

Operation Manual



To operate the equipment correctly, be sure to read this manual thoroughly before use.



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- Thank you for choosing this Kowa Control Panel.
- This control panel is for automatically controlling the Kowa R Type Vibrating Sifter (Vibrating Sorter) by use of timers. Sifting classification and discharge is performed repeatedly based on timer settings.
- This operation manual provides detailed information on the KOWA Control Panel as follows:

1. Precautions for safe operation

- 2. Basic setting and operation procedures
- 3. Troubleshooting

Be sure to read this manual thoroughly before using the control panel in order to provide full functionality of the equipment, and ensure safe and efficient operation of the vibrating sifter.

Be sure to always use this control panel in accordance with this operation manual. Handling the product in a manner other than that described in this manual may cause unexpected malfunctions or accidents. Therefore, all personnel who handle this unit, including the supervisory staff, are urged to become thoroughly familiar with the contents of this manual. Keep this manual in a location that is easily accessible by anyone at any time so that it can be referred to whenever information is needed. If you are not certain about an item while working, immediately consult and reread the relevant section.

If this unit is lent to another party, be sure to also lend this operation manual and all accessories.

 If this operation manual becomes lost or damaged, contact the dealer where this unit was purchased, or Kowa.

This operation manual was prepared with the utmost attention to detail. However, if any errors or omissions are encountered, contact the dealer from whom this unit was purchased, or Kowa.

The content of this manual may not be copied in whole or in part without the consent of Kowa Kogyosho Co., Ltd.

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Important Safety Issues

- The operation, maintenance, and inspection procedures for the control panels of Kowa products are neither difficult nor dangerous.
- However, insufficient information on the proper safe handling procedures or a failure to observe the proper precautions may result in a serious accident.
- The precautions listed here help prevent injury or hazards to you and others. For this reason, you must be sure to read the "Important Safety Issues" thoroughly before use to operate the unit correctly and safely.

Explanation of Symbols (Marks)



: Operating the equipment erroneously by failing to observe this precaution may possibly cause death or serious injury to humans.



: Operating the equipment erroneously by failing to observe this precaution may possibly cause injury to humans and serious damage to the product.



NOTE : Provides information that does not fall in the "WARNING" or "CAUTION" categories.

Examples of Symbols (Marks)

: The



mark indicates a DANGER, WARNING, or CAUTION item. : The The symbol inside the mark describes the precaution in more detail ("Electric Shock", in the example on the left).



mark indicates a prohibited action.

The symbol inside the mark describes the precaution in more detail ("Do not touch", in the example on the left).



mark indicates an action that must be taken, or instructs how : The to perform a task.

The symbol inside the mark describes the precaution in more detail ("Provide Ground Work", in the example on the left).

Precautions for Product Specifications

Do not use the product outside of the specified product specifications. Using the product out of the specifications may result in current leakage, electric shock, fire, or malfunction.



Precautions for Carrying-in and Installation

	WARNING!!	
	 Give consideration to the center of gravity and weight of the control panel when lifting or suspending it upon carry-in. Faulty or insufficient suspension may result in the control panel falling or being damaged, or injury depending on the number of persons carrying it. 	
	 Give full consideration to the weight of the control panel when installing it to a wall or base. Insufficient load capacity may cause injury due to the control panel falling or being damaged. 	
	 All electrical work must be performed in compliance with local electrical equipment standards and internal wiring codes. Improper wiring may lead to current leakage, electric shock, or fire. 	
	 Make sure that the power source (ground-fault circuit breaker and similar) is turned off before connecting the vibrating sifter to the terminal block of the control panel. Failure to do so may result in electric shock, short circuit, or unexpected operation of the vibrating sifter. 	
Jons -	 Do not install the control panel in a location (position) that blocks the heat radiating fan and filter parts. Heat buildup inside the unit may result in a fire. 	

Operating Precautions

	 Immediately turn off the power source and disconnect cables from the power distribution board and similar devices if you detect any possible faults such as smoke, strange odors, or inability to operate. Continued operation in faulty conditions may result in electric shock or fire. 	
<u> </u>	 Be sure to always turn off the power source before changing any connections inside the control panel. Failure to do so may result in electric shock or short circuit. 	Change Chang Chang Change Chang Change Chang
20%	 Only use the control panel when the door is securely closed. Dust and dirt can catch fire or cause a short circuit. 	
<u> </u>	 Immediately turn off the power source and disconnect cables from the power distribution board and similar devices if water or other liquid gets inside the control panel, Failure to do so may result in electric shock or short circuit. 	
	 Do not insert any foreign objects or fingers into the control panel from the ventilation fan on the side of the control panel. Doing so may result in electric shock, injury, or short circuit. 	
	 Turn off the power source immediately and inspect the machine if "INV FAULT" on the control panel lights up during vibrating sifter operation because the probable cause is a sudden change in power source voltage or similar reason. Failure to do so may result in electric shock, short circuit, or fire. 	Inverter fault Fau
	 There interior of the control panel is at high voltage and high temperature during vibrating sifter operation and right after stopping. Be very careful when setting or changing the inverter of the timers in the control panel. Failure to do so may result in electric shock, short circuit, or burns. 	

Precautions for Maintenance and Inspection

VARNING!!
 Always make sure that the power source (ground-fault circuit breaker and similar) is turned off before performing maintenance and inspection. Failure to do so may result in death or serious injury due to electric shock or short circuit.
 Do not inspect, adjust, or repair internal parts except for those specified. Doing so may result in electric shock, short circuit, or faulty operation.
 Customers must not change (modify) the specifications of the control panel. Modification may result in electric shock, short circuit, or faulty operation. NOTE: Contact the dealer where this unit was purchased, or Kowa if modification of the control panel is required due to specification changes.



Control Panel Overview

This control panel automatically controls a reverse-type vibrating sifter (R type) by use of timers to repeatedly and automatically classify and discharge the sifter based on the timer setting.

Inverter Installation

A reverse-type vibrating sifter (R type) repeatedly performs a cycle of classify, stop, discharge, and stop at high frequency. For this reason, smooth starting and stopping is performed by inverter control to prevent equipment damage due to vibration during starting and stopping. (Control panels made by Mitsubishi are used for a standard type.)

Interlocked Operation with Material Feeder

The sifter must always be performing classification when feeding material to a reverse-type vibrating sifter. To achieve this, the control panel outputs a material feeding timing signal. (Automatic operation only)

This signal is fed into the control panel of the material feeder, enabling the sifter and material feeder to operate in an interlocked manner.

NOTE: The material feeding timing signal does not directly drive the feeder. The material feeder circuit must be modified.



Existing Circuit

Modified Circuit



Customers must not change (modify) the specifications of the control panel. Contact the dealer where this unit was purchased, or Kowa if modification of the control panel is required due to specification changes.

Modification may result in electric shock, short circuit, or faulty operation.

Basic Operation

The sifter operates by repeating a cycle of sifting classification \rightarrow stop \rightarrow sifting discharge, with repetition of this cycle based on the timer settings.

The material feeding signal is also output during sifting classification according to the timer settings.

External Inputs

The following three signals can be input as external switch inputs:

- · Emergency stop
- \cdot Auto run
- \cdot Cycle stop

Product Check

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Unpack the product and check the packed contents.



Next, check for any damage to the product, as well as for loose bolts, nuts, and similar parts. Also, check that the product specifications are according to your order. Contact the dealer where this unit was purchased, or Kowa if the product is damaged or is faulty in any manner.



Absolutely do not use the product outside of the specified product specifications. Using the product out of the specifications may result in current leakage, fire, or malfunction.

Product Specifications

Use by mounting the simple closed box on a wall or a base (stand-type).

Control Panel External Dimensions

External dimensions (0.4 kW to 3.7 kW common) H600 x W500 x D250 (mm)

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NOTE: The above specifications are for a standard-type control panel. Specifications may differ depending on your order.

4 Part Names and Operation

Control Panel: External



(1) Combination	Display Lights
(1) 0011101110101	Biopiay Ligino

(A) SOURCE · · · · · · · Light the c	s up when power is supplied to the control panel and the breaker in ontrol panel is turned on.
(B) OPERATION SOURCE · · Light	s up when the OPERATION SOURCE switch (6) is set to "ON".
(C) INV FAULT······Light	s up when an error occurs in the inverter for sifter drive.
(D) ON AUTOMATIC RUN · · · Light	s up during automatic cycle operation.
(E) CYCLE STOP······Light	s up when the CYCLE STOP switch (10) is pressed during automatic operation.
(F) MATERIAL FEEDING · · · · Light cycle	s up when the material feeding signal is output during automatic operation.
(G) ON CLASSIFICATION · · · Light autor	s up when classifying operation is being performed during manual or natic operation.
(H) ON DISCHARGING · · · · · Light autor	s up when discharge operation is being performed during manual or natic operation.
(2) MATERIAL FEED STANDBY TIMER	Sets the time until material feeding starts after the start of classification during automatic cycle operation.
(3) MATERIAL FEED RUN TIMER	Sets the time to feed raw materials after the time of the material feed standby timer elapses.
(4) CLASSIFICATION TIMER	Sets the classification time during one cycle of automatic operation. (Setting range: 0.1 sec. to 9,990 hours)
(5) DISCHARGING TIMER	Sets the discharging time during one cycle of automatic operation. (Setting range: 0.1 sec. to 9,990 hours)
(STOP TIMER)	Set by the internal timer in the sequencer (default setting: 10 sec.)
(INTERVAL TIMER)	
(6) OPERATION SOURCE OFF/ON switch	Set the switch to "ON" to supply power to the inverter, turn on the exhaust fan, and enable all operations.
(7) MANU AUTO. switch	For changing the operation method.
(8) EMERGENCY STOP switch	Stops all operations immediately.
(9) AUTO RUN switch	Starts automatic operation according to the timer settings.
(10) CYCLE STOP switch	Press this switch during automatic cycle operation to stop automatic operation after one cycle (after discharge).
(11) CLASSIFICATION switch	Classification is performed manually. (Does not stop until the STOP switch is pressed.)
(12) DISCHARGING switch	Discharge is performed manually. (Does not stop until the STOP switch is pressed.)
(13) STOP switch	Stops manual classification and discharge.

Control Panel: Internal

The layout inside the control panel is as indicated below. Please use as a reference.



- $NFB \cdot \cdot \cdot No$ fuse breaker
- CP · · · · · Circuit protector
- MC···· Magnetic contactor
- $\mathsf{CR} \cdots \cdot \mathsf{Relay}$
- $\mathsf{NF} \cdot \cdots \cdot \mathsf{Noise \ filter}$
- $\mathsf{RB} \cdot \cdots \cdot \mathsf{Braking\ resistor}$
- $INV \cdots Inverter$

Pre-Installation Check

Installation Location

Do not install the control panel in a location (position) that blocks the WARNING! exhaust fan or dust filter parts. Heat buildup inside the unit may result in fire.

Install the control panel in a location that satisfies the following conditions:

- (1) Low amount of dust and dirt
- (2) Good ventilation
- (3) Sufficient work space for operation, maintenance and inspection
- (4) The exhaust fan and dust filter parts are not blocked.
- (5) Position where the operating conditions of the vibrating sifter can be monitored.

Installation Precautions

Carrying-in of Control Panel



Give consideration to the center of gravity and weight of the control panel when lifting or suspending it. Faulty or insufficient suspension may result in the control panel falling or being damaged, or injury depending on the number of persons carrying it.

Use a forklift or similar means to lift the control panel box to prevent strong impacts and vibration when carrying it in or moving it.

Control Panel Installation



Give full consideration to the weight of the control panel when installing it to a wall or base. Insufficient load capacity may cause injury due to the control panel falling or being damaged.

- (1) The weight of the control panel depends on the specifications of your order. Weigh the control panel once before installing it.
- (2) Mount the control panel using four bolts to a load-bearing wall or base that can support the weight of the control panel.
- (3) Do not place heavy objects on the control panel after installation.

Electrical Wiring

• Electrical Wiring Work



• All electrical work must be performed in compliance with local electrical equipment standards and internal wiring codes. Improper wiring may lead to current leakage, electric shock, or fire.

• Make sure that the power source (ground-fault circuit breaker and similar) is turned off before connecting the vibrating sifter to the terminal block of the control panel. Failure to do so may result in electric shock, short circuit, or unexpected operation of the vibrating sifter.

Notes on Wiring Cables



- If you need to extend wiring cable, use a cable that is of equal or greater thickness than the core wire. Use of a cable with a smaller thickness may result in fire, current leakage, or electric shock due to heat generation of the cable. NOTE: Use fully molded connectors if extending wiring cable.
- \cdot Do not forcibly bend or twist wiring cables, or allow them to contact structures so as not to damage them.

6 Timer and Inverter Settings

Timer Settings

Timer Settings Procedures

Press a top button to decrease the value and press a lower button to increase it.

The set time is displayed on the LCD part.





Observe the following when setting timers.

Classification time > Material feed standby timer + Material feed run timer

Operation Chart According to Timer Settings (Automatic Operation)

Operation Chart



Use the above example table as a guide to determine setting times.

Trial Operation



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Immediately turn off the power source if you detect any possible faults during or after operation such as smoke, strange odors, or inability to operate, and refer to this manual, the "Kowa R Type Vibrating Sifter" operation manual, or the "Kowa F/G Type Vibrating Sifter" operation manual to take the appropriate measures.

Contact the dealer where this unit was purchased, or Kowa if there is no improvement in the conditions or if the conditions do not correspond to any described in the operation manual. Continued operation in faulty condition is extremely dangerous and may result in a serious accident, electric shock, or fire.

Performing Trial Operation

Be sure to always perform trial operation to check for any faults or problems in the following situations.

- · When the control panel is moved
- · After maintenance and inspection (repair and similar) work
- · After not being used for a long period of time



(1) Turn the OPERATION SOURCE to "ON".

Trial Operation Procedures

- (2) Set the MANU. AUTO. switch to the "MANU." side.
- (3) Press the CLASSIFICATION switch to check the direction of rotation of the vibrating sifter.
- (4) Press the DISCHARGING switch to check the direction of rotation of the vibrating sifter.
- (5) Set the vibrating sifter to automatic operation and check the status of classification and discharge operations while feeding raw material.
- (6) If a problem occurs during classification or discharge, change the time by referring to "6. Timer and Inverter Settings" on page 11.

[Rotation Direction during Classification]



Operation

If there are no problems during trial operation, you may continue regular operation.



Periodic maintenance and inspection are necessary to maintain the performance of the control panel. Perform inspection and maintenance according to the following procedures.

If the equipment operates in any irregular manner, refer to this manual, the "Kowa R Type Vibrating Sifter" operation manual, or the "Kowa F/G Type Vibrating Sifter" operation manual and immediately perform the appropriate measures.

Before Inspection

Be especially careful in regards to the following items when performing maintenance and inspection.

WARNING!!
 Always make sure that the power source (ground-fault circuit breaker and similar) is turned off before performing maintenance and inspection. Failure to do so may result in death or serious injury due to electric shock or short circuit.
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