

# Measuring and Monitoring Relays

K8DT

Achieve Downsizing Control Panels  
and Reducing Wiring



- Models with transistor outputs available for long-term contact reliability.
- Control panel downsizing and reduced wiring; flexible layout with a 17.5-mm width
- Push-In Plus terminal blocks for easy wiring

# For building green control panels

Natural disasters caused by global warming and climate change are became global social issue, that drives over 150 countries and regions worldwide to take action toward decarbonization. Our goal is to reduce greenhouse gas (GHG) emissions toward half by through new ways of building control panels, that key figure of the manufacturing site.



### Process

Realize greatly reduces design/ manufacturing work

Innovation for design, building Process

Further Evolution for Panels

### Panel

Realize compact & highly reliable control panels

Building sustainable control panels

Creating green control panels

Simple & Easy People

### Green

Reducing GHG emission of control panels to achieve carbon neutrality

### People

Provide reliable and comfortable manufacturing for all people who deal with control panels

## Integrating green perspectives into Value Design

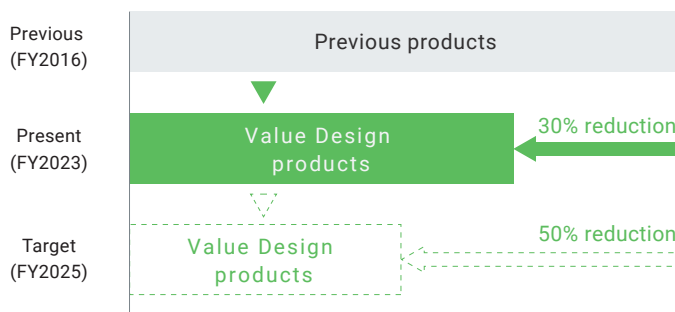
Value Design for Panel (Value Design) is the common concept shared across OMRON's in-panel product specifications to deliver new value to your control panels.

This Value Design also integrate environment consideration concept that enable earth and user-friendly control panel building.



- 1 ..... Unified height & slim size\*<sup>1</sup>
- 2 ..... Side-by-side mounting at (55°C) ambient temperature\*<sup>2</sup>
- 3 ..... Unique Push-In Plus technology\*<sup>1</sup>
- 4 ..... Front-in and front-release wiring
- 5 ..... eCAD library
- 6 ..... Certification for CE, UL, and CSA
- 7 ..... **Green features that save energy and resources**\*<sup>3</sup>

CFP of control panel (total GHG emissions)\*<sup>4</sup>



\*1. Expect for some products

\*2. Side-by-side mounting is possible in the same series

\*3. Greener design compared to previous (2016) products

\*4. CFP (carbon footprint) of control panel is a calculation result of referring the life cycle assessment method that based on international standards ISO14067 which define CO<sub>2</sub> quantitative conversion of the environmental burden at every stage, from manufacturing, transportation, use, and disposal of the control panel (product). According to OMRON investigation in May 2023.

## What Are K8DT Measuring and Monitoring Relays?

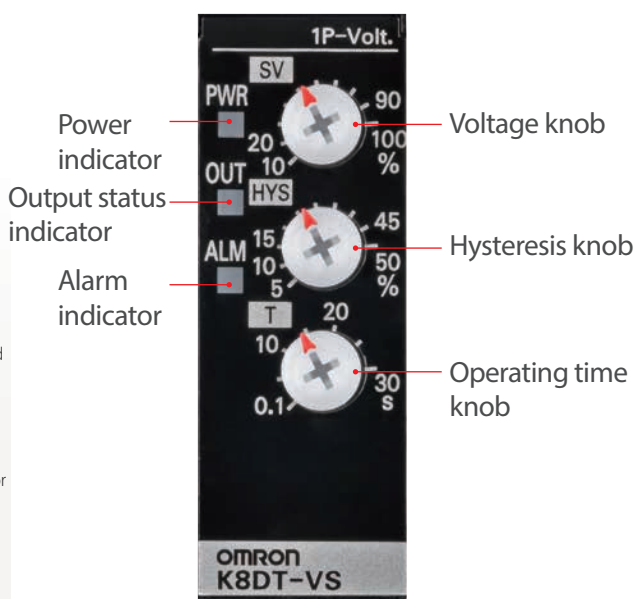
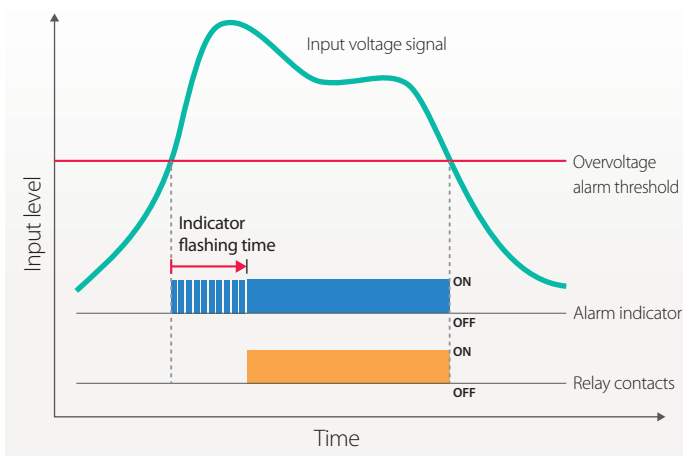
# These Relays function as alarms for which you can set a threshold value

**Input signal\*** A voltage, current, temperature (thermocouple or platinum resistance thermometer), or water level (electrode) can be input.

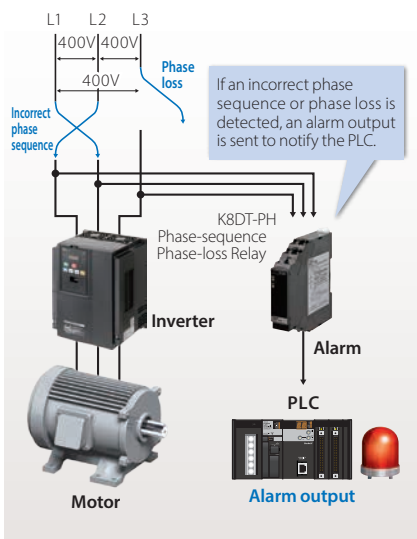
**Alarm output** You can select a relay or transistor output.

\*There are different models for different inputs.

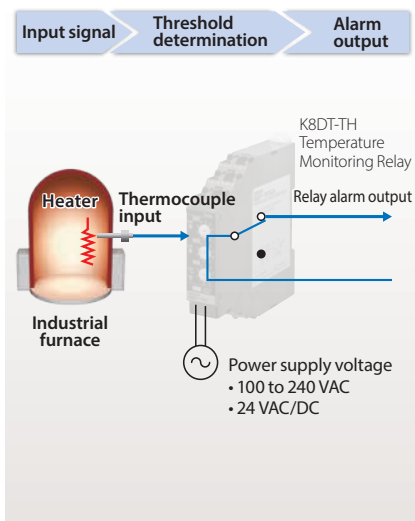
K8DT-VS Relay for voltage monitoring  
Operation Timing Chart



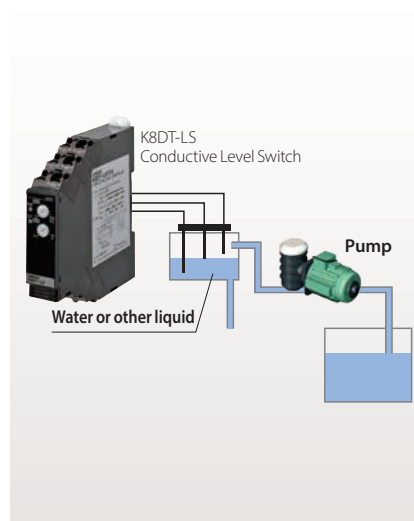
### Motor Protection Relays



### Temperature Monitoring Relays



### Water Level Control Relays



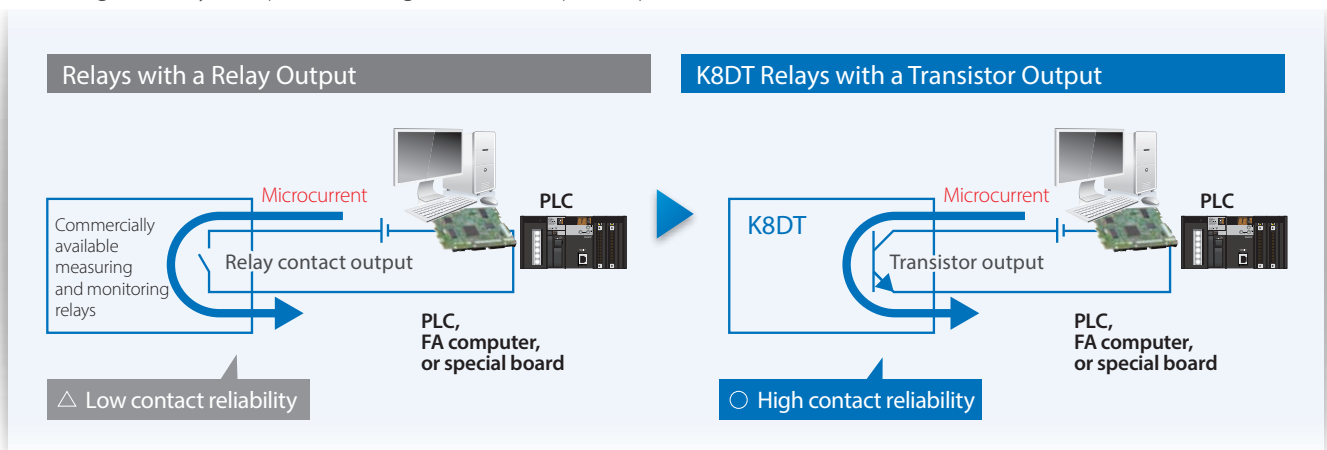
# Long-term Contact Reliability Contributes to Visualization of Fault Status

## Industry First\*: Models with Transistor Outputs

\*According to OMRON investigation in November 2015.

Use transistor outputs to take advantage of the long-term contact reliability.

The operating frequency of Measuring and Monitoring Relays is low, which means the surfaces of relay contacts can deteriorate and reduces reliability. Particularly for microcomputer board and PLC inputs, a microcurrent of 5 mA or less for switching reliability is required, making transistor outputs superior.



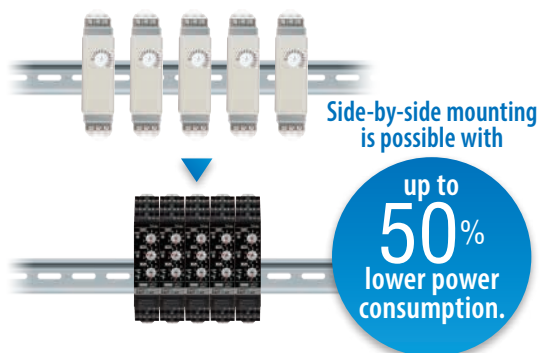
**Point** **Visualization of Fault Status**  
 Visualization of fault status can be achieved by inputting it to a PLC or other host devices. In turn, visualization of fault status contributes to rapid recovery from equipment faults. The use of transistor outputs enables stable input of fault signals to a PLC or other host devices, helping to create IoT equipment.

## Low Power Consumption Design Enables Side-by-side Mounting

The power consumption has been greatly reduced in comparison with commercially available measuring and monitoring relays.

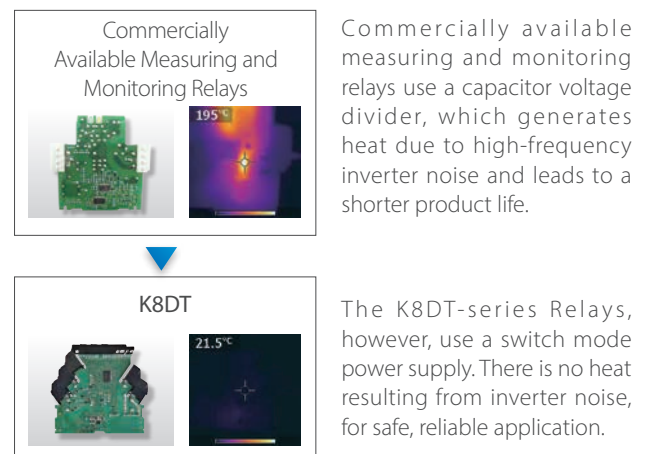
A lower power consumption means that internal heat generation is suppressed, which enables side-by-side mounting.

Commercially Available Measuring and Monitoring Relays



## Reliability Even in Poor Noise Environments

There is no heat generated by high-frequency noise, which enhances reliability.



# Control Panel Downsizing and Reduced Wiring; Flexible Layout with a 17.5-mm Width

This Is the Shape That Resulted from Efforts to Downsize Panels and Reduce Wiring.

- The slim body is only 17.5 mm wide to enable control panel downsizing.
- To simplify wiring, Push-In Plus terminal blocks are positioned at the front.
- To simplify changing settings, the setting switches were placed on the front.



Setting Switches on the Front Panel



A Slim 17.5 mm

## Push-In Plus Terminal Blocks for Easy Wiring



Just Insert Wires: No Tools Required

Now you can use Push-In Plus terminal blocks to reduce the time and work involved in wiring.

Greatly Reduce Wiring Work with Push-In Plus Terminal Blocks

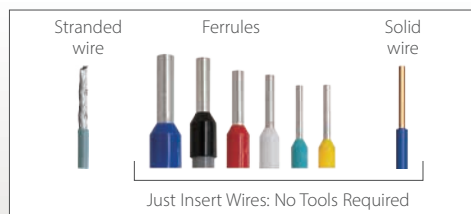


Conventional screw terminal blocks OMRON Push-In Plus terminal block

\*Information for Push-In Plus and screw terminal blocks is based on OMRON's actual measurement value data.

Wiring Possible with Stranded Wires

You can insert wires with pin terminals or ferrules, or you can also insert solid wires or stranded wires.



# Application Examples: Motor Protection



\*1 CCC certification does not apply to the K8DT-AS□TD/-AW□TD.

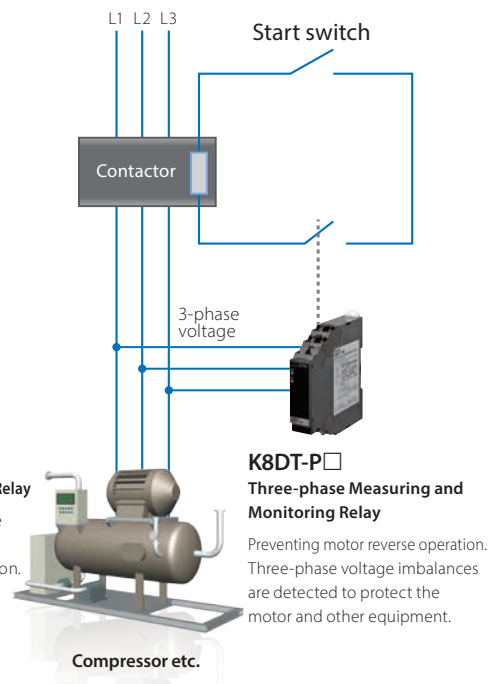
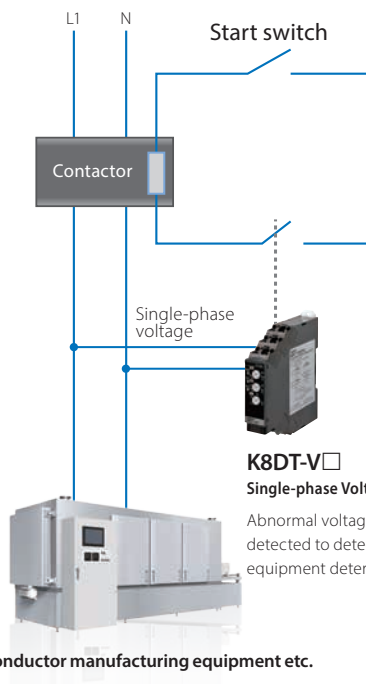
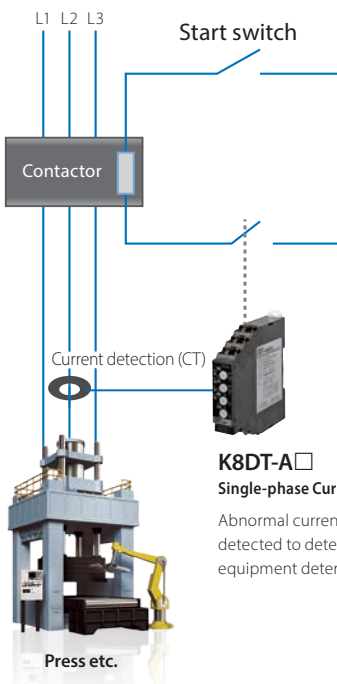
\*2 LR certification applies only to the K8DT-P□.

## K8DT-A□/V□/P□

**Application** Ideal for monitoring for error trends in motors and other equipment (e.g., equipment with three-phase motors, expensive equipment, and equipment with compressors).

**Features** High reliability for worry-free application.

### Handle a Wide Range of Applications



**Greater Reliability**

The product lineup includes new models with transistor outputs for greater reliability when inputting signals to PLCs.

**Long Service Life**

Low power consumption and low heat generation design achieve a long service life.

**Applicable Standards**

Certified for main safety standards. Applicable with the voltage specifications of various countries.

**Handles Power Supply Voltages Worldwide**

Area	Power supply voltage
China	Three-phase, 380 V
India	Three-phase, 400 or 415 V
Thailand	Three-phase, 380 V
USA	Three-phase, 460 or 480 V
Europe	Three-phase, 380, 400, or 415 V



## Application Examples:

# Temperature Monitoring Relay



### K8DT-TH

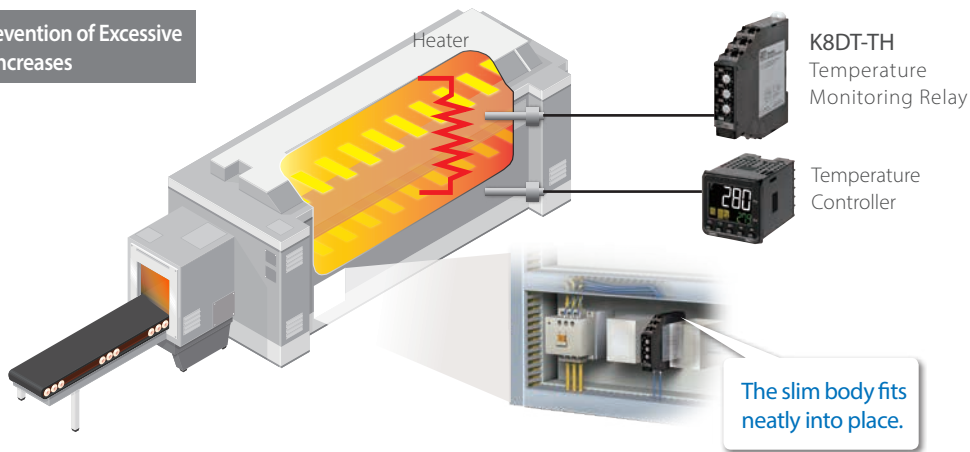
**Application** Ideal for prevention of excessive temperature increase in heaters

(e.g., electronic components, semiconductors, and industrial furnaces).

**Features**

- (1) Slim design enables addition to narrow spaces.
- (2) Rotary switches simplify setting procedure.
- (3) Safety considerations with a manual reset button.

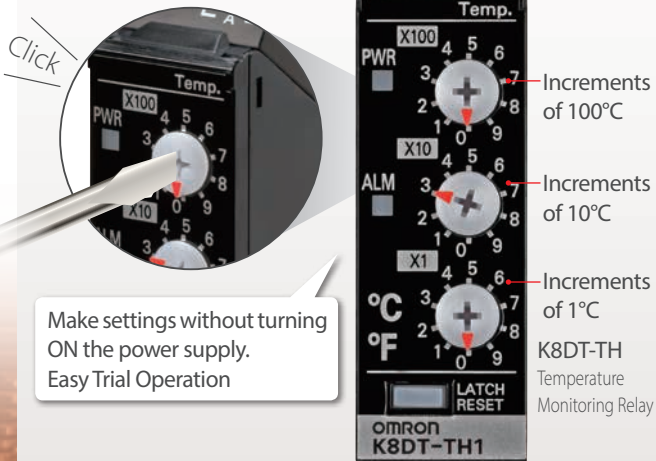
Redundant Prevention of Excessive Temperature Increases



### Simple Temperature Settings

Rotary switch settings in 1°C increments from 0 to 999°C.

\*For the K8DT-TH1.



### Safety Manual Reset Button

The alarm status is held when a fault occurs.

Manual Reset Button

Restart the system after confirming onsite safety.





# Application Examples: Water Level Control



\* CCC certification does not apply to the K8DT-LS1TD.

## K8DT-LS

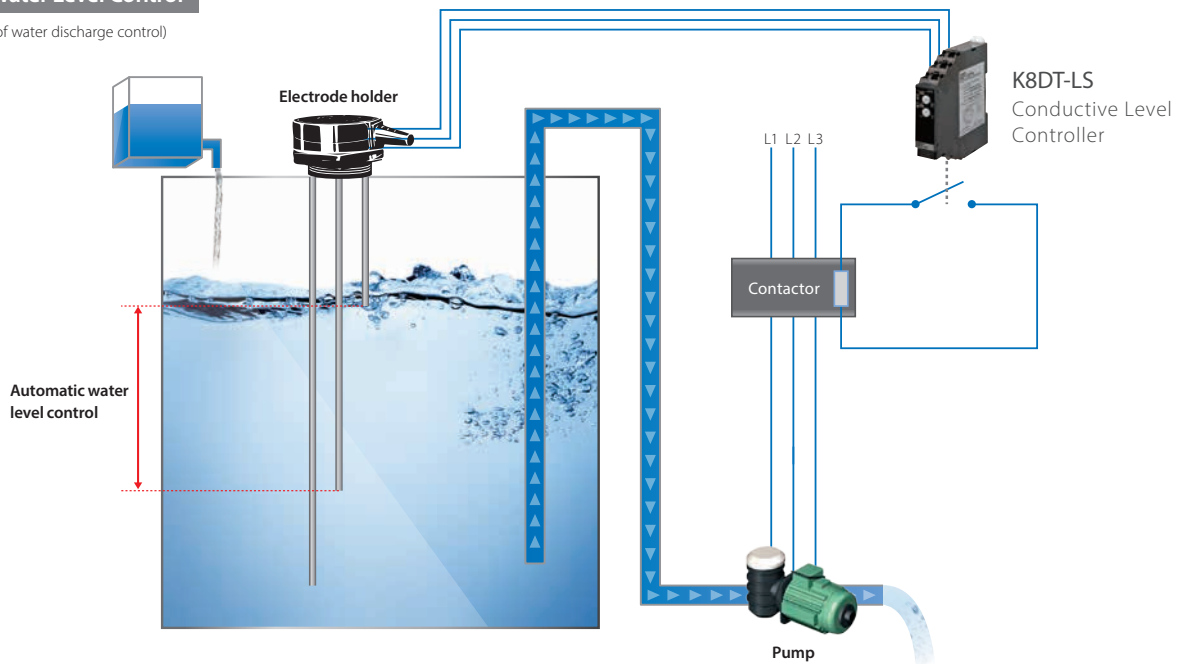
**Application** Ideal for water level detection and control in tanks (e.g., water processing and circulation equipment).

- Features**
- (1) The slim body helps you downsize control panels.
  - (2) Long-awaited models with long-life transistor outputs.
  - (3) ON-delay timer built in to eliminate contact chattering.

\*When Holding Electrodes Are Not Used

### Tank Water Level Control

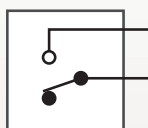
(Example of water discharge control)



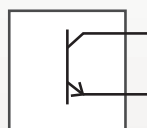
### Models with Transistor Outputs Added

Using a Relay with a transistor output eliminates worries about contact wear.

Models with Relay Outputs



Models with Transistor Outputs



### ON-delay Timer

Prevent contact chattering due to waves on the water surface.



Operating sensitivity knob  
(10 k to 100 kΩ)

Timer knob  
(0.1 to 10 s)



# Product Lineup



### Slim and Extended

Push-In Plus terminal block  
Models with transistor outputs are available.

K8DT



Optional Front Cover for the K8DT (Sold Separately)  
Y92A-D1A



### Extended

Screw terminals

K8AK



Compact and Simple  
Screw terminals

K8DS

● : Model available.

Model	Terminal block	Output	Motor protection							Temperature monitoring	Water level control		
			Single-phase				Three-phase						
			Current monitoring		Voltage monitoring		Phase sequence/phase loss	Voltage asymmetry monitoring	Voltage monitoring			Composite monitoring	Thermistor monitoring
			Overcurrent or undercurrent monitoring	Overcurrent and undercurrent monitoring	Overvoltage or undervoltage monitoring	Overvoltage and undervoltage monitoring							
K8AK	Screws	Relay output	●	●	●	●	●	●	●	●	●		
K8DS			—	—	—	—	●	●	●	●	—	—	
K8DT	Push-In Plus	Transistor output	●	●	●	●	●	●	●	●	●		
			●	●	●	●	●	●	●	●	—	●	

Certified for Main Safety Standards for Easy Equipment Exporting



\*1 CCC certification does not apply to the K8DT-AS□TD/-AW□TD/-TH-LS1TD.

\*2 LR certification applies only to the K8DT-P□.

## Selection Guide

		Input	Alarm operation	Function	Width	Terminal block	Output	Model	
Motor protection	Single-phase	Current	Upper or lower limit (switched)		22.5 mm	Screws	One SPDT relay output	K8AK-AS	
					17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-AS	
		Voltage	Upper and lower limits (redundant operation)		22.5 mm	Screws	Two SPDT relay outputs	K8AK-AW	
					17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-AW	
		Voltage	Upper or lower limit (switched)		22.5 mm	Screws	One SPDT relay output	K8AK-VS	
					17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-VS	
	Voltage	Upper and lower limits (redundant operation)		22.5 mm	Screws	Two SPDT relay outputs	K8AK-VW		
				17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-VW		
	Three-phase	Voltage	Fixed	Fixed		22.5 mm	Screws	One DPDT relay output	K8AK-PH
						17.5 mm	Screws	One SPDT relay output	K8DS-PH
			Fixed	Upper and lower limits		22.5 mm	Screws	Two SPDT relay outputs	K8AK-PM
						17.5 mm	Screws	One SPDT relay output	K8DS-PM
Fixed			Upper and lower limits		17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-PM	
				Upper limit	Upper limit		22.5 mm	Screws	One SPDT relay output
			17.5 mm			Screws	One SPDT relay output	K8DS-PA	
Upper and lower limits			Lower limit alarm		22.5 mm	Screws	Two SPDT relay outputs	K8AK-PW	
					17.5 mm	Screws	One SPDT relay output	K8DS-PU	
Upper and lower limits			Upper and lower limits		17.5 mm	Screws	One SPDT relay output	K8DS-PZ	
					17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-PZ	
Fixed			Fixed		22.5 mm	Screws	One SPDT relay output	K8AK-PT	
		22.5 mm		Screws	One SPDT relay output	K8AK-TS			
Temperature monitoring	Thermocouple or platinum resistance thermometer	Upper or lower limit (switched)		22.5 mm	Screws	One SPDT relay output	K8AK-TH		
				17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-TH		
Water level control	Electrode	Water supply or discharge (switched)		22.5 mm	Screws	One SPDT relay output	K8AK-LS		
				17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-LS		

**Note: Do not use this document to operate the Unit.**

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