New Product

Three-phase Voltage and Phase-sequence Phase-loss Relay
K8DT-PM

Protect motors and other equipment from unstable voltages in the power supply system.
Protect motors and other equipment by detecting overvoltages, undervoltages, phase sequence, and phase loss for three-phase power supplies.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

- Phase loss detection while the motor is operating.
- Global power supply support. (Changed with a switch.)
- Greater resistance to inverter noise.
- Width of 17.5 mm to reduce space required in panels.
- Push-In Plus Terminal that reduce wiring work.
  The use of cage clamps enables wiring with bare stranded wires.
  Double-insertion holes for crossover wiring (all terminals).
- UL listed for easy shipping to North America.
- Certified for maritime standards (LR).
- Models added with transistor outputs for superior contact reliability.

⚠ Refer to *Safety Precautions* on page 9.
Refer to pages 7 to 8 for commonly asked questions.

Ordering Information

Three-phase Voltage and Phase-sequence Phase-loss Relay

Rated input voltage ✻	Output	Model
3-phase 3-wire 200, 220, 230, 240 VAC	Relay: SPDT contact output	**K8DT-PM1CN**
	Transistor	**K8DT-PM1TN**
3-phase 3-wire 380, 400, 415, 480 VAC	Relay: SPDT contact output	**K8DT-PM2CN**
	Transistor	**K8DT-PM2TN**

Note: The input range is set with a DIP switch.
✻ The power supply voltage is the same as the rated input voltage.

Options (Order Separately)
Front Cover

Appearance	Model
	Y92A-D1A

K8DT-PM

Ratings and Specifications

Ratings

Rated input voltage		K8DT-PM1□N: Three-phase, three-wire Mode: 200, 220, 230, or 240 VAC K8DT-PM2□N: Three-phase, three-wire Mode: 380, 400, 415, or 480 VAC
Input load		K8DT-PM1: Approx. 1.7 VA K8DT-PM2: Approx. 2.7 VA
Rated insulation voltage		528 VAC
Operating value setting range		Overvoltage –30% to 30% of rated input voltage Undervoltage –30% to 30% of rated input voltage **Note:** The rated input voltage can be switched by using the DIP switches.
Operating value		Operates at 100% of set value.
Reset value		5% of operating value (fixed)
Reset method		Automatic reset
Operating time setting range	**Overvoltage/ Undervoltage**	0.1 to 30 s
	Phase sequence	0.1 s±0.05 s
	Phase loss	0.1 s max.
Power ON lock time		1 s/5 s (switched by using the DIP switch)
Indicators		Power (PWR): Green, Output (OUT): Yellow, OVER: Red, UNDR: Red
Output form		Relay Output: SPDT contact Transistor Output: 1
Output relay ratings		Rated load 5 A at 250 VAC (Resistive load) 5 A at 30 VDC (Resistive load) 1 A at 250 VAC (Inductive load) 0.2 A at 48 VDC (Inductive load) Minimum load: 5 VDC, 10 mA (reference values) Mechanical life: 10 million operations min. Electrical life: 5 A at 250 VAC or 30 VDC: 50,000 operations 3 A at 250 VAC or 30 VDC: 100,000 operations
Transistor output ratings		Rated voltage: 24 VDC (maximum voltage: 26.4 VDC) Maximum current: 50 mA DC
Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°C (with no condensation or icing)
Ambient operating humidity		25% to 85% RH (with no condensation)
Storage humidity		25% to 85% RH (with no condensation)
Altitude		2,000 m max.
Applicable wires		Stranded wires, solid wires, or ferrules
Applicable wire size		0.25 to 1.5 mm^2 (AWG24 to AWG16)
Wire insertion force		8 N max. for AWG20 wire
Screwdriver insertion force		15 N max.
Wire stripping length		8 mm
Ferrule length		8 mm
Recommended flat-blade screwdriver		XW4Z-00B (Omron) SZF 0.4 × 2.5 (Phoenix Contact) 210-719 (Wago) SDI 0.4 × 2.5 × 75 (Weidmuller)
Current capacity		10 A (per pole)
Number of insertions		50 times
Case color		N1.5
Case material		PC, UL 94 V-0
Weight		Approx. 100 g
Mounting		Mounts to DIN Track, or screw mounting
Dimensions		17.5 × 90 × 90 mm (W×D×H)

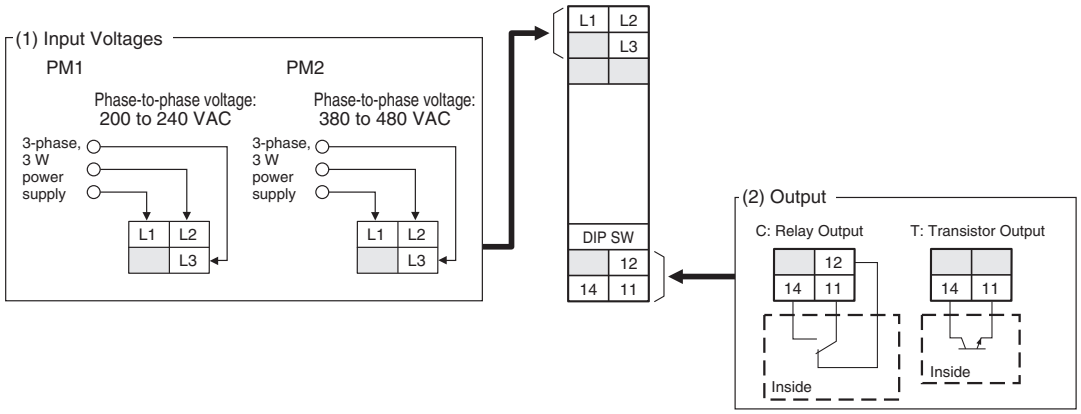
Specifications

Input frequency		50/60 Hz
Overload capacity		Continuous 528 V
Repeat accuracy	**Operating value**	±0.5% full scale (at 25°C and 65% humidity, rated power supply voltage)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Applicable standards	**Conforming standards**	EN 60947-5-1 Installation environment (pollution level 2, Overvoltage category III)
	EMC	EN 60947-5-1
	Safety standards	UL 60947-5-1 (Listing), Korean Radio Waves Act (Act 10564), CCC (GB14048.5), LR (Category ENV1.2)
Insulation resistance		20 MΩ min. Between external terminals and case Between input terminals and output terminals
Dielectric strength		2,000 VAC for one minute Between external terminals and case Between input terminals and output terminals
Noise immunity		1,500 V power supply terminal common/normal mode Square-wave noise of 1 μs/100 ns pulse width with 1-ns rise time
Impulse withstand voltage		6 kV (between live terminals and exposed, non-charged metal parts)
Vibration resistance		Frequency: 10 to 55 Hz, 0.35-mm single amplitude 10 sweeps of 5 min each in X,Y, and Z directions
Shock resistance		100 m/s^2, 3 times each in 6 directions along 3 axes
Degree of protection		Terminals: IP20

Connections

Terminal Diagram

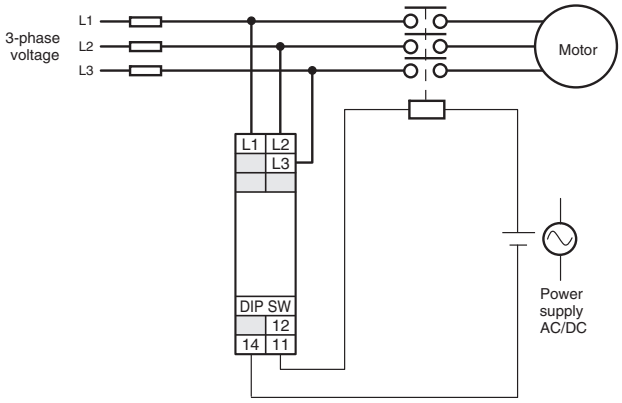
K8DT-PM1 C N
(1) (2)



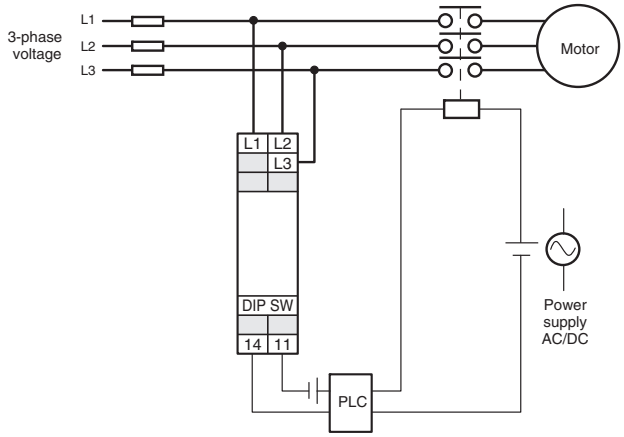
Note: Do not connect anything to terminals that are shaded in gray.

Wiring Example

Relay Output



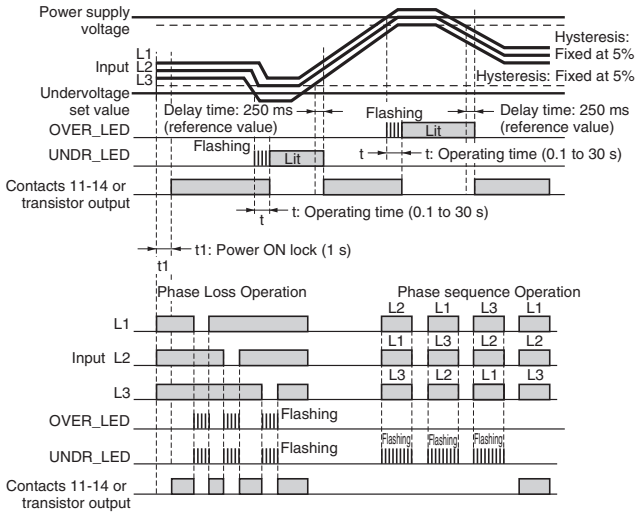
Transistor Output



Note: Use copper wires with a rating of 75°C or an equivalent rating.

Timing Charts

Overvoltage/Undervoltage and Phase Sequence/Phase Loss Operation Diagram



Note: 1. The K8DT-PM□ output contacts are normally operative.
2. The power ON lock prevents unnecessary alarms from being generated during the unstable period when the power is first turned ON. There is no contact output during timer operation.
3. Phase loss is detected by a drop in the L1, L2, or L3 voltage. A phase loss is detected when any of the phase-to-phase voltages goes below 60% of the rated input.
4. L1 and L2 are also used for the power supply. If the voltage becomes very low, the Relay will not operate.
5. Phase loss (on power supply side and load side) is not detected in the motor load during operation.

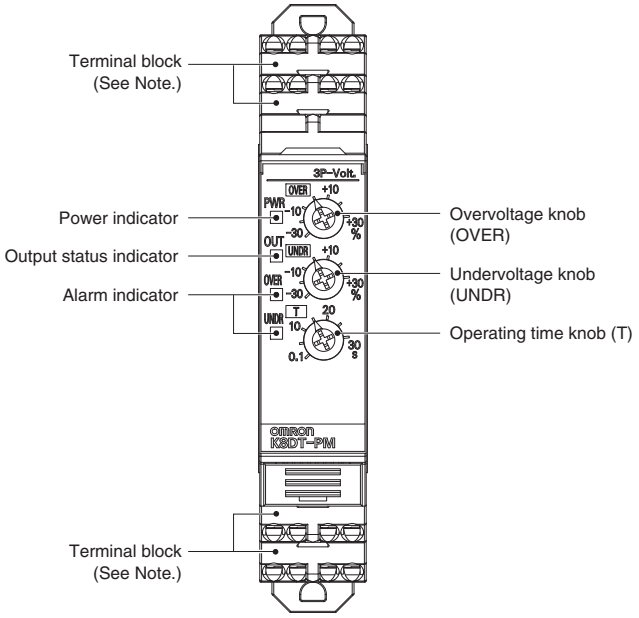
Operation Table

Item	Indicators			Contact operation
	OUT_LED	OVER_LED	UNDR_LED	
Normal	ON	OFF	OFF	ON
Overvoltage	OFF	ON	OFF	OFF
Undervoltage	OFF	OFF	ON	OFF
Phase Loss	OFF	Flashing ✻1	Flashing ✻1	OFF
Phase sequence	OFF	OFF	Flashing ✻2	OFF

✻1. L1 and L2 are also used for the power supply. If the voltage becomes very low, the indicator will turn OFF.
✻2. The indicator will flash once per second after an incorrect phase is detected and once per 0.5 second during the detection time.

Nomenclature

Front



Indicators

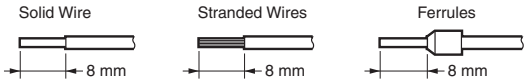
Item		Meaning
Power indicator (PWR: Green)		Lit when power is being supplied.*
Output status indicator (OUT: Yellow)		Lights for output (lit for normal operation)
Alarm indicator	**OVER: Red**	• Lights for overvoltage error. When the input exceeds the overvoltage value, the indicator flashes for the operating time to indicate the error status. • Flashes for phase loss.
	UNDR: Red	• Lights for undervoltage error. When the input exceeds the undervoltage value, the indicator flashes for the operating time to indicate the error status. • Flashes for phase loss. • Flashes for reversed phase error.

✻ This indicator uses the input across L1 and L2 as the internal power supply. It will not light unless there is an input across L1 and L2.

Setting Knobs

Item	Description
Overvoltage knob (OVER)	Used to set from -30% to 30% of the rated input.
Undervoltage knob (UNDR)	Used to set from -30% to 30% of the rated input.
Operating time knob (T)	Used to set the operating time to 0.1 to 30 s.

Note: Use solid wires, stranded wires, or ferrules to connect to the terminals.
To maintain the withstand voltage after connecting the terminals, insert 8 mm of exposed conductor into the terminal.



Operation Methods

Connections

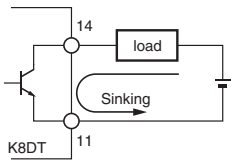
Input

Wire the input to the L1, L2, and L3 terminals (3-phase, 3-wire).
Make sure the phase sequence is wired correctly. The Unit will not operate normally if the phase sequence is incorrect.

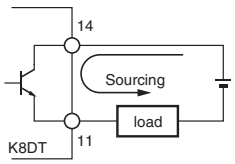
Outputs

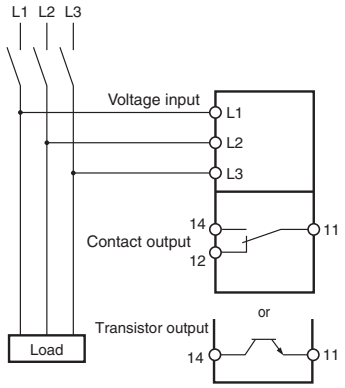
For a relay output, the SPDT contacts are output on terminals 11, 12, and 14. For a transistor output, the output is on terminals 11 and 14.
The internal circuit is of the transistor output NPN, but application is possible for either a sinking or sourcing output.

In the case of sinking output applications



In the case of sourcing output applications

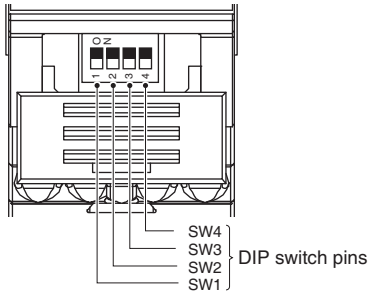




DIP Switch Settings

The Power ON lock time, rated voltage are set using the DIP switch located on the front of the Unit.
K8DT-PM□ does not use SW2.

Note: Open the DIP switch cover to set the DIP switch.
Keep the DIP switch cover closed while the power supply to the Relay is ON.



DIP switch pins

K8DT-PM1

Pin	ON ❍↑ OFF ●↓	1 (ON/OFF)	2	3	4
Power ON lock time	5 s	❍	Not used.	---	---
	1 s	●		---	---
Rated voltage	240 V	---		❍	❍
	230 V	---		●	❍
	220 V	---		❍	●
	200 V	---		●	●

Note: All pins are set to OFF at the factory.

K8DT-PM2

Pin	ON ❍↑ OFF ●↓	1 (ON/OFF)	2	3	4
Power ON lock time	5 s	❍	Not used.	---	---
	1 s	●		---	---
Rated voltage	480 V	---		❍	❍
	415 V	---		●	❍
	400 V	---		❍	●
	380 V	---		●	●

Note: All pins are set to OFF at the factory.

Setting Methods

Overvoltage

The overvoltage knob (OVER) is used to set the overvoltage threshold.
The overvoltage can be set to between –30% and 30% of the rated input voltage.
Turn the knob while there is an input to the input terminals until the alarm indicator flashes (when the set value and the input have reached the same level.)
Use this as a guide to set the voltage.
The rated input depends on the model and the DIP switch setting.
Example: K8DT-PM1 with DIP Switch Set to 200 V
The rated input is 200 VAC and the setting range is 140 to 250 V.

Undervoltage

Undervoltage is set using the undervoltage knob (UNDR).
The undervoltage can be set to between –30% and 30% of the rated input.
Turn the knob while there is an input to the input terminals until the alarm indicator flashes (when the set value and the input have reached the same level.)
Use this as a guide to set the voltage.
The rated input depends on the model and the rotary switch setting.
Example: K8DT-PM1 with Rotary Switch Set to 200 V
The rated input voltage is 200 VAC and the setting range is 140 to 250 V.

Operating Time

The operating time is set using the operating time knob (T).
The operating time can be set to between 0.1 and 30 s.
If the input exceeds (or drops lower than) the voltage set value, the alarm indicator will start flashing for the set period and then stay lit.

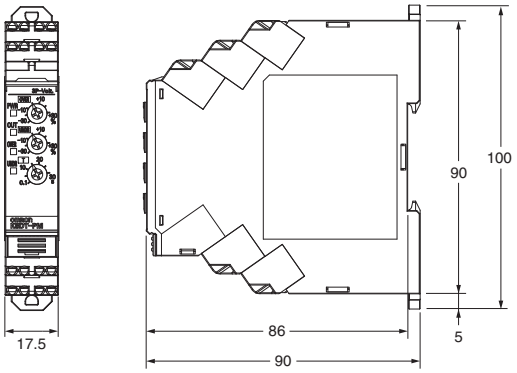
K8DT-PM

Dimensions

(Unit: mm)

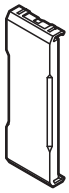
Three-phase Voltage and Phase-sequence Phase-loss Relays

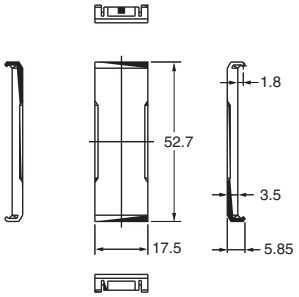
K8DT-PM1
K8DT-PM2



Options (Order Separately)

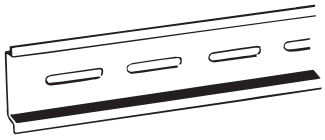
Front Cover
Y92A-D1A

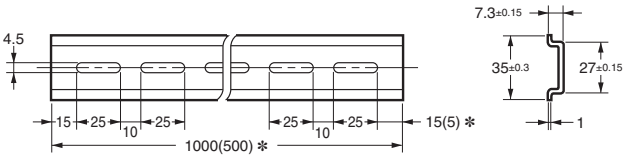




Optional Parts for DIN Track Mounting

DIN Tracks
PFP-100N
PFP-50N





✻ Dimensions in parentheses are for the PFP-50N.

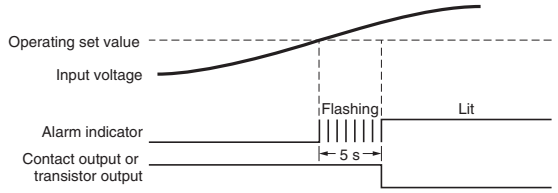
Questions and Answers

Q **Checking Operation**

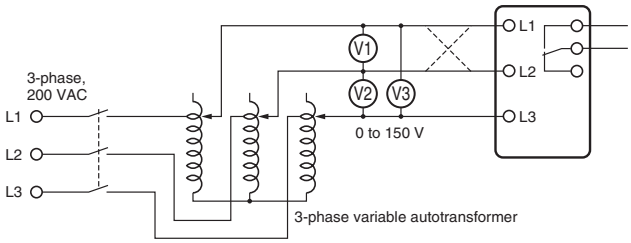
A

Overvoltage
Gradually increase the input from 80% of the set value. The input will equal the operating value when the input exceeds the set value and the alarm indicator starts flashing.
Operation can be checked by the relay output that will start after the operating time has passed.
Undervoltage
Gradually decrease the input from 120% of the set value and check the operation using the same method as for an overvoltage.

Example: Monitoring Mode for Rated Voltage of 200 V and an Operating Time Setting of 5 s



Connection Diagram 1

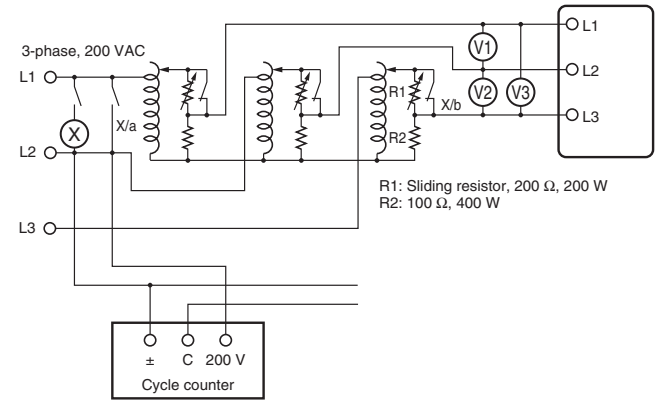


Q **How to Measure the Operating Time**

A

Overvoltage
Change the input suddenly from 70% to 120% of the set value and measure the time until the Unit operates.
Undervoltage
Change the input suddenly from 120% to 70% of the set value and measure the time until the Unit operates.
Operating Time
Adjust the slide resistor so that the voltage applied to the K8DT terminals is 120% of the set value for overvoltage detection or 80% of the set value for undervoltage detection when the auxiliary relay in connection diagram 2 operates. Close the switch and use a cycle counter to measure the operating time.

Connection Diagram 2



Q **Checking the Phase Sequence and Phase Loss Operation**

A

Phase Sequence
Switch the wiring, as shown by the dotted lines in connection diagram 1, to reverse the phase sequence and check that the K8DT operates.
Phase loss
Create a phase loss for any input phase and check that the K8DT operates.

Questions and Answers

Q **Load-side Phase Loss**

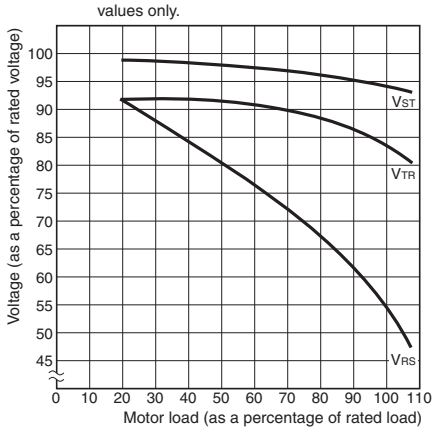
A In principle, phase loss cannot be detected on the load side because the K8DT-PM measures three-phase voltage to determine phase loss.

Q **Motor Load Phase Loss during Operation**

A Motor load phase loss cannot be detected during operation. It can be used to detect phase loss at startup.
Normally, three-phase motors will continue to rotate even if one phase is open. The three-phase voltage will be induced at the motor terminals. The diagram shows voltage induction at the motor terminals when phase R has been lost with a load applied to a three-phase motor. The horizontal axis shows the motor load as a percentage of the rated load, and the vertical axis shows voltage as a percentage of the rated voltage. The lines in the graph show the voltage induced at the motor terminals for each load phase loss occurs during operation. As the graph shows, phase loss cannot be detected because the motor terminal voltage does not drop very much even if a phase is lost when the load on the motor is light. To detect motor load phase loss during operation, use the undervoltage detection function to detect the motor terminal voltages at phase loss. Set the operating time carefully because it will affect the time from when the phase loss occurs until tripping when this function is used.

Characteristic Curve Diagram

Note: This characteristic curve shows the approximate values only.



Note: For phase loss of phase R. V_{ST}, V_{TR}, and V_{RS} indicate the motor terminal voltage at phase loss.

Q **Is an overvoltage detected if only one of the three-phase phase-to-phase voltages exceeds the overvoltage set value?**

A The K8DT monitors all three phase voltages. Therefore, an overvoltage is detected if only one of the phase-to-phase voltages exceeds the set value. The same is true for undervoltages.

Safety Precautions

Be sure to read the precautions for all models in the website at the following URL: http://www.ia.omron.com/.

Warning Indications

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally, there may be significant property damage.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.
Precautions for Safe Use	Supplementary comments on what to do or avoid doing, to use the product safely.
Precautions for Correct Use	Supplementary comments on what to do or avoid doing, to prevent failure to operate, malfunction, or undesirable effects on product performance.

Meaning of Product Safety Symbols

	Used to warn of the risk of electric shock under specific conditions.
	Used for general prohibitions for which there is no specific symbol.
	Used to indicate prohibition when there is a risk of minor injury from electrical shock or other source if the product is disassembled.
	Used for general mandatory action precautions for which there is no specified symbol.

⚠ WARNING

Electrical shock may occasionally cause serious injury. Confirm that the input voltage is OFF before starting any wiring work and wire all connections correctly.

⚠ CAUTION

Doing so may occasionally result in minor injury due to electric shock. Do not touch the Relay while the power supply is ON, except for the adjustment knob.

There is a risk of minor electrical shock, fire, or device failure. Do not allow any pieces of metal, conductors, or cutting chips that occur during the installation process to enter the product.

Explosions may cause minor injuries. Do not use the product in locations with inflammable or explosive gases.

There is a risk of minor electrical shock, fire, or device failure. Do not disassemble, modify, repair, or touch the inside of the product.

Use of the product beyond its life may result in contact welding or burning. Make sure to consider the actual operating conditions and use the product within its rated load and electrical life count. The life of the output relay varies significantly with the switching capacity and switching conditions.

If the Relay is used with incorrect wiring, fire may occasionally occur, possibly resulting in physical damage. Check the wiring for mistakes before you turn ON the power supply.

If the Relay fails, monitoring and alarm outputs may fail to operate. This may result in physical damage to the facilities, equipment, or other devices that are connected to it. To reduce this risk, inspect the Relay regularly. To maintain safety in the event of malfunction of the Relay, take appropriate safety measures, such as installing a monitoring device on a separate line.

If the wire insertion length is insufficient, fire may occasionally occur, possibly resulting in physical damage. Insert the wires all the way to the back.

The terminal block may be damaged if you insert a flat-blade screwdriver in the release hole with excessive force. Insert the flat-blade screwdriver into the release holes with a force of 15 N or less.

Precautions for Safe Use

1. Do not use or store the product in the following locations.
   - Locations subject to water, or oil
   - Outdoor locations or under direct sunlight
   - Locations subject to dust or corrosive gases (sulfurizing gases, ammonia gases, etc.)
   - Locations subject to rapid temperature changes
   - Locations prone to icing and dew condensation
   - Locations subject to vibration and large shocks
   - Locations subject to wind and rain
   - Locations subject to static electricity or noise
   - Locations subject to insects or small animals
2. Use and store the product in a location where the ambient temperature and humidity are within the specified ranges. If applicable, provide forced cooling.
3. Check terminal polarity when wiring and wire all connections correctly.
4. Do not wire the input and output terminals incorrectly.
5. Make sure the power supply voltage and loads are within the specifications and ratings for the product.
6. Make sure the ferrule terminals for wiring are of the specified size.
7. The stripping length is 8 mm. Insert the wires all the way to the back.
8. Do not connect anything to terminals that are not being used.
9. Use a power supply that will reach the rated voltage within 1 second after the power is turned ON.
10. Keep wiring separate from high voltages and power lines that draw large currents. Do not place product wiring in parallel with or in the same path as high-voltage or high-current lines.
11. Do not install the product near equipment that generates high frequencies or surges.
12. The product may cause incoming radio wave interference. Do not use the product near radio wave receivers.
13. Install an external switch or circuit breaker and label it clearly so that the operator can quickly turn OFF the power supply.
14. Make sure the indicators operate correctly. Depending on the application environment, the indicators may deteriorate prematurely and become difficult to see.
15. Do not use the product if it is accidentally dropped. The internal components may be damaged.
16. Be sure you understand the contents of this catalog and handle the product according to the instructions provided.
17. Do not install the product in any way that would place a load on it.
18. When discarding the product, properly dispose of it as industrial waste.
19. The product must be handled only by trained electrician.
20. Prior to operation, check the wiring before you supply power to the product.
21. Do not install the product immediately next to heat sources.
22. Perform periodic maintenance.
23. Do not wire anything to the release holes.
24. When you insert a flat-blade screwdriver into a release hole, do not tilt or twist the screwdriver. The terminal block may be damaged.
25. Insert a flat-blade screwdriver into the release holes at an angle. The terminal block may be damaged if the screwdriver is inserted straight in.
26. Do not allow the flat-blade screwdriver to fall when you are holding it in a release hole.
27. Do not bend a wire past its natural bending radius or pull in it with excessive force. Doing so may break the wires.
28. Do not insert more than one wire into each terminal insertion hole.
29. To prevent wiring materials from smoking or igniting, confirm wire ratings and use the wiring materials given in the following table.

Recommended wire	Stripping length (Ferrules not used)
0.25 to 1.5 mm²/AWG 24 to 166	8 mm

30. Use only the specified wires for wiring.
31. When wiring the terminals, allow some leeway in the wire length.
32. Make sure that the power supply is turned OFF before you change any DIP switch setting.

Precautions for Correct Use

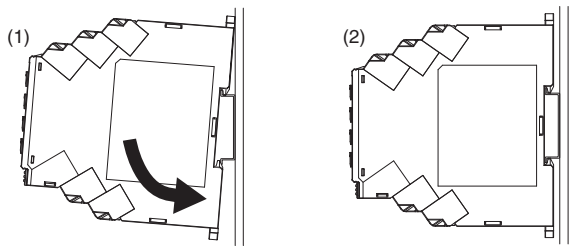
Observe the following operating methods to prevent failure and malfunction.

1. Use the power supply voltage, input power, and other power supplies and converters with suitable capacities and rated outputs.
2. The distortion in the input waveform must be 30% max. If the input waveform is distorted beyond this level, it may cause unnecessary operation.
3. The product cannot be used for thyristor control or on the secondary side of an inverter. To use this product on the primary side of an inverter, install a noise filter on the primary side of the inverter.
4. Phase loss is detected only when the power supply to the motor is turned ON. Phase loss during motor operation is not detected.
5. Phase loss can be detected only from the input contacts to the power supply side. Phase loss cannot be detected from the input contacts to the load side.
6. When cleaning the product, do not use thinners or solvents. Use commercial alcohol.
7. If you use stranded wires, make sure that there are no loose wire strands.
8. If you wire crossovers and connect terminal blocks in parallel, a large current will flow. Make sure that the current does not exceed 10 A.
9. The terminal block may be damaged if the recommended tool is not used. Use the recommended flat-blade screwdriver to operate the release holes.

Correct Mounting Direction, Mounting, and Removing

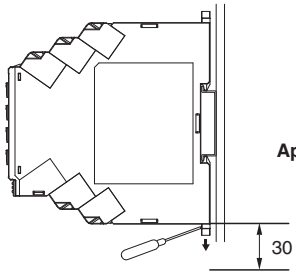
Mounting to DIN Track

To mount the Relay to a DIN Track, hook the Relay onto the DIN Track and press the Relay in the direction of the arrow until you hear it lock into place.



Removing from the DIN Track

To remove the Relay, insert a screwdriver into the hook on the top or bottom and pull out the hook to release the Relay.

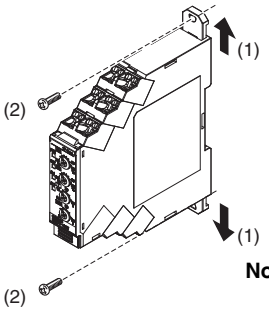


Applicable DIN Tracks
PFP-100N (100 cm)
PFP-50N (50 cm)

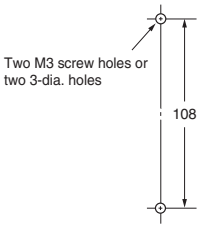
- Leave at least 30 mm of space between the product and other devices to allow easy installation and removal.

Screw Mounting

1. Pull out the two hooks on the back of the Relay to the outside until you hear them click in place.
2. Insert M3 screws into the hook holes and secure the Relay.



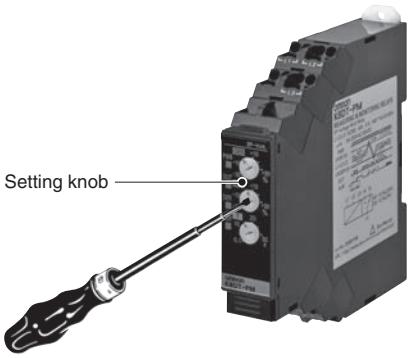
Mounting Hole Dimensions



Note: 1. Pull out the hooks to mount the Relay with screws.
2. Recommended tightening torque: 0.5 to 0.6 N·m.

Adjusting the Setting Knobs

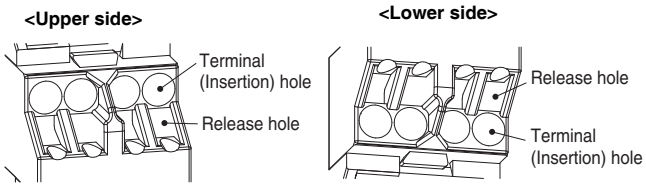
- Use a flat-blade screwdriver to adjust the setting knobs. The knobs have a stopper that prevents them from turning beyond the full right or left position. Do not force a knob beyond these points.



- To reduce the error in the setting knob, always turn the setting knob from the minimum setting toward the maximum setting.

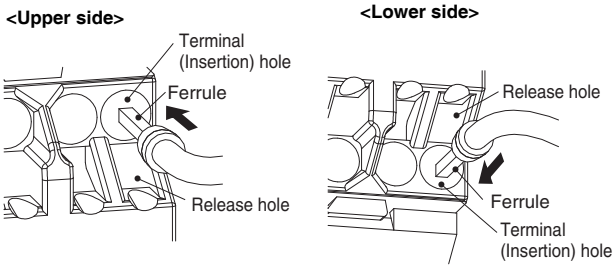
Connecting Wires to the Push-In Plus Terminal Block

Part Names of the Terminal Block



Connecting Wires with Ferrules and Solid Wires

Insert the solid wire or ferrule straight into the terminal block until the end touches the terminal block.

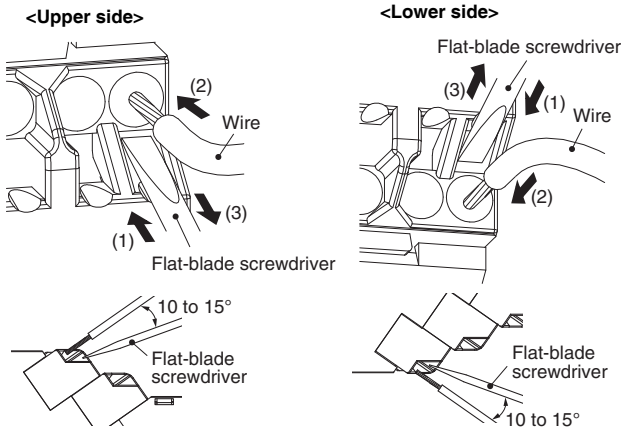


If a wire is difficult to connect because it is too thin, use a flat-blade screwdriver in the same way as when connecting stranded wire.

Connecting Stranded Wires

Use the following procedure to connect the wires to the terminal block.

1. Hold a flat-blade screwdriver at an angle and insert it into the release hole. The angle should be between 10° and 15°. If the flat-blade screwdriver is inserted correctly, you will feel the spring in the release hole.
2. With the flat-blade screwdriver still inserted into the release hole, insert the wire into the terminal hole until it strikes the terminal block.
3. Remove the flat-blade screwdriver from the release hole.



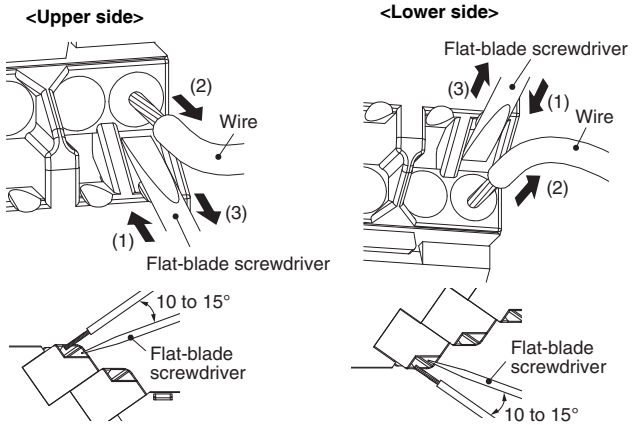
Checking Connections

- After the insertion, pull gently on the wire to make sure that it will not come off and the wire is securely fastened to the terminal block.
- If you use a ferrule with a conductor length of 10 mm, part of the conductor may be visible after the ferrule is inserted into the terminal block, but the product insulation distance will still be satisfied.

Removing Wires from the Push-In Plus Terminal Block

Use the following procedure to remove wires from the terminal block. The same method is used to remove stranded wires, solid wires, and ferrules.

1. Hold a flat-blade screwdriver at an angle and insert it into the release hole.
2. With the flat-blade screwdriver still inserted into the release hole, remove the wire from the terminal insertion hole.
3. Remove the flat-blade screwdriver from the release hole.



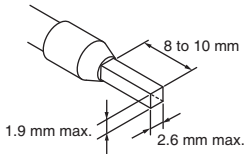
Recommended Ferrules and Crimp Tools

Recommended ferrules

Applicable wire		Ferrule Conductor Length (mm)	Stripping length (mm) (Ferrules used)	Recommended ferrules		
(mm^2)	(AWG)			Phoenix Contact product	Weidmuller product	Wago product
0.25	24	8	10	AI 0,25-8	H0.25/12	216-301
		10	12	AI 0,25-10	---	---
0.34	22	8	10	AI 0,34-8	H0.34/12	216-302
		10	12	AI 0,34-10	---	---
0.5	20	8	10	AI 0,5-8	H0.5/14	216-201
		10	12	AI 0,5-10	H0.5/16	216-241
0.75	18	8	10	AI 0,75-8	H0.75/14	216-202
		10	12	AI 0,75-10	H0.75/16	216-242
1/1.25	18/17	8	10	AI 1-8	H1.0/14	216-203
		10	12	AI 1-10	H1.0/16	216-243
1.25/1.5	17/16	8	10	AI 1,5-8	H1.5/14	216-204
		10	12	AI 1,5-10	H1.5/16	216-244
Recommended crimp tool				CRIMPFOX6 CRIMPFOX6T-F CRIMPFOX10S	PZ6 roto	Variocrimp4

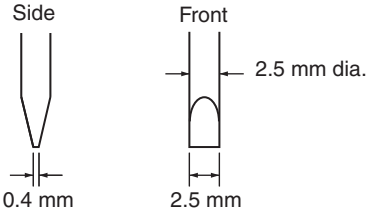
Note: 1. Make sure that the outer diameter of the wire coating is smaller than the inner diameter of the insulation sleeve of the recommended ferrule.

2. Make sure that the ferrule processing dimensions conform to the following figures.



Recommended Flat-blade Screwdriver

Use a flat-blade screwdriver to connect and remove wires.
Use the following flat-blade screwdriver.
The following table shows manufacturers and models as of 2015/Dec.



Model	Manufacturer
ESD 0,40×2,5	Wera
SZS 0,4×2,5 SZF 0-0,4×2,5 ✻	Phoenix Contact
0.4×2.5×75 302	Wiha
AEF.2,5×75	Facom
210-719	Wago
SDI 0.4×2.5×75	Weidmuller

✻ OMRON's exclusive purchase model XW4Z-00B is available to order as SZF 0-0,4×2,5 (manufactured by Phoenix Contact).

⚠ EN/IEC Standard Compliance

- Refer to the contents of this datasheet for cable selection and other conditions for compliance with EMC standards.

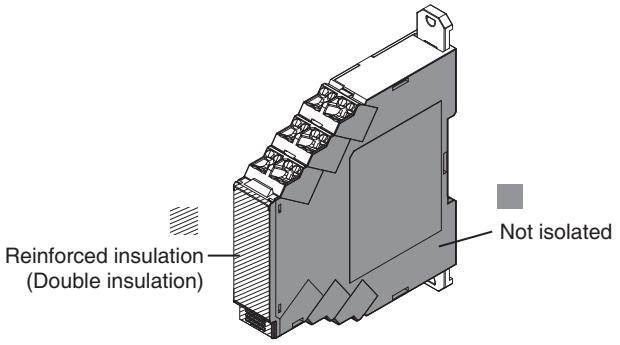
Precaution on EN Standard Compliance

The K8DT complies with EN 60947-5-1 when it is built into a panel, but observe the following handling methods to ensure compliance with the requirements of this standard.

Wiring

Overvoltage category III
Pollution degree 2

- Open-frame Device
- If basic, double, or reinforced insulation is required, use the basic, double, or reinforced insulation defined in IEC 60664 that is suitable for the maximum applied voltage for the clearance, solid insulation, and other factors.
- There is basic insulation between the input terminals and output terminals.
- Operating section must have reinforced or double insulation.
- The sides of the case are not isolated.
- Connect the output contacts (contacts with different polarity) so that they reach the same potential.



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