

# 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

# New Value For Control Panels

Control Panels: The Heart of Manufacturing Sites.

Evolution in control panels results in large evolution in production facilities.

And if control panel design, control panel manufacturing processes, and human interaction with them are innovated, control panel manufacturing becomes simpler and takes a leap forward.

OMRON will continue to achieve a control panel evolution and process innovation through many undertakings starting with the shared Value Design for Panel \*1 concept for the specifications of products used in control panels.

\*1 Value Design for Panel



Our shared Value Design for Panel (herein after referred to as "Value Design") concept for the specifications of products used in control panels will create new value to our customer's control panels.

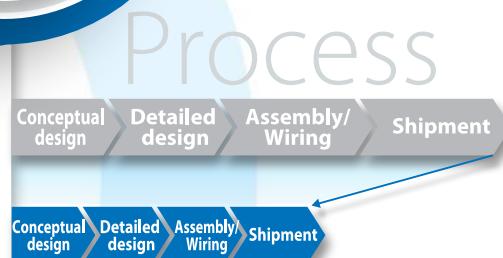
Combining multiple products that share the Value Design concept will further increase the value provided to control panels.



Further Evolution  
for  
**Panels**

**New Value**  
For  
Control Panels

Innovation for  
panel building  
**Process**



Simple & Easy  
for panel business  
**People**



Panels

People

# Achieve Downsizing Control Panels and Reducing Wiring

Protect Your Important Equipment from the Chance of Troubles

## Do You Face These Problems?

1. Alarms do not occur before equipment is damaged.
2. Protection is necessary because of poor power supply quality overseas.
3. Preventing excessive temperature increases in heaters is necessary.
4. Control panels for electrode-based water level control must be downsized.
5. Measuring and Monitoring Relays that conform to international safety standards are necessary.

## Let the K8DT Solve Your Problems

Install the K8DT for predictive maintenance and problem prevention measures for your equipment.



K8DT-AS    K8DT-AW    K8DT-VS    K8DT-VW    K8DT-PH    K8DT-PM    K8DT-PZ    K8DT-TH    Temperature Monitoring Relays  
K8DT-LS    Water Level Control Relays

### Motor Protection Relays

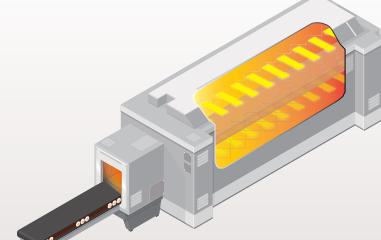
Detect abnormalities in motors and other equipment.



Press etc.

### Temperature Monitoring Relays

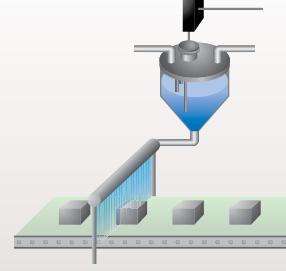
Detect excessive temperature increases in heaters.



Industrial furnaces etc.

### Water Level Control Relays

Detect abnormal water levels.



Washing equipment etc.

## What Are K8DT Measuring and Monitoring Relays?

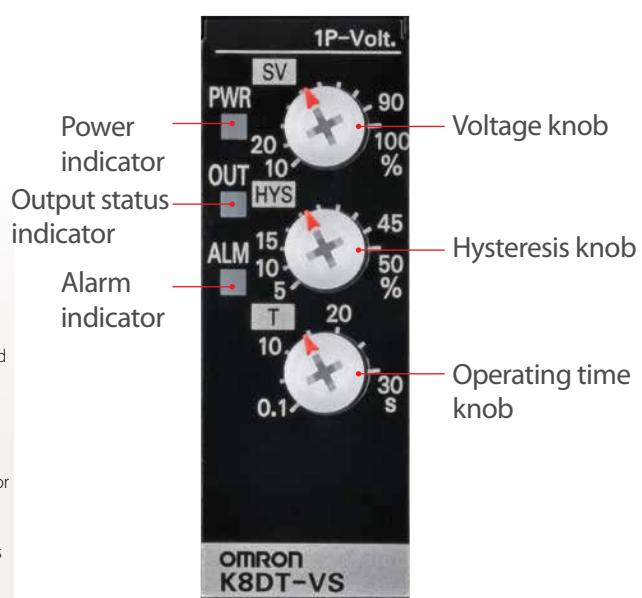
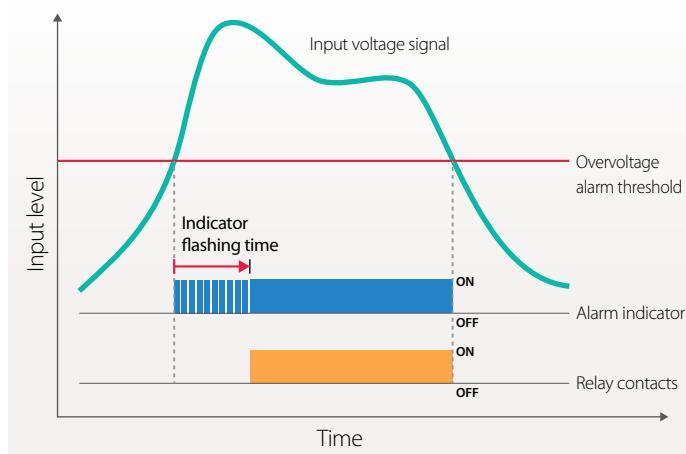
These Relays function as alarms for which you can set a threshold value

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

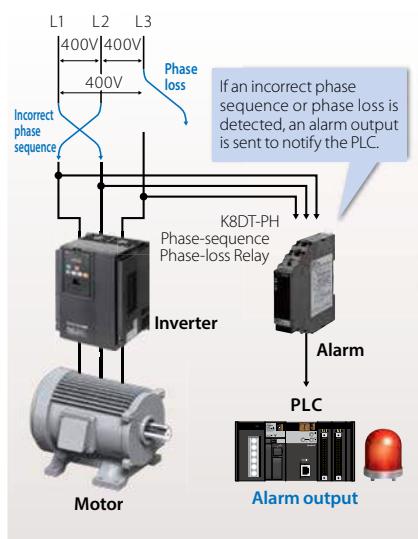
**Alarm output** You can select a relay or transistor output.

\*There are different models for different inputs.

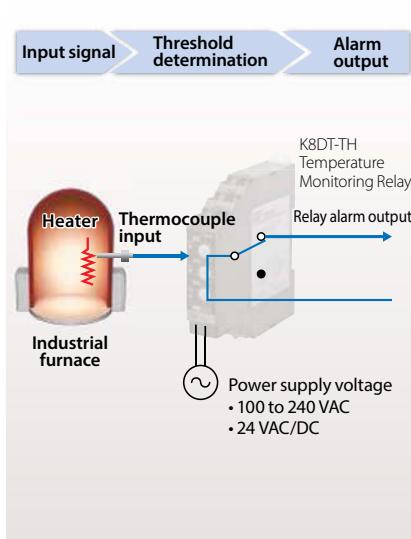
K8DT-VS Relay for voltage monitoring  
Operation Timing Chart



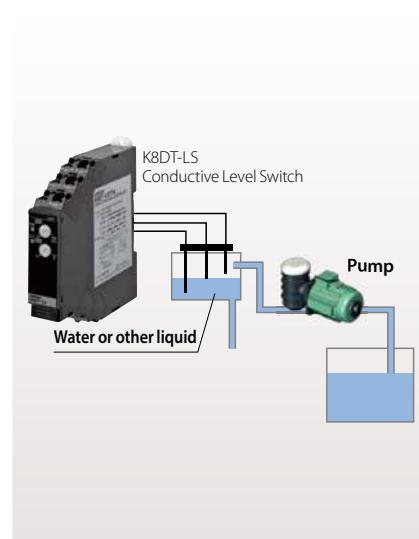
### Motor Protection Relays



### Temperature Monitoring Relays



### Water Level Control Relays



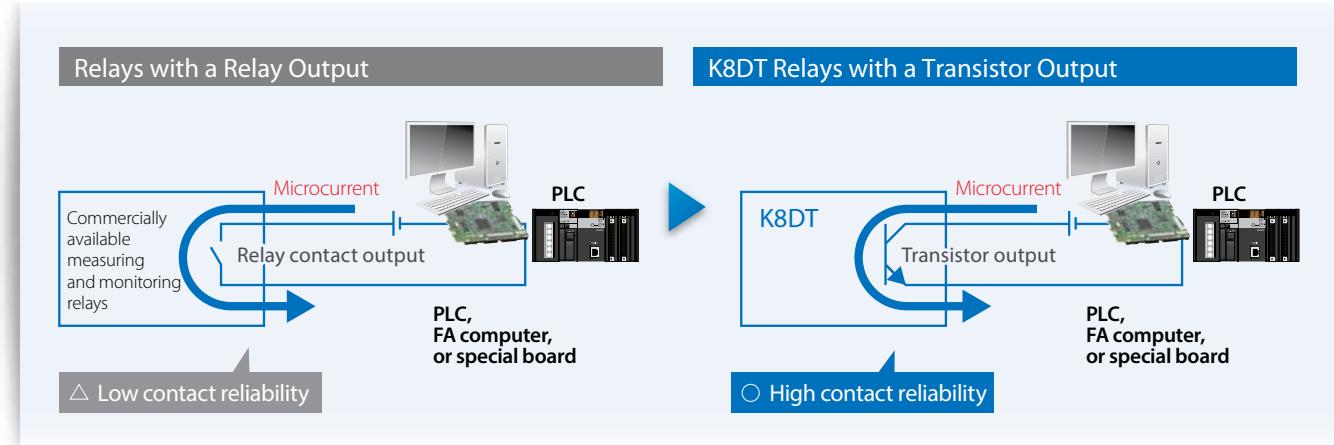
# Long-term Contact Reliability Contributes to Visualization of Fault Status

## 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 reduce reliability. Particularly for microcomputer board and PLC inputs, a microcurrent of 5 mA or less for switching reliability is required, making transistor outputs superior.



### Visualization of Fault Status

#### Point

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.

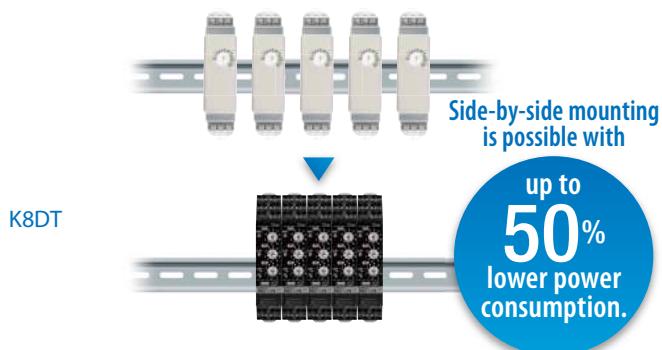
The use of transistor outputs enables stable input of fault signals to a PLC or other host devices, helping to create IoT equipment.

## 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.

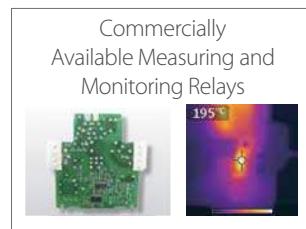
A lower power consumption means that internal heat generation is suppressed, which enables side-by-side mounting.

### Commercially Available Measuring and Monitoring Relays



## Reliability Even in Poor Noise Environments

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



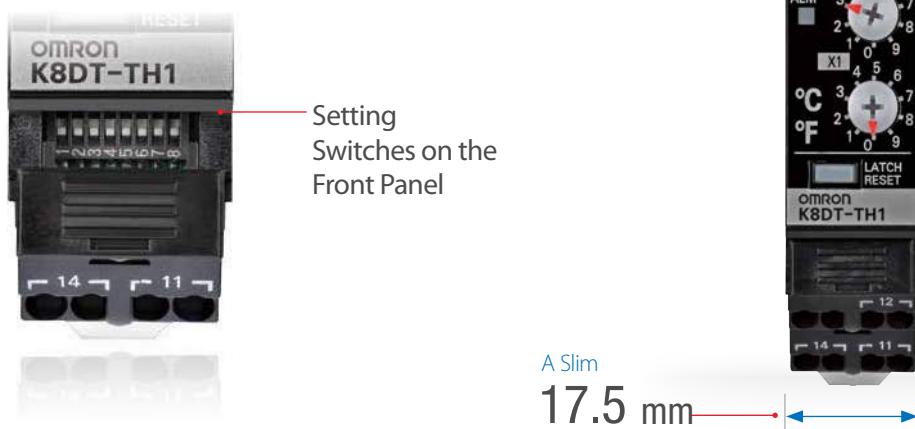
Commercially available measuring and monitoring relays use a capacitor voltage divider, which generates heat due to high-frequency inverter noise and leads to a shorter product life.

The K8DT-series Relays, however, use a switch mode power supply. There is no heat resulting from inverter noise, for safe, reliable application.

# 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.



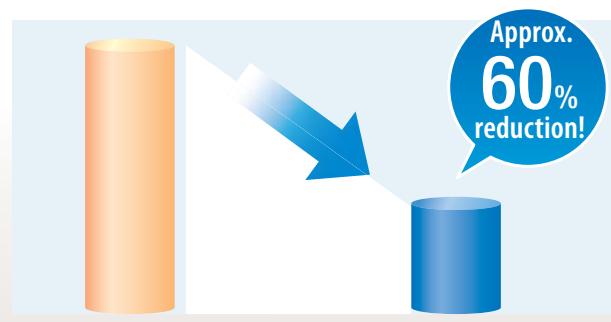
## Push-In Plus Terminal Blocks for Easy Wiring



### 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



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

### K8DT-A□/-V□/-P□

#### Application

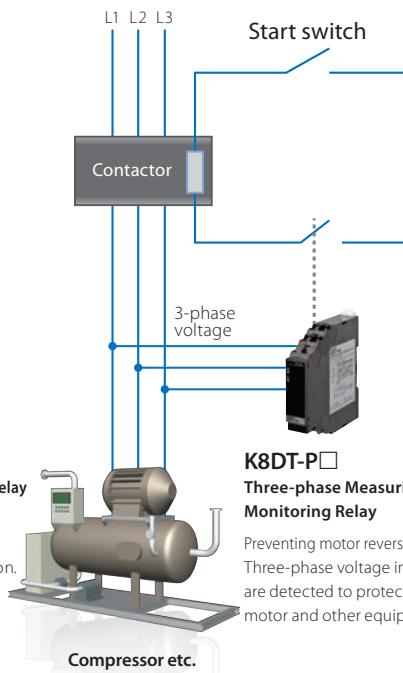
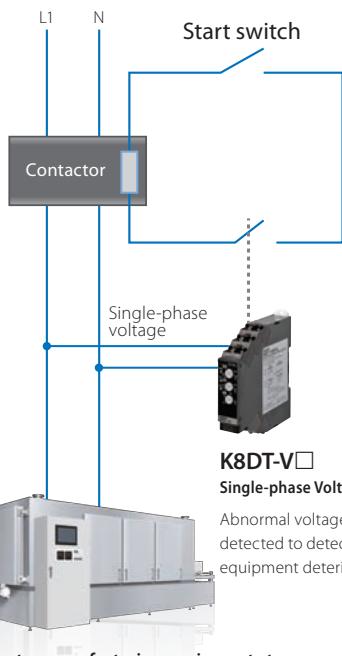
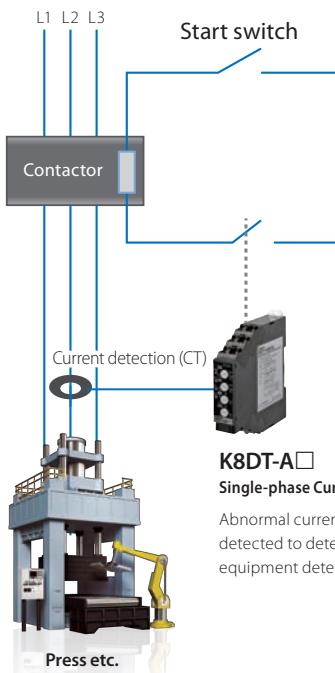
**Ideal for monitoring for error trends in motors and other equipment**

(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



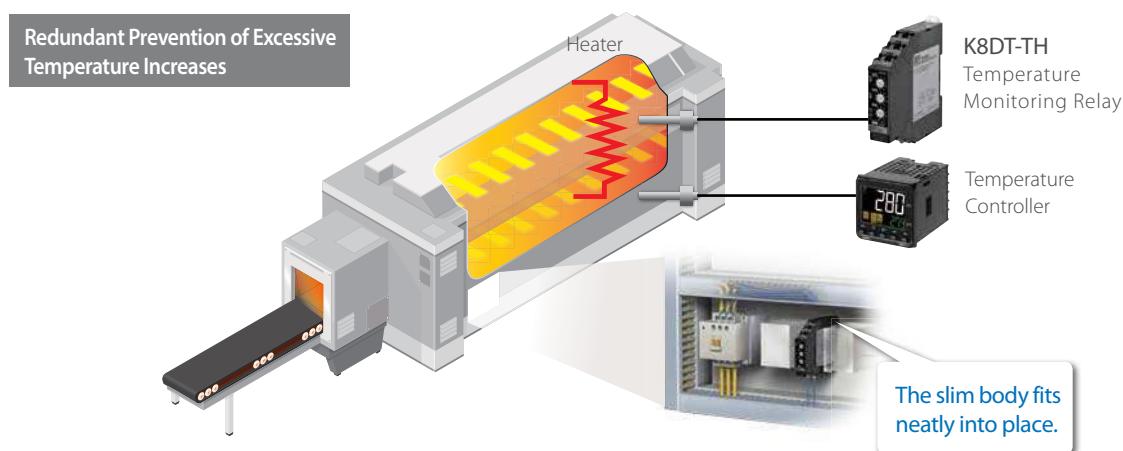
### K8DT-TH

#### 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.



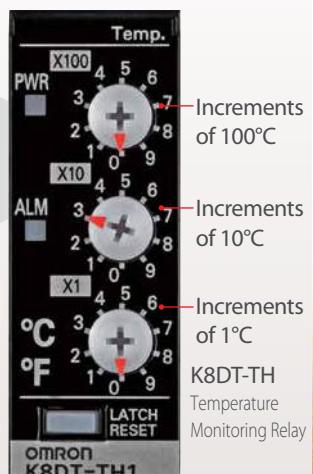
#### Simple Temperature Settings

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

\*For the K8DT-TH1.



Make settings without turning ON the power supply.  
Easy Trial Operation



#### Safety Manual Reset Button

The alarm status is held when a fault occurs.



Restart the system after confirming onsite safety.



# Application Examples:

## Water Level Control



K8DT-LS

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

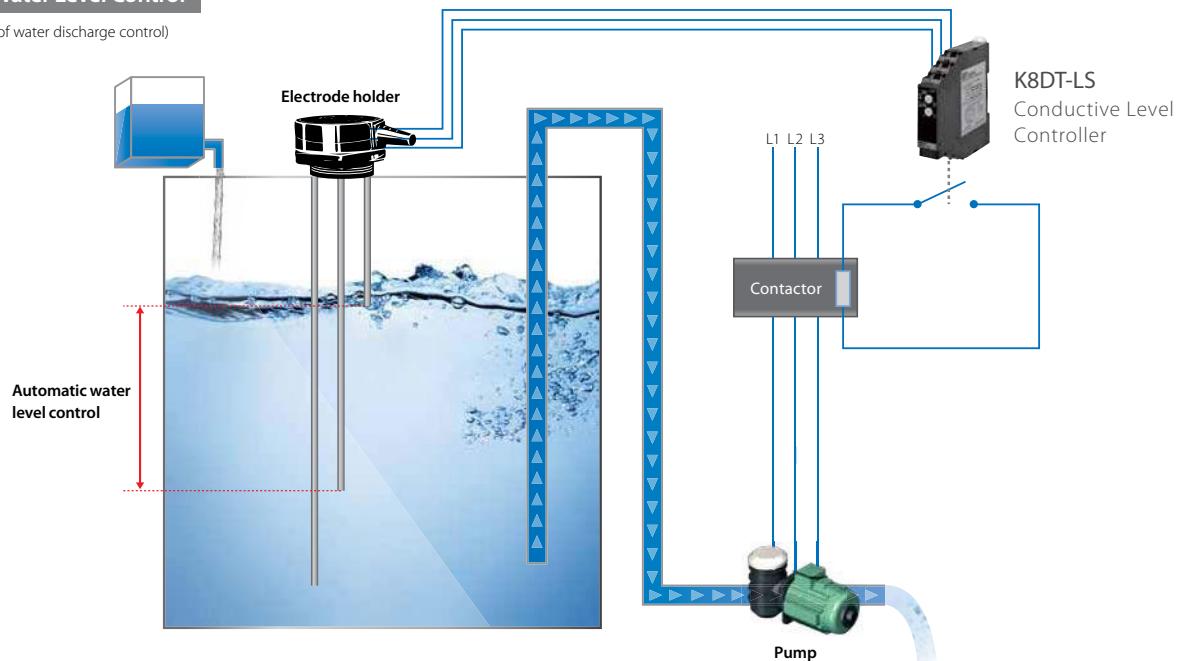
**Features**

- (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**

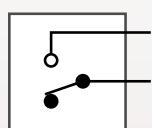
(Example of water discharge control)



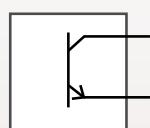
**Models with Transistor Outputs Added**

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.

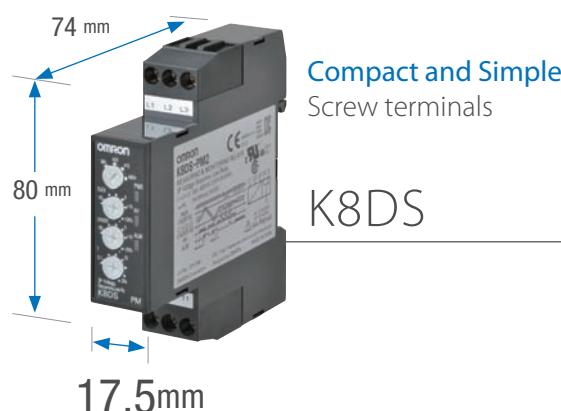


Operating sensitivity knob  
(10 k to 100 kΩ)

Timer knob  
(0.1 to 10 s)



# Product Lineup



● : 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				
			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



## Selection Guide

	Input	Alarm operation	Function	Width	Terminal block	Output	Model	
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	
		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	
		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	
Motor protection	Three-phase	Voltage	Fixed		22.5 mm	Screws	One DPDT relay output	K8AK-PH
			Fixed		17.5 mm	Screws	One SPDT relay output	K8DS-PH
			Fixed		17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-PH
		Upper and lower limits		22.5 mm	Screws	Two SPDT relay outputs	K8AK-PM	
				17.5 mm	Screws	One SPDT relay output	K8DS-PM	
		Upper and lower limits		17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-PM	
				22.5 mm	Screws	One SPDT relay output	K8AK-PA	
		Upper limit		17.5 mm	Screws	One SPDT relay output	K8DS-PA	
				22.5 mm	Screws	Two SPDT relay outputs	K8AK-PW	
		Lower limit alarm		17.5 mm	Screws	One SPDT relay output	K8DS-PU	
				17.5 mm	Screws	One SPDT relay output	K8DS-PZ	
		Upper and lower limits		17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-PZ	
				22.5 mm	Screws	One SPDT relay output	K8AK-PT	
		Fixed		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	

# Products That Create New Value in Control Panels

Value Design  
for  
Panel



Switch Mode  
Power Supplies  
S8VK-S



Uninterruptible  
Power Supply  
(UPS)  
S8BA



Power Monitors  
KM-N2/KM-N3



Measuring and  
Monitoring Relays  
K8DT



Solid-state Timers  
H3DT



Solid-state Timers  
H3Y(N)-B



Solid-state Timers  
H3RN-B



Liquid Leakage  
Sensor Amplifiers  
K7L-B



Sockets for Relays with  
Forcibly Guided Contacts  
(for G7SA)  
P7SA-PU



Common Sokets  
(for MY/H3Y(N)-B)  
PYF-PU(-L)



Common Sokets  
(for G2R-S/H3RN-B/K7L-B)  
P2RF-PU



Slim I/O Relays  
G2RV-SR



Slim I/O Relays  
G3RV-SR



I/O Relay Terminals  
G70V



Pushbutton Switches  
Push-In Plus  
Terminal Block Series  
A22N-P/A30N-P/M22N-P



Solid State Relays  
for Heaters  
G3PJ



DIN Track  
Terminal  
Block  
XW5T



Digital Temperature  
Controllers  
E5CC-B/E5EC-B



Panel Assist Web

[www.ia.omron.com/solution/panel/](http://www.ia.omron.com/solution/panel/)



Innovation in Control Panel Building  
Cat. No. Y218

Refer to the K8DT Measuring and Monitoring Relays Datasheets for details.

Before you place an order, please read and understand "Agreement for Using the Product" available on Omron's latest "Best control devices Omron", "General Brochure" or Omron's website.

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