3. @@4.

Conduct aging for 15 minutes min. @@@@The product service life depends on the ambient temperature. The higher the ambient temperature, the shorter the service life. @@@@Do not, however, allow only the terminals to be cooled. Doing so will increase measurement error.

@@Use these relays within their rated load and electrical life. @@@@There are some parameters that are not displayed for certain models. @@@@Setting average processing, display color settings, and other advanced-function parameters. Stopped Measurement Power ON Operation level + Time set by user (See note.) 1 s min.

Protect level + 1 s min. 1 s min. Flashing stops if key is released. -1234.5 Continue to press the key for 2 s min. Indicates change of level. Initial setting level Password "-0169" 1 s min. Advanced-function setting level Note: The move-to-protect-level time can be set in the advanced-function setting level. Process Meter K3MA-J 11 Parameters Note: 1. Some parameters are not displayed for certain models.

2. The K3MA-J will stop measurement if the level is changed to the initial setting level or the advanced-function setting level. 3. If the input range is changed, some parameters are set to default values. Therefore, set the input range first. 4. Settings displayed in reversed colors are defaults. Power ON Operation level Current value For models with the comparative output function MODE OUT1 value - MODE Set one of these. OUT1 upper-limit value - MODE OUT1 lower-limit value - MODE OUT2 value - MODE Set one of these. OUT2 upper-limit value - MODE OUT2 lower-limit value - MODE 12 Process Meter K3MA-J Press Level Key for more than 3 s.

Press Level Key Initial setting level for more than 1 s. Advanced-function setting level Enter password "-0169" MODE Press Level Key for more than 1 s. Input type /// Parameter initialization /// Unit: times MODE Scaling input value 1 - Average processing MODE Scaling display value 1 - MODE Models with the comparative output function OUT1 hysteresis MODE Scaling input value 2 - - - MODE OUT2 hysteresis MODE Scaling display value 2 - - - MODE Zero-limit Zero-limit - MODE Decimal point position / - MODE OUT1 type Upper Limit Lower Limit Upper/Lower Limits MODE When zerolimit is ON Zero-limit value MODE Display color change MODE OUT2 type Upper Limit Lower Limit Upper/Lower Limits Green (red) Green Red (green) MODE Move to advancedfunction MODE setting level MODE Red - - Display auto-return time - - MODE Move-to-protectlevel time Unit: s - - MODE Unit: s Process Meter K3MA-J 13 Press Operation level Level Key + Mode Key for more than 1 s. Protect level Mode Key Press Level Key + for more than preset time. Operation/adjustment lockouts MODE // Setting level lockout MODE // Setting change lockout MODE / Forced-zero shift lockout MODE / Operation/Adjustment Lockouts Restricts key operations for operation level and adjustment level.

Parameter oapt Setting 0 1 2 Allowed Allowed Allowed Operation level Current value display Set value display Allowed Allowed Prohibited Initial Settings Power ON Press the Level Key level. for 3 s min. to move to the initial setting · Initial setting is 0. · This cannot be displayed on models not equipped with the comparative output function. Select the input type.

Set the scaling values and specify output operating action as required. Setting Level Lockout Restricts shifting to initial setting level or advanced-function setting level. Parameter Setting icpt 0 1 2 Shift to initial setting level Allowed Prohibited Shift to advancedfunction setting level Allowed Prohibited Prohibited Press the Level Key operation level. for less than 1 s min. to return to the If required, shift to the advanced-function setting level to set the number of measurements for averaging, hysteresis values, auto-zero limit value, display color change, display auto-return time, or move-to-protect-level time. Setting Change Lockout Restricts setting changes by key operation. When this lockout is set, it is no longer possible to shift to a setting change mode. Parameter wrpt off on Setting Setting change by key operation Allowed Prohibited Specify set value of OUT 1 and 2. However, all protect level parameters can still be changed. Measurement starts.

Forced-zero Lockout Restricts the setting or release of a forced-zero by front-panel key operation. Parameter =rpt off on Setting Setting/release of forced-zero by key operation Allowed Prohibited 14 Process Meter K3MA-J Setting Example Initial Settings The settings for the following example are shown here. Display value DISPLAY 2 () Example: Tank pressure display 4 to 20 mA 0 to 980 kPa 1 2 SV Max Min E8AA-M10 Pressure Sensor K3MA-J-A2 24VAC/VDC MAX/MIN LEVEL MODE SHIFT UP DISPLAY 1 () INPUT 1 () Input value INPUT 2 () Here, the pressure inside the tank is to be displayed in units of 0.1 kPa. · Pressure Sensor: E8AA-M10 Measuring range: 0 to 980 kPa, output 4 to 20 mA 1. Set the K3MA-J input type to the 4 to 20 mA input range. Parameter: in-t (input type), Setting value: 4-20 2. Set the display values for the corresponding input values. Set the scaling as shown below for the following correspondence: input 4 mA-->display 0.0, input 20 mA-->display 980.

0 Parameter Setting value inp.1 (scaling input value 1) 4.00 dsp.1 (scaling display value 1) 00000 inp.2 (scaling input value 2) 20. 00 dsp.2 (scaling display value 2) 09800 dp (decimal point position) %%%%.% Note: The decimal point position here refers to the position in the number after scaling. When setting the scaling display value, it is necessary to consider the number of digits to be displayed past the decimal point. Troubleshooting When an error occurs, error details will be displayed on the main indicator.

Confirm the error from the main indicator and take the appropriate countermeasures.



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Level display Not lit 5 Main indicator e111 e111 Error contents RAM memory error EEPROM memory error Countermeasures Repair is necessary. Consult your OMRON sales representative. When this error is displayed, press the Level Key for 3 seconds, and the settings will be restored to the factory settings. If the error cannot be recovered, repair is necessary. Consult your OMRON sales representative. Not lit Flashes s.err You will see this indication when turning ON the At the initial setting level, set the input type and other parameters the first time after purchase. This is be-rameters according to your application. cause the input signal value is 0 mA at that time even though the range is factory set to 4 to 20 mA.

Input error Promptly change the input voltage/current to a value that falls within the measurement range. If the error cannot be recovered, repair is necessary. Consult your OMRON sales representative. Promptly change the input to a value that falls within the specified range. The scaling value may be inappropriate. Review the scaling value at the initial setting level. Not lit Flashes 99999 The scaling display value exceeds 99999. Not lit 19999 Flashes - The scaling display value is lower than -19999. Promptly change the input to a value that falls within the specified range. The scaling value may be inappropriate.

Review the scaling value at the initial setting level. Process Meter K3MA-J 15 Warranty and Limitations of Liability WARRANTY OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

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No. N108-E1-04A In the interest of product improvement, specifications are subject to change without notice. OMRON Corporation Industrial Automation Company Industrial Devices and Components Division H.Q. Measuring Components Department Shiokoji Horikawa, Shimogyo-ku, Kyoto, 600-8530 Japan Tel: (81)75-344-7080/Fax: (81)75-344-7189 Printed in Japan 0903-0.4M (1001) (B) 16 .



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