Measuring and Monitoring Relays

K8DT

- 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

Building sustainable control panels

Panel

Realize compact & highly reliable 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.

Value Design for Panel

1 ..... Unified height & slim size*1

2 ..... Side-by-side mounting at (55°C) ambient temperature*2

3 ..... Unique Push-In Plus technology*1

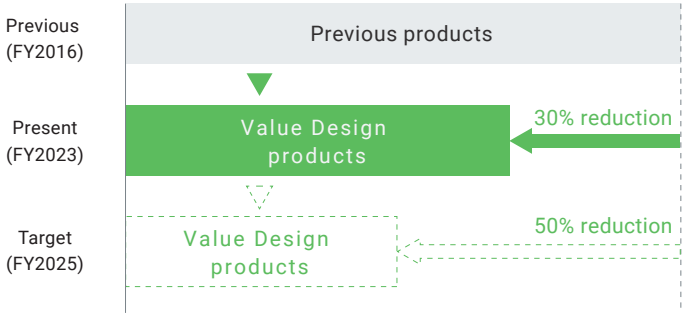
4 ..... Front-in and front-release wiring

5 ..... eCAD library

6 ..... Certification for CE, UL, and CSA

7 ..... Green features that save energy and resources*3

CFP of control panel (total GHG emissions)*4



*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 refering the life cycle assessment method that based on international standards ISO14067 which define CO_2 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?

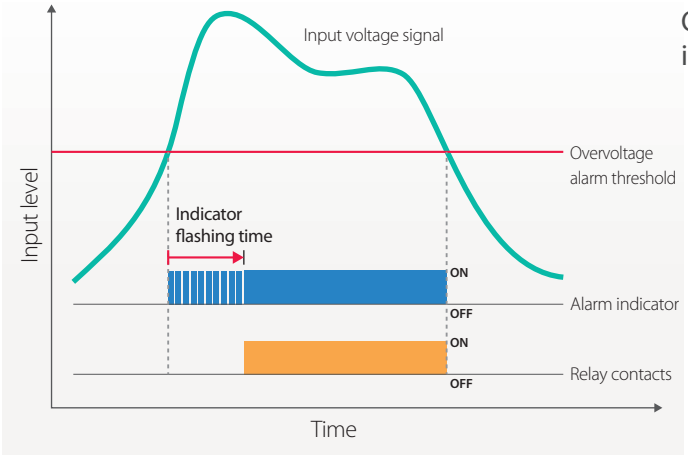
These Relays function as alarms for which you can set a threshold value

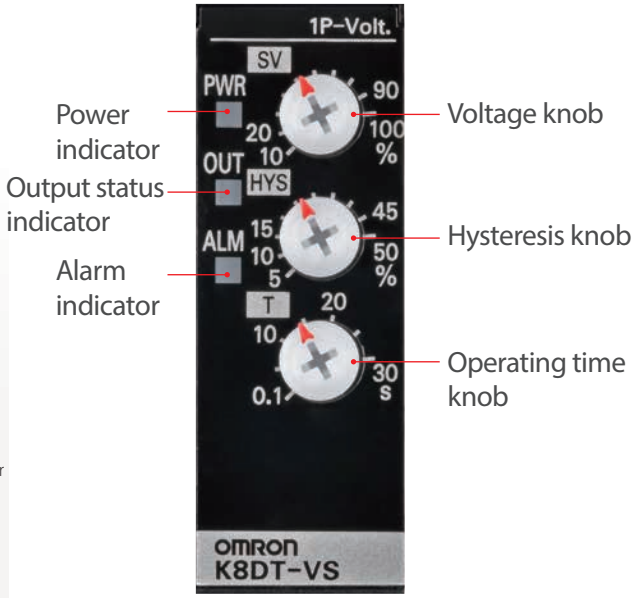
Input signal* A voltage, current, temperature (thermocouple or platinum resistance thermometer), or water level (electrode) can be input.

Alarm output You can select a relay or transistor output.

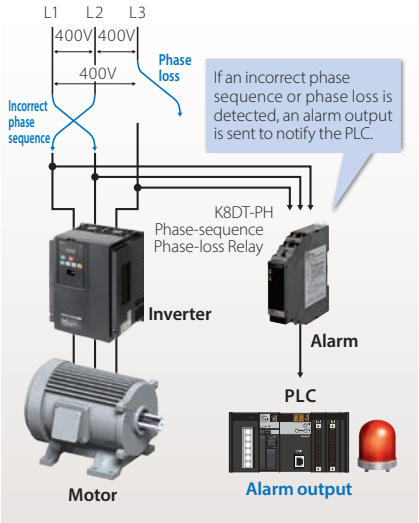
*There are different models for different inputs.

K8DT-VS Relay for voltage monitoring
Operation Timing Chart

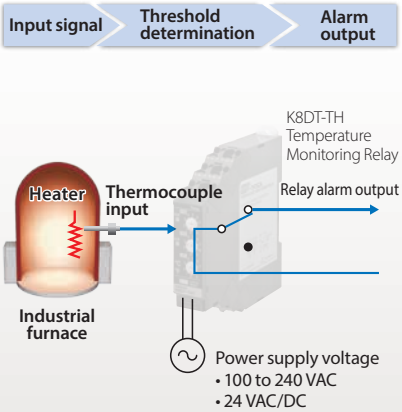




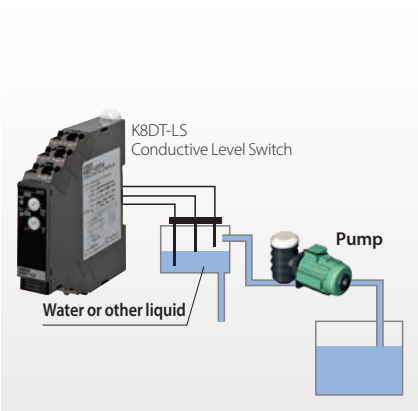
Motor Protection Relays



Temperature Monitoring Relays



Water Level Control Relays



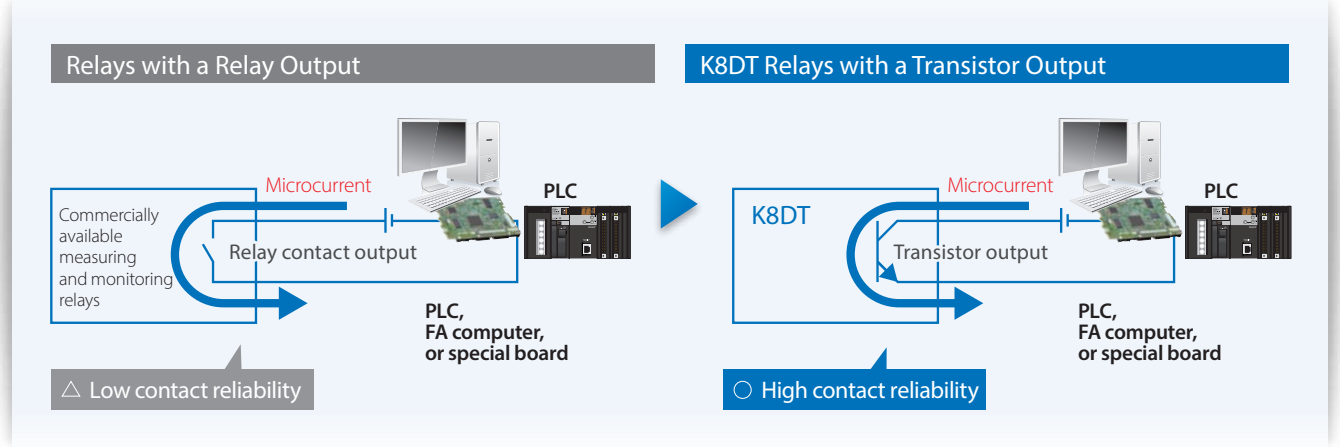
Long-term Contact Reliability Contributes to Visualization of Fault Status

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

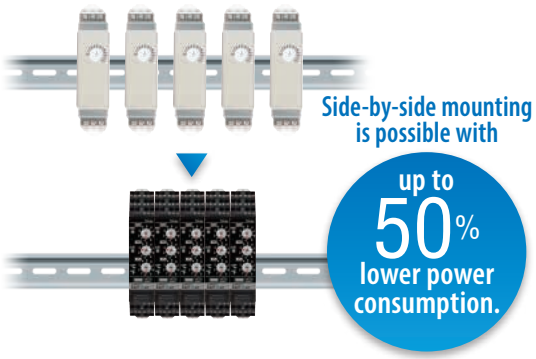
Visualization of fault status can be achieved by inputting it to a PLC or other host devices.
In turn, visualization of fault status contributes to rapid recovery from equipment faults.
The use of transistor outputs enables stable input of fault signals to a PLC or other host devices, helping to create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

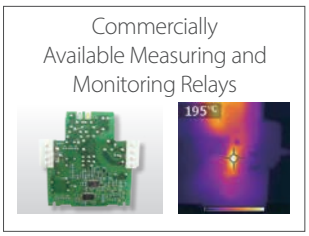
A lower power consumption means that internal heat generation is suppressed, which enables side-by-side mounting.

Commercially Available Measuring and Monitoring Relays

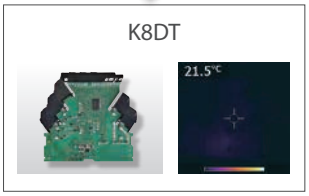


Reliability Even in Poor Noise Environments

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



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

Life Size

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

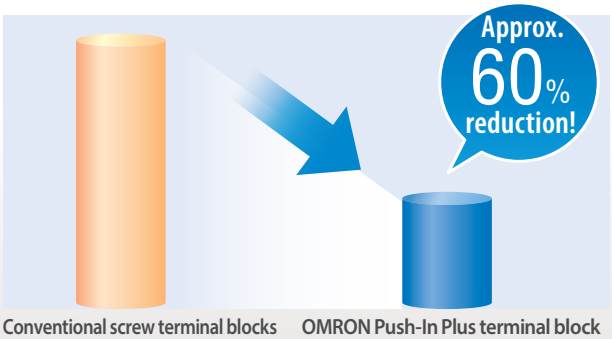
A Slim 17.5 mm

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

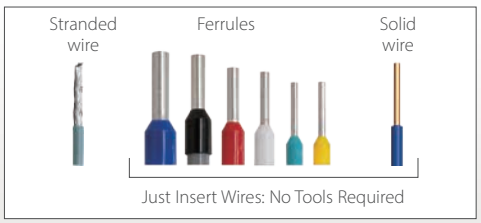


Conventional screw terminal blocks OMRON Push-In Plus terminal block

*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

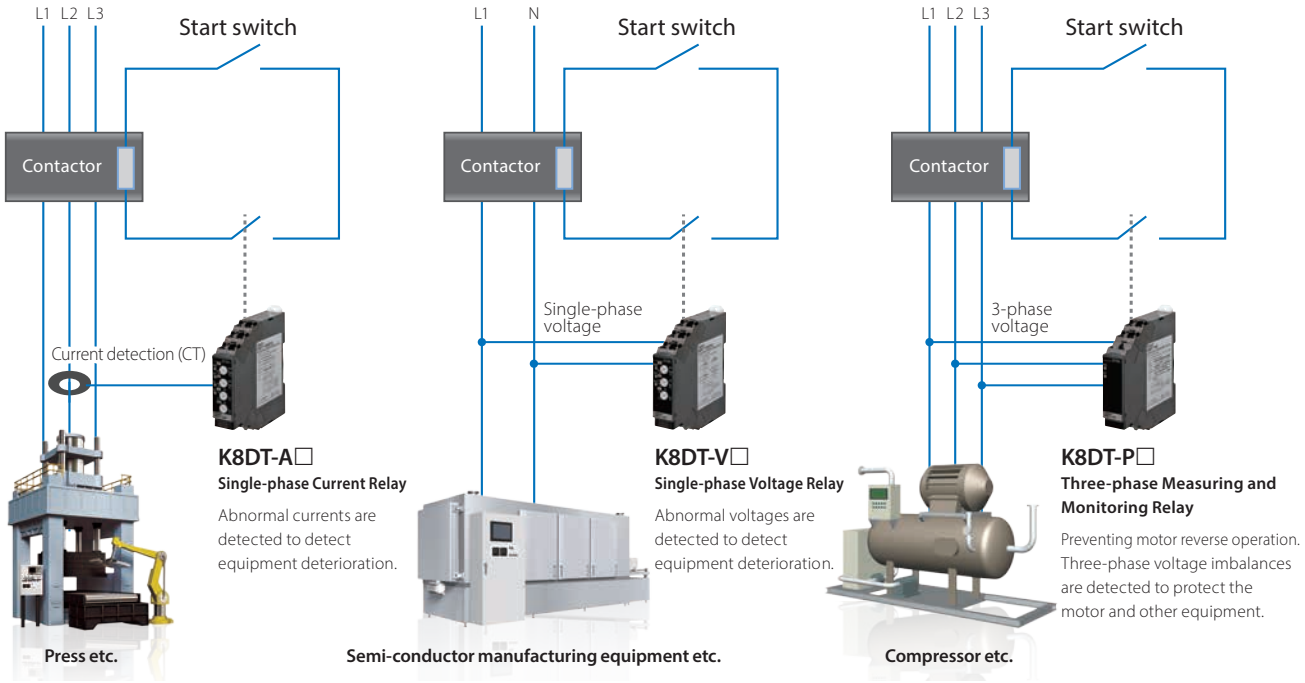
*1 CCC certification does not apply to the K8DT-AS☐TD/-AW☐TD.
*2 LR certification applies only to the K8DT-P☐.

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



K8DT-A☐
Single-phase Current Relay
Abnormal currents are detected to detect equipment deterioration.

Press etc.

K8DT-V☐
Single-phase Voltage Relay
Abnormal voltages are detected to detect equipment deterioration.

Semi-conductor manufacturing equipment etc.

K8DT-P☐
Three-phase Measuring and Monitoring Relay
Preventing motor reverse operation. Three-phase voltage imbalances are detected to protect the motor and other equipment.

Compressor etc.

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).

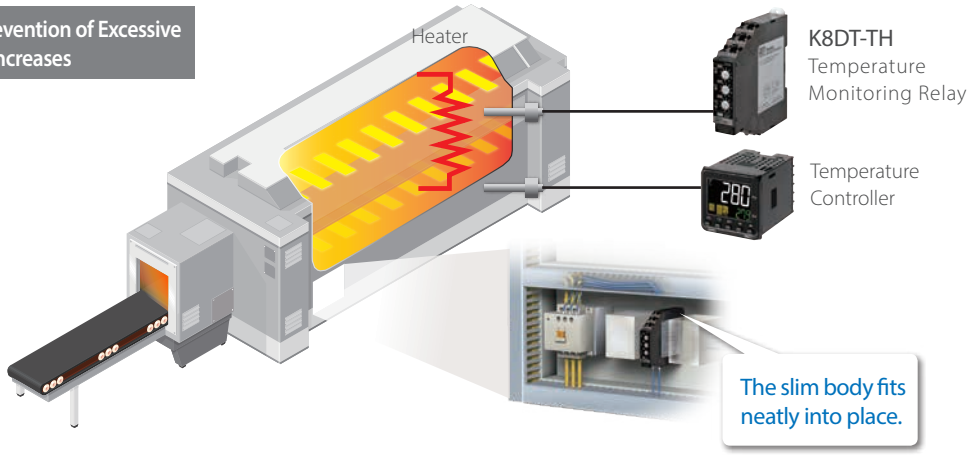
Features

(1) Slim design enables addition to narrow spaces.

(2) Rotary switches simplify setting procedure.

(3) Safety considerations with a manual reset button.

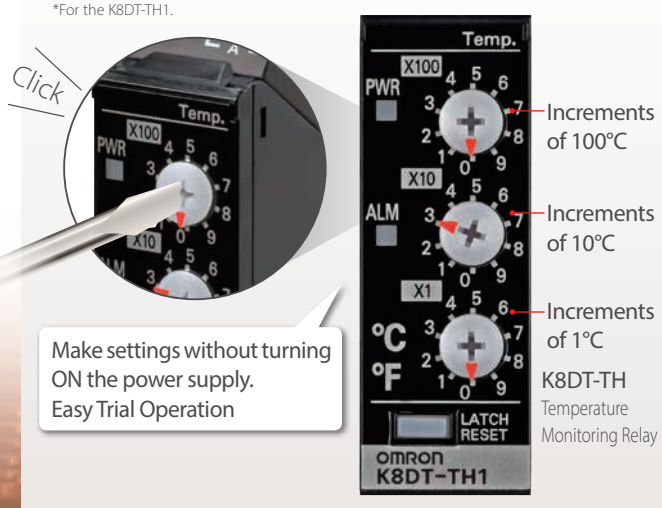
Redundant Prevention of Excessive Temperature Increases



Simple Temperature Settings

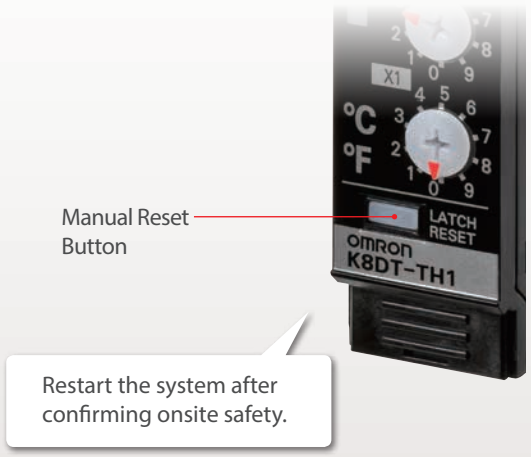
Rotary switch settings in 1°C increments from 0 to 999°C.

*For the K8DT-TH1.



Safety Manual Reset Button

The alarm status is held when a fault occurs.



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.

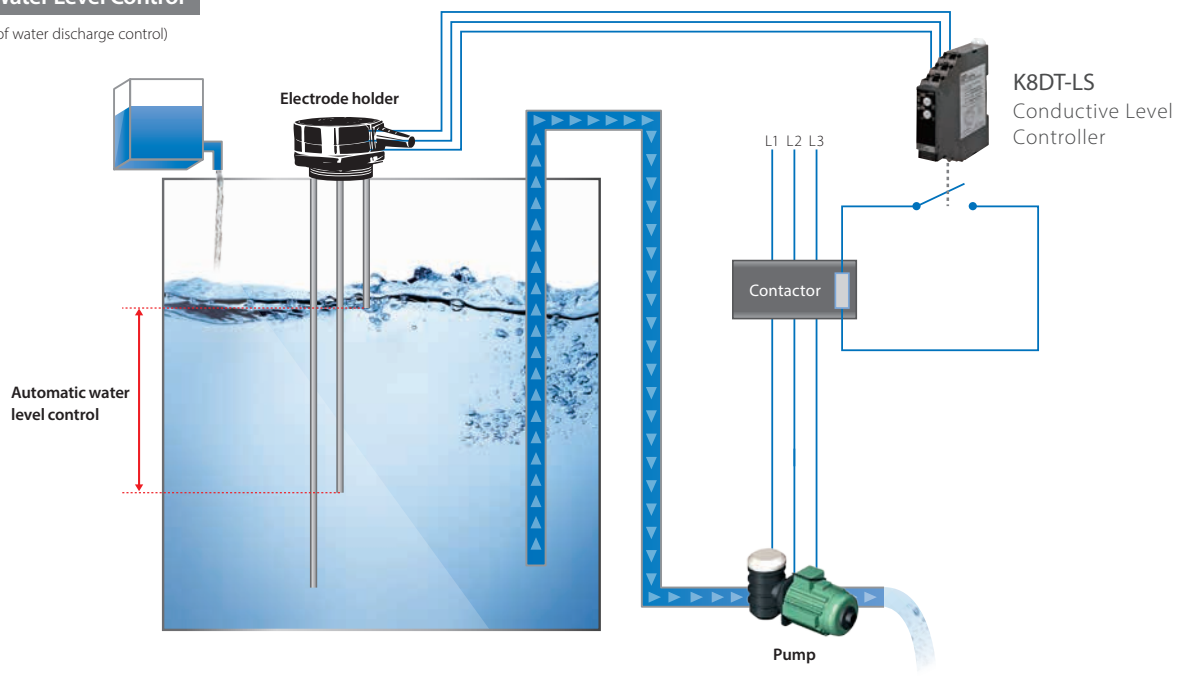
(2) Long-awaited models with long-life transistor outputs.

(3) ON-delay timer built in to eliminate contact chattering.

*When Holding Electrodes Are Not Used

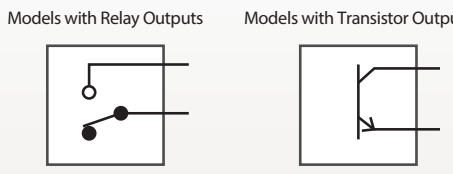
Tank Water Level Control

(Example of water discharge control)



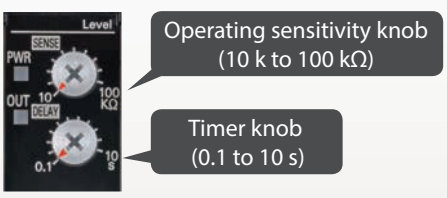
Models with Transistor Outputs Added

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

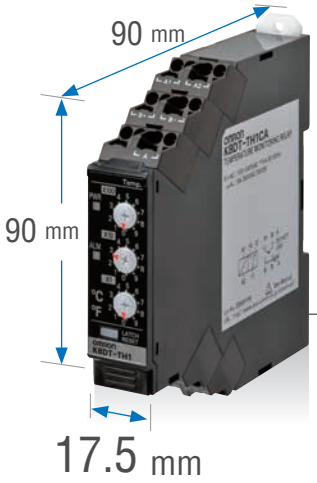


ON-delay Timer

Prevent contact chattering due to waves on the water surface.



Product Lineup



Slim and Extended

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

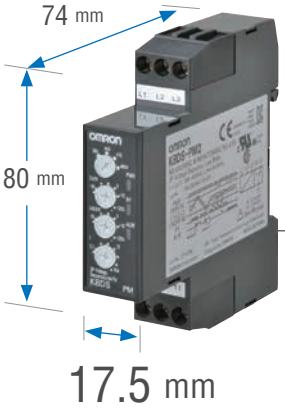
K8DT

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)	I< Single-phase Undercurrent or I> Single-phase Overcurrent	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)	I< Single-phase Undercurrent I> Single-phase Overcurrent	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)	U< Single-phase Undervoltage or U> Single-phase Overvoltage	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)	U< Single-phase Undervoltage U> Single-phase Overvoltage	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	Phase sequence, Phase loss	22.5 mm	Screws	One DPDT relay output	K8AK-PH
			Fixed	Phase sequence, Phase loss	17.5 mm	Screws	One SPDT relay output	K8DS-PH
			Fixed	Phase sequence, Phase loss	17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-PH
			Upper and lower limits	Phase sequence, Phase loss, U< Three-phase Undervoltage, U> Three-phase Overvoltage	22.5 mm	Screws	Two SPDT relay outputs	K8AK-PM
			Upper and lower limits	Phase sequence, Phase loss, U< Three-phase Undervoltage, U> Three-phase Overvoltage	17.5 mm	Screws	One SPDT relay output	K8DS-PM
			Upper and lower limits	Phase sequence, Phase loss, U< Three-phase Undervoltage, U> Three-phase Overvoltage	17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-PM
			Upper limit	Phase sequence, Phase loss, Three-phase Asymmetry	22.5 mm	Screws	One SPDT relay output	K8AK-PA
			Upper limit	Phase sequence, Phase loss, Three-phase Asymmetry	17.5 mm	Screws	One SPDT relay output	K8DS-PA
			Upper and lower limits	U< Three-phase Undervoltage, U> Three-phase Overvoltage	22.5 mm	Screws	Two SPDT relay outputs	K8AK-PW
			Lower limit alarm	Phase sequence, Phase loss, U< Three-phase Undervoltage	17.5 mm	Screws	One SPDT relay output	K8DS-PU
			Upper and lower limits	Phase sequence, Phase loss, U< Three-phase Undervoltage, U> Three-phase Overvoltage, Three-phase Asymmetry	17.5 mm	Screws	One SPDT relay output	K8DS-PZ
			Upper and lower limits	Phase sequence, Phase loss, U< Three-phase Undervoltage, U> Three-phase Overvoltage, Three-phase Asymmetry	17.5 mm	Push-In Plus	One SPDT relay output or one transistor output	K8DT-PZ
			Fixed	Phase sequence, Phase loss, Thermistor	22.5 mm	Screws	One SPDT relay output	K8AK-PT
			Fixed	Thermistor	22.5 mm	Screws	One SPDT relay output	K8AK-TS
Temperature monitoring		Thermocouple or platinum resistance thermometer	Upper or lower limit (switched)	Temperature Monitoring	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)	Water level control	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.

OMRON Corporation **Industrial Automation Company**

Kyoto, JAPAN **Contact : www.ia.omron.com**

Regional Headquarters

OMRON EUROPE B.V.
Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31) 2356-81-300 Fax: (31) 2356-81-388

OMRON ELECTRONICS LLC
2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900 Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.
438B Alexandra Road, #08-01/02 Alexandra
Technopark, Singapore 119968
Tel: (65) 6835-3011 Fax: (65) 6835-3011

OMRON (CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-6023-0333 Fax: (86) 21-5037-2388

Authorized Distributor:

CSM_3_1
Cat. No. N210-E1-02 0124 (0316)