

K8AK/K8DS Series

Measuring and Monitoring Relays

Protect critical process and machines
while maintaining prime panel space



» Compact 22.5 mm and 17.5 mm housing

» Resistant to high-frequency noise

» Complies to global power and safety standards

First Class quality to fulfill all your monitoring needs

Omron's robust K8AK series of monitoring relays delivers first class protection in a slim 22.5 mm wide package, which frees up valuable panel space.

This robust offering can safeguard single phase and three-phase motors, conveyors, heaters and generators from dangerous conditions like overvoltage and undervoltage, phase-sequence, and phase loss. They can also be used as primary or secondary control in temperature controlling applications such as industrial ovens, heat tunnels and shrink wrapping, and liquid level control for storage tanks, vats, and other liquid transfer applications.

Single-phase circuit monitoring:

- K8AK-A series: Designed to protect single phase applications from over and undercurrent
- K8AK-V series: Designed to protect single phase applications from over and undervoltage

Three-phase circuit monitoring (3-wire or 4-wire systems):

- K8AK/K8DS-PH: Designed to protect applications from 3-phase sequence and phase loss
- K8AK-PW: Designed to protect applications from 3-phase overvoltage and undervoltage
- K8AK-PM: Designed to protect applications from 3-phase overvoltage, undervoltage, phase loss and phase sequences
- K8AK-PA: Designed to protect applications from 3-phase asymmetry, phase sequence and phase loss

Temperature Monitoring:

- K8AK-TH: Designed to protect applications from over or under temperature conditions

Liquid Level Control:

- K8AK-LS: Designed as a high-level or low-level liquid control or a combination of both*

* Depending on your application.

Omron's K8AK/K8DS series coupled with other Omron Automation and Safety products provide a complete and flexible one-stop solution for your application needs



Features at a glance



Quick view of status

All devices are equipped with an LED to indicate the presence of a power supply (green LED), activity of the output relays (yellow LED), and whether there is an over or under alarm (red LED).

*Intended model: K8AK-AS/AW/VS/VW/PM/PW/PA



Configuration DIP switches

Parameters are easily set on each K8AK unit by using a small screwdriver.

*Excluding: K8AK-PH, K8DS-PH



A single K8AK (PM/PW/PA series) can monitor a 3-phase power supply anywhere in the world

In the example shown below, models K8AK-PA, K8AK-PM and K8AK-PW can be easily selected to monitor anywhere in the world by simply moving 2 DIP switches.

	SW3			ON	ON	OFF	OFF
	SW4			ON	OFF	ON	OFF
K8AK-PW2	SW2	ON	P-P	380 V	400 V	415 V	480 V
		OFF	P-N	320 V	230 V	240 V	377 V

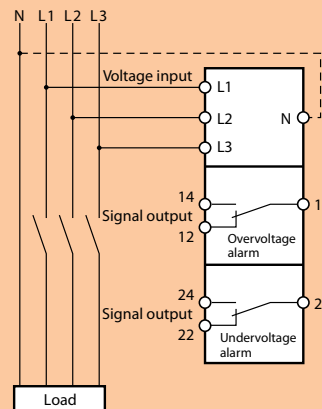
Approvals and markings

This new range has been certified for CE approval; UL certification is pending.



Easy-to-read wiring diagram

No more hard to find wiring paperwork. Each K8AK and K8DS unit contains an easy-to-read wiring diagram which is located on the side providing an quicker and error free installation.



Measuring and Monitoring Relays



1

K8AK-AS
Single-phase current relay

- Overcurrent or Undercurrent
- Reset: Manual/Automatic
- Independent start-up and operation time
- Relay output: SPDT (5A @ 250 VAC)
- Dims (L x W x H): 100 mm x 22.5 mm x 90 mm



2

K8AK-AW
Single-phase current relay

- Overcurrent and Undercurrent
- Reset: Manual/Automatic
- Independent start-up and operation time
- Relay output: 2-SPDT (5A @ 250VAC)
- Dims (L x W x H): 100 mm x 22.5 mm x 90 mm



3

K8AK-VS
Single-phase voltage relay

- Overcurrent or Undercurrent
- Reset: Manual/Automatic
- Process control input: 0 to 10V
- Relay output: SPDT (5A @ 250 VAC)
- Dims (L x W x H): 100 mm x 22.5 mm x 90 mm



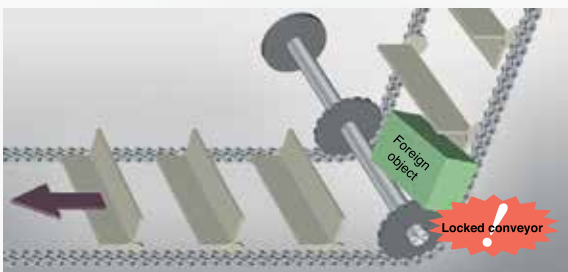
4

K8AK-VW
Single-phase voltage relay

- Overcurrent and Undercurrent
- Reset: Manual/Automatic
- Process control input: 0 to 10V
- Relay output: 2-SPDT (5A @ 250VAC)
- Dims (L x W x H): 100 mm x 22.5 mm x 90 mm

Application examples

1 Conveyor Application (K8AK-AS)



Purpose

If the conveyor is jammed it could force the motor into a locked rotor status. If this occurs the K8AK-AS will react instantaneously causing the motor to shut down and prevent damage to the conveyor system.

Advantages

K8AK-AS offers an effective equipment protection because of its current setting can range from 2 mA to 200 A (model specific).

2 Swimming Pool Circulation System (K8AK-AW)



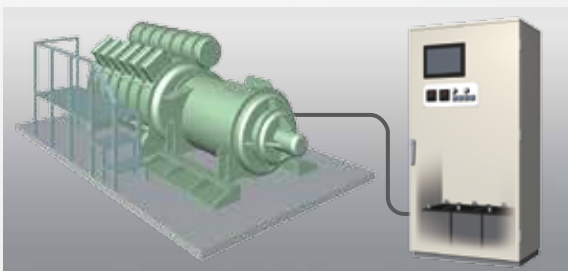
Purpose

In this application K8AK-AW is being used in a dual role to detect overcurrent and undercurrent. Overcurrent would occur if an object were blocking the filtration system causing a locked rotor situation. Undercurrent would occur if there were loss of pressure in the system.

Advantages

In this application K8AK-AW is being used simultaneously to detect overcurrent in case the motor goes into lock rotor status and undercurrent in case there is loss of pressure in the system. If either condition were to occur K8AK-AW would protect the motor by stopping it.

3 K8AK-VS



Purpose

The K8AK-VS is used to monitor undervoltage condition of the compressor in the event of power loss, avoiding a line-down situation.

Advantages

K8AK-VS can detect when the battery is low which will then allow the main power to take over and re-charge the batteries.

4 K8AK-VW



Purpose

Control panel must be carefully monitored because the effects of a power outage or voltage drop would be highly detrimental to equipment. The K8AK-VW monitors the control power supply for overvoltage and undervoltage levels.

Advantages

Overvoltage and undervoltage can be detected with a single K8AK-VW. It can send a signal to the backup system via the SPDT relays where it would eliminate a down situation.

Measuring and Monitoring Relays



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K8DS-PH or K8AK-PH
Designed to protect against 3-phase applications from transient phase-sequence and phase loss

- Reset: Automatic
- Operating time: 0.1 s max
- Relay output: K8AK-PH: (1) SPDT (5A @ 250 VAC); K8DS-PH: (1) SPST (5A @ 250 VAC)
- K8AK-PH: 22.5mm (w)
- K8DS-PH: 17.5 mm (w)



6

K8AK-PW
Three-phase voltage relay

- Overvoltage and undervoltage protection
- DIP switch setting for 3-phase 3-wire or 3-phase 4-wire
- Two independent SPDT relay outputs (5A @ 250 VAC)
- Reset: Automatic
- Adjustable time setting range



7

K8AK-PM
Three-phase voltage, sequence, loss relay

- Overvoltages, undervoltages, phase sequence and phase loss
- DIP switch setting for 3-phase 3-wire or 3-phase 4-wire
- Two independent SPDT relay outputs (5A @ 250 VAC)
- Reset: Automatic
- Adjustable time setting range

Application examples

5 Machining



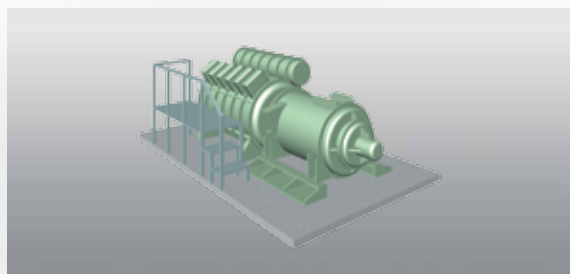
Purpose

K8AK-PH would be used to detect a loss of 3-phase which would protect the machinery and products being manufactured.

Advantages

K8AK-PH provides phase loss/phase sequence and overvoltage/undervoltage 3-phase protection in applications where space is very limited.

6 Generator (K8AK-PW)



Purpose

K8AK-PW is capable of detecting overvoltage or undervoltage and phase loss of the input power for a generator. Once detected K8AK-PW will suspend input power to the control panel therefore saving controls and motor.

Advantages

A single K8AK-PW can be used for a three-phase power supply with three or four wires. It can be used to individually set and output overvoltage and/or undervoltage alarms.

7 K8AK-PM



Purpose

Cranes cannot operate correctly when there is an overvoltage or undervoltage, or a phase-sequence or phase-loss error. The K8AK-PM can be used to monitor three-phase voltage, phase-sequence, and phase-loss errors.

Advantages

A single K8AK-PM can monitor overvoltage and undervoltage, as well as phase-sequence, and phase-loss errors in three-phase voltage. It can also output individual alarms for overvoltage or undervoltage using SPDT relays. This makes it possible to determine which type of error occurred.

Measuring and Monitoring Relays



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K8AK-PA
Three-phase asymmetry, sequence, loss relay

- Asymmetry rate: 2% to 22%
- 3-wire / 4-wire selection for three-phase power supply
- Input range selection
- SPDT relay output



9

K8AK-TH
Temperature monitoring relay

- Simple function SV setting using rotary DIP switch
- Universal-input support for thermocouple or Pt100 / Pt1000
- Normal ON / normal OFF
- Selectable with latch / without latch function
- SPDT relay output



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K8AK-LS
Conductive level controller

- Variable operating resistance
- Water supply / draining selection
- Operation time setting
- SPDT relay output

Application examples

8 K8AK-PA



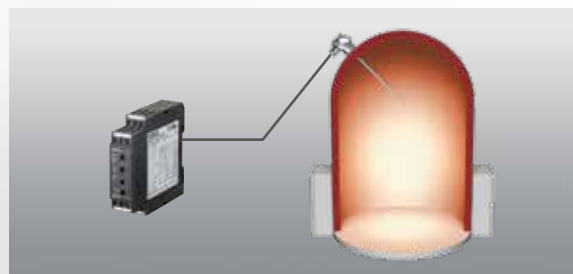
Purpose

Compressors cannot operate correctly when there is an error in a phase-sequence, or a phase asymmetry or phase-loss error.

Advantages

A single K8AK-PA can monitor voltage unbalance, as well as phase-sequence, and phase-loss errors in three-phase voltage.

9 K8AK-TH



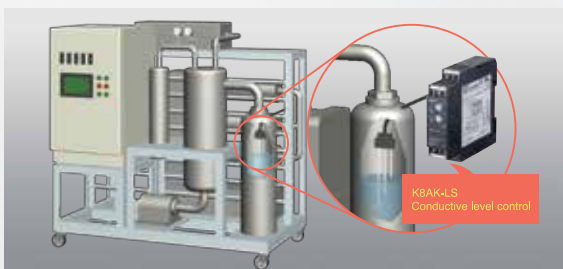
Purpose

Depending on the application, K8AK-TH can be used as a primary temperature controller for detecting a failing bearing on a motor or can be used as back-up temperature controller to protect a critical application if the primary controller were to fail.

Advantages

K8AK-TH robust temperature settings allow it to be used in a broad range of applications. Its selectable alarm latch function allows the user flexibility to automatically or manually reset process from a high or low limit condition.

10 K8AK-LS



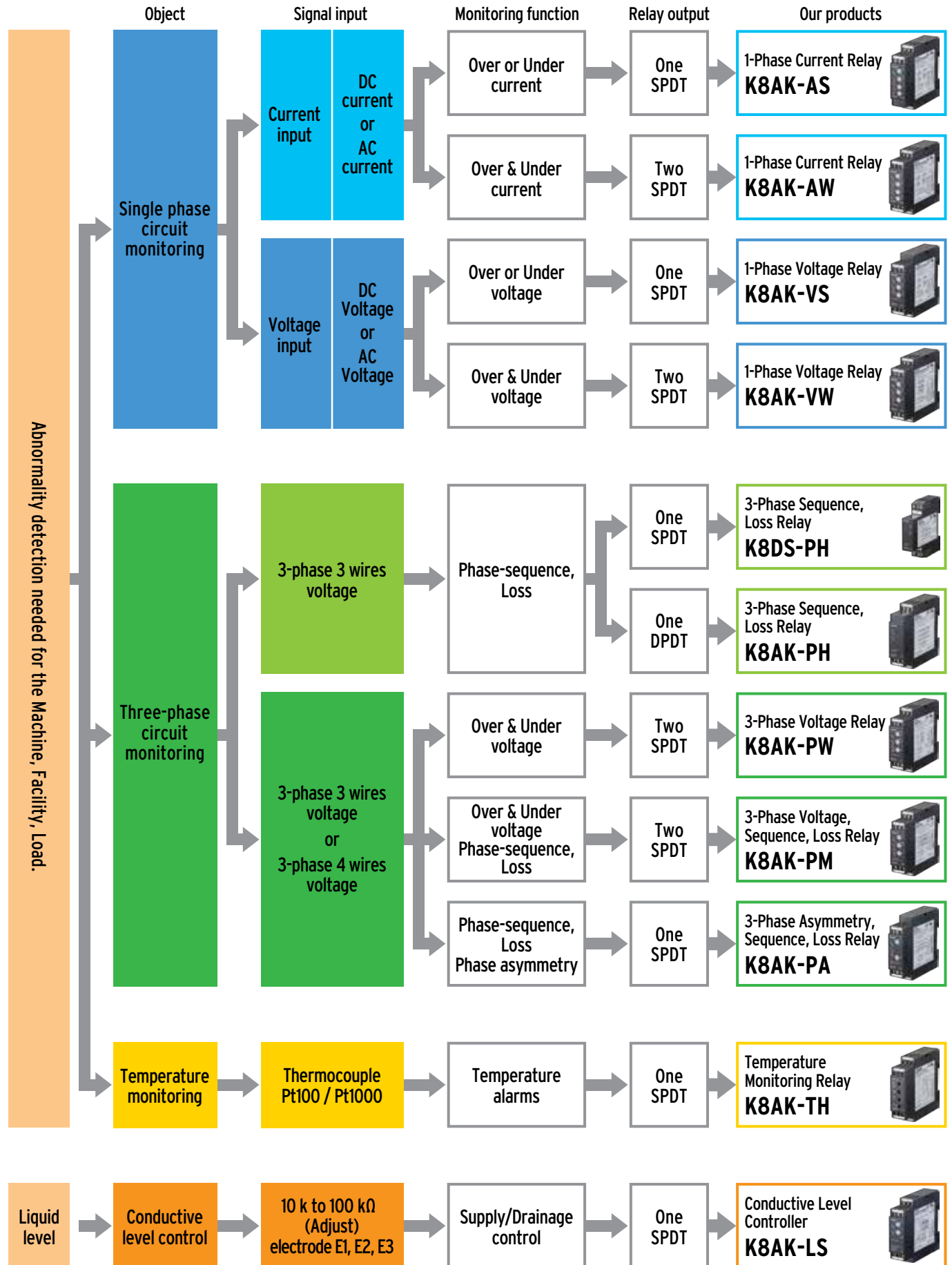
Purpose

The K8AK-LS can be used to control the liquid level in a tank.

Advantages

Because the sensitivity resistance can be adjusted from 10 k to 100 kΩ, there is no need to change models to match different liquid types and concentrations. You can also set the operation time in a range of 0.1 to 10 seconds to prevent operating errors due to chattering. Water supply and draining control can be changed by DIP switch.

Measuring and Monitoring Relays - K8AK/K8DS series selection guide



Product Line Up



Housing size	Measurement	Function	Model	Nominal input	Relay output	Supply voltage	
DIN 22.5 mm	1-phase	Current relay (Overcurrent or undercurrent)	K8AK-AS1	20, 100, 500 mA AC/DC	SPDT	100-240 VAC	
			K8AK-AS2	1, 5, 8 A AC/DC		24 VAC/DC	
			K8AK-AS3	CT transformer *possible commercial		100-240 VAC	
		Current relay (Overcurrent and undercurrent) (Window comparator)	K8AK-AW1	20, 100, 500 mA AC/DC	SPDT x 2	100-240 VAC	
			K8AK-AW2	1, 5 A AC/DC		24 VAC/DC	
			K8AK-AW3	CT transformer *possible commercial		100-240 VAC	
		Voltage (Overvoltage or undervoltage)	K8AK-VS2	10, 30, 150 VAC/DC	SPDT	100-240 VAC	
			K8AK-VS3	200, 300, 600 VAC/DC		24 VAC/DC	
		Voltage (Overvoltage and undervoltage) (Window comparator)	K8AK-VW2	10, 30, 150 VAC/DC	SPDT x 2	100-240 VAC	
			K8AK-VW3	200, 300, 600 VAC/DC		24 VAC/DC	
		3-phase	Phase-sequence and phase-loss	K8AK-PH1	200-480 VAC	DPDT	Same as input voltage
				K8AK-PA1	200-240 VAC		
	Phase asymmetry, phase-sequence, and phase loss relay		K8AK-PA2	380-480 VAC	SPDT		
			K8AK-PM1	200-240 VAC			
	Overvoltage and undervoltage, phase-sequence, and phase loss relay (Window comparator)		K8AK-PM2	380-480 VAC	SPDT x 2		
			K8AK-PW1	200-240 VAC			
	Overvoltage and undervoltage (Window comparator)	K8AK-PW2	380-480 ACV	SPDT x 2			
Water level	Conductive level controller	K8AK-LS1	10 k to 100 kΩ	SPDT	100-240 VAC		
Temperature	Temperature monitoring relay	K8AK-TH1S	0-999°C/°F (1degree/setting)	SPDT	100-240 VAC		
		K8AK-TH12S	0-1800°C (10°C/setting) 0-3200°F (10°F/setting)		24 VAC/DC		
DIN 17.5 mm	3-phase	Phase-sequence and phase-loss	K8DS-PH1	200-480 VAC	SPDT	Same as input voltage	

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