

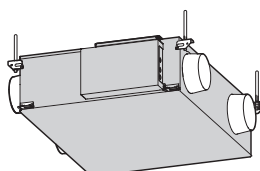
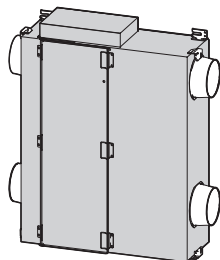
Lossnay Energy Recovery Ventilator

Model:

LGH-50RSDC-E (220-240V 50Hz)

Installation Instructions

(For use by dealer/contractor)



Contents

Safety precautions.....	1
Outline drawings.....	2
Standard installation examples.....	3
Installation method.....	4
Function settings.....	7
Trial operation.....	8

This product needs to be installed properly in order to ensure maximum functionality as well as safety.

Please make sure to read this installation manual before starting the installation.







- Installation must be performed by a dealer or installation contractor. Please note that improper installation may cause malfunction or accident.




Separate booklet "Operating Instructions" is provided for the customer.

The booklet and this manual must be handed over to the customer after completing the installation.

Safety precautions

The following signs indicate that death or serious injury may be caused by failure to heed the precautions described below.

 WARNING	
 Do not disassemble	Do not modify or disassemble. (It could cause fire, electric shock or injury.)
 Prohibition of use in bath or shower room	The Lossnay unit should not be installed where it is highly humid, like a bathroom, or other wet place. (It could cause electric shock or power leakage.)
 Connect the grounding wire.	Connect the product properly to ground. (Malfunctioning or power leaks can cause electrical shock.)
 The instructions given must be followed.	Use the specified power supply and voltage. (Use of incorrect power supply or voltage could cause fire or electric shock.) Select a place with sufficient strength and install the main unit securely. (It could cause injury if it falls.)
 The instructions given must be followed.	
Wiring work must be performed by qualified professionals, and be implemented safely and securely in accordance with the engineering standards and the extension wiring rules for electrical equipment. (Poor connection or improper wiring work could cause electric shock or fire.) Install a power supply isolator at the power supply side as per local electrical regulations. (It could cause fire if power leakage occurs.) All supply circuits must be disconnected before obtaining access to the terminal devices. Use the specified cable size and connect the cables securely to prevent disconnection when they are pulled. (If there is a defect in the connection, there is a possibility of fire.) Select an adequate place for the opening to introduce outdoor air, where it will not inhale the exhaust fumes like combustion gas, or others, and there is no risk of blockage by snowfall or others. (Shortage of fresh air could put the room in a state of oxygen deficiency.) A duct made of steel must be installed with care not to be connected electrically with metals such as metal, wire, stainless steel plate, or others. (It could cause fire when power leakage occurs.)	

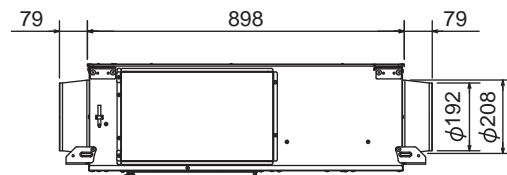
 CAUTION	
 Prohibited	Do not place a burning appliance in a place where it is exposed directly to the air from the Lossnay unit. (It could cause an accident as a result of incomplete combustion.) Do not place an object on or sit on the Lossnay unit. (It could cause electric shock, fire, or other damage.) Do not use at a place where exposed to high temperatures (40°C or higher), naked flames, or in environment with combustible fumes. (It could cause fire.) Do not use in an environment such as a chemical factory, where hazardous gases such as acidic gases, alkaline gases, organic solvent fumes, paint fumes, or gases containing corrosive components are generated. (It could malfunction.) Insulation failure caused by salt or sulphur air and hot spring steam, Rust, fire or malfunction may occur. Installing high quality filters inside outdoor air duct if the Lossnay operates in salt or sulphur air conditions. Do not install this product in a place where it is exposed to ultraviolet light. (UV may damage covering insulation.)
 The instructions given must be followed.	
Put on gloves during maintenance. (It could cause injury.) Make sure the power supply isolator is turned off on the power distribution panel when Lossnay is not used for a long period of time after the installation. (It could cause electric shock, power leakage, or fire as a result of deteriorated insulation.) Always use the specified suspension bolts, nuts and washers. (Use of hardware with insufficient strength could result in the product dropping.) The outside ducts must be tilted at a gradient (1/30 or more) down toward the outdoor louvres from Lossnay, and properly insulated. (The entry of rain water may cause power leakage, fire, or damage to household property.) The control box cover must be closed after the installation. (Dust or humidity may cause power leakage or fire.) When connecting external devices (electrically operated damper, lamp, monitoring unit, etc.) using output signals of the Lossnay unit, make sure to install safety equipment for the external devices. (It could cause fire, damage, etc. without safety equipment.)	

Safety precautions (continued)

CAUTION

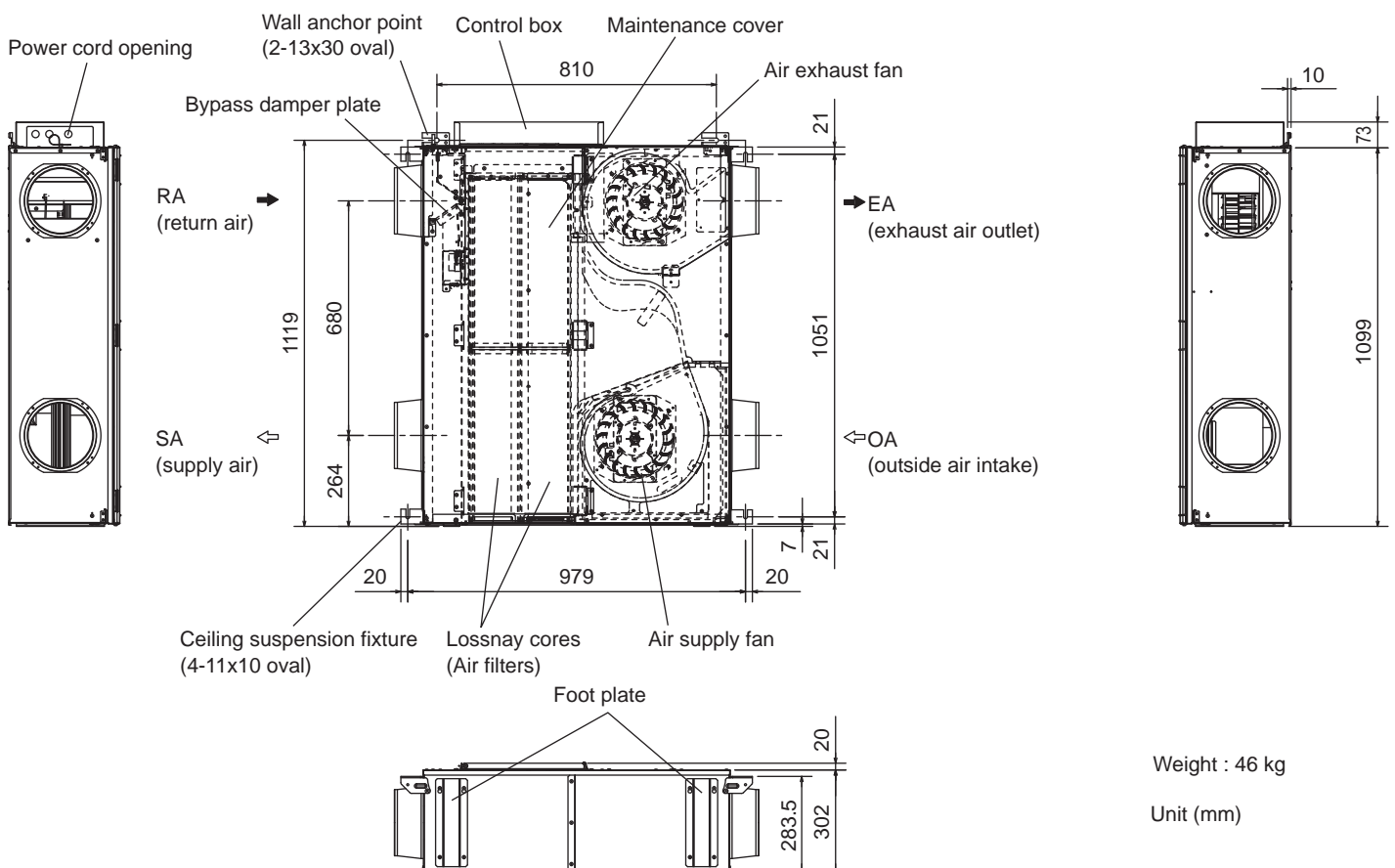
- When using the product where it is exposed to high temperatures and humidity (40°C or higher, RH 80% or higher), or where fog occurs frequently, moisture is likely to condense in the core, and may result in condensation build up in the unit. The product should not be used under such conditions.
- Outdoor air may enter the Lossnay owing to the pressure difference between indoor and outdoor or external winds even when the product is not operated. It is recommended to install also an Electrically operated damper to block the outdoor air.
- In a cold weather area, an area with strong external winds or where fog occurs frequently, cold outdoor air, external winds or fog may be introduced into the product when its operation is stopped. It is recommended to install an Electrically operated damper to shut them out.
- When using the product in an environment where there is a window, or opening near the outdoor louvre, where insects are likely to gather around the interior or exterior light, take note that small insects may intrude into the product.
- In a cold weather area, or others, dewing or freezing could occur on the main unit, where the duct is connected, or other sections, depending on the conditions of outdoor air and indoor temperature and moisture, even if they are within the range of operating conditions. Make sure to confirm the operating conditions and other precautions, and do not use the product if dewing or freezing is anticipated.
*Example of dewing condition – Outdoor air: -5°C or lower, dew-point temperature at installation place: 10°C or higher (When the indoor temperature is 22°C or higher with the relative humidity higher than 50%, or other)

Outline drawings

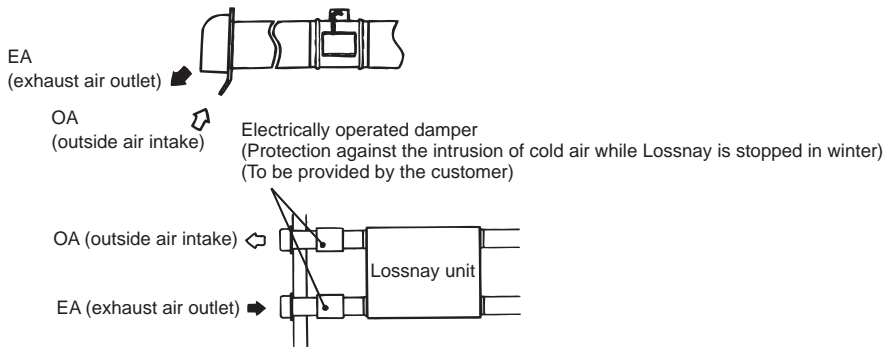


Accessory parts

- Mounting screws.....x24
- Duct connecting flanges.....x4
(double flanges at SA and EA sides)



Standard installation examples



- In a region where there is risk of freezing in winter, it is recommended to install an Electrically operated damper, or the like, in order to prevent the intrusion of (cold) outdoor air while Lossnay is stopped.

- ⚠ ● This product is designed to use horizontally as the figure or upside down. Do not install vertically with the product suspension fixture.
- The outside air intake must be located where no rainwater or fog comes in to prevent the intake of water.

Example

<Installation vertically>	<Installation horizontally>
<p>Nut</p> <p>Anchor bolt (to be provided by user)</p> <p>Washer</p> <p>More than 5</p> <p>Unit</p> <p>Nut</p> <p>Washer</p> <p>Supply air grille</p> <p>Return air grille</p> <p>Maintenance space</p> <p>More than 400</p> <p>OA (outside air intake)</p> <p>EA (exhaust air outlet)</p> <p>⚠ Keep the unit more than 5mm away from the wall.</p> <p>Return air grille</p> <p>SA (supply air)</p> <p>Supply air grille</p> <p>RA (return air)</p> <p>Maintenance space</p> <p>More than 400</p> <p>Duct</p> <p>Unit</p> <p>EA (exhaust air outlet)</p> <p>OA (outside air intake)</p> <p>Floor</p> <p>⚠ Unit should be on the floor by foot plate.</p> <p>Downward gradient of duct: 1/30 or more (toward wall side, provide 1m or more) (to prevent rain water from seeping in)</p>	<p>OA (outside air intake)</p> <p>EA (exhaust air outlet)</p> <p>Unit</p> <p>Supply air grille</p> <p>Return air grille</p> <p>Maintenance space</p> <p>More than 400</p> <p>More than 1200</p> <p>⚠ Top/bottom reverse installation is not available for this unit</p> <p>Downward gradient of duct: 1/30 or more (toward wall side, provide 1m or more) (to prevent rain water from seeping in)</p> <p>Anchor bolt (to be provided by user)</p> <p>Maintenance space</p> <p>More than 1000</p> <p>Unit</p> <p>Duct</p> <p>OA (outside air intake)</p> <p>EA (exhaust air outlet)</p> <p>RA (return air)</p> <p>SA (supply air)</p> <p>Return air grille</p> <p>Supply air grille</p> <p>⚠ Do not install the unit on the ceiling plate directly to prevent the unit from falling, and making vibration and noise.</p>

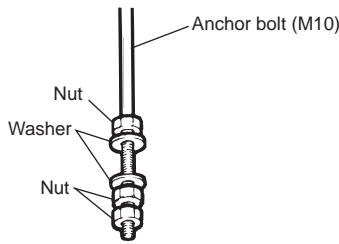
Unit (mm)

Installation method

Installing the Lossnay unit

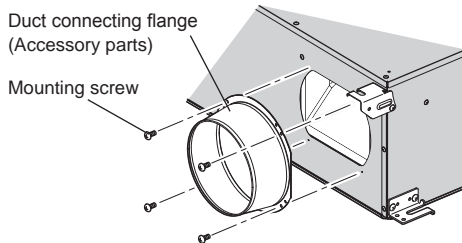
1) Preparing the anchor bolts

Mount the washers (outer diameter of >21 mm for M10) and nuts onto the pre-recessed anchor bolts (M10), as shown in the figure below.



2) Attaching the duct connecting flanges

Use the supplied screws to secure the duct connecting flanges to the Lossnay unit.



⚠ CAUTION

- Before attaching the duct connecting flanges, check that no foreign matter (scraps of paper, vinyl, etc.) has found its way inside to Lossnay unit.
- Attach the duct connecting flanges with the packing at the SA and RA sides.

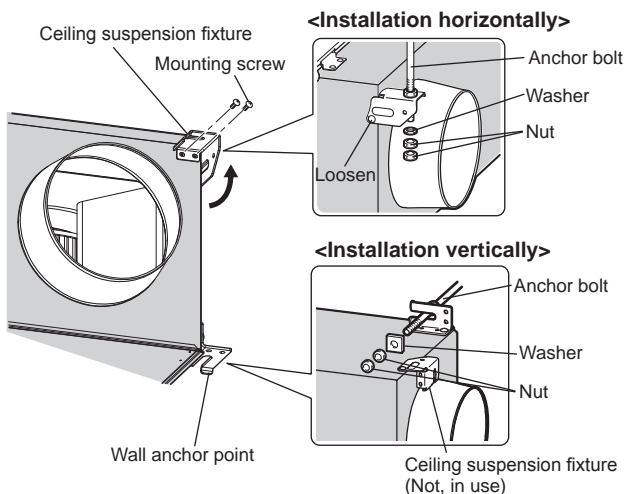
3) Mounting Lossnay unit

<Installation horizontally>

- (1) Loose the screw on the ceiling suspension fixture.
- (2) Turn the fixture around the loosened screw by 90 degrees to set it at level.
- (3) Fix the fixtures securely on the fan body by tightening the loosened screw and accessory mounting screws.
- (4) Hang the ceiling suspension fixtures on the anchor bolts and adjust in such a way that Lossnay unit is level.
- (5) Tighten up securely using double nuts.

<Installation vertically>

- (1) Wall anchor point should be hang by M10 anchor bolt.
- (2) Tighten up securely using washer (more than 26mm) and M10 nut.



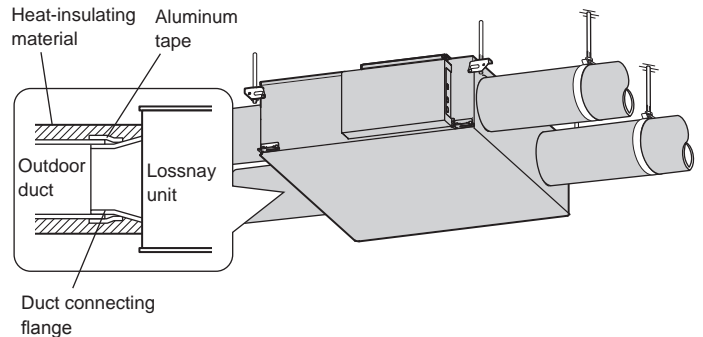
- All mounting screws for the ceiling suspension fixture should be tighten even if the unit is installed vertically.

⚠ CAUTION

- If wall material is wood, tighten up by wood screws. Confirm whether strength of wall is enough.
- When suspending Lossnay unit from the ceiling, do not handle it in such a way that force will be applied to the control box.
- Install the anchor bolts to ensure the product's weight or earthquake load. (Correctly rated wire / chain may also be used)

4) Connecting the ducts

- (1) Fasten the duct securely to the duct connecting flange, and wrap aluminum tape (not included) around the joints so that there is no air leakage.
- (2) Suspend the ducts from the ceiling so that their weight will not be applied to the Lossnay unit.
- (3) All ducts must be covered with heat-insulating material in order to prevent condensation from forming.

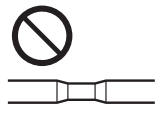
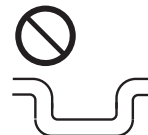


⚠ CAUTION

- Before attaching the ducts, check that no (debris or any other) foreign matter (scraps of paper, vinyl, etc.) has found its way inside the ducts.
- Do not touch the damper plate inside Lossnay unit when connecting the ducts.
- If it is expected that the ambient temperature around the place where the Lossnay unit is installed will be high during the summer air conditioning season, it is recommended that the indoor duct work be covered with insulation material.

Do not carry out the following types of duct construction. (Doing so could cause a drop in the air volume and generate abnormal noises.)

- Extremely sharp bends
- Multiple bends
- Bends right next to the outlet
- Extreme reduction in the diameter of the connected ducts



Installation method (continued)

Electrical installation

With this product, the wiring installation method will vary according to the design of the system.

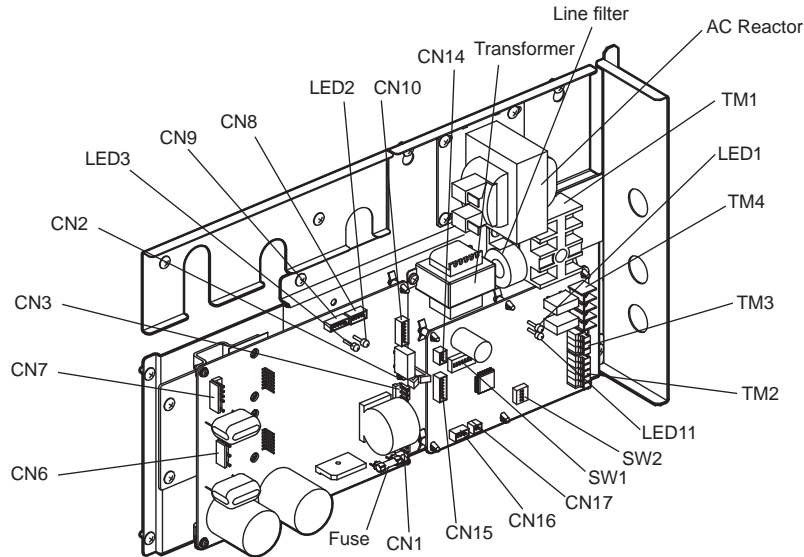
Perform electrical installation to meet local electrical regulations.

* Always use double insulated PVC cable for the transmission cables.

* Wiring work must be performed by qualified professionals.

* All supply circuits must be disconnected before obtaining access to the terminal devices.

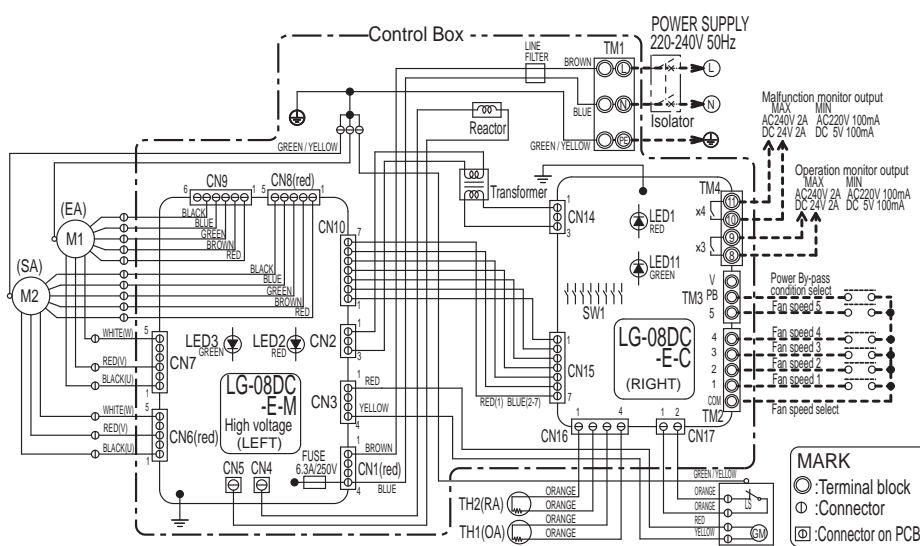
Names of components in control box



Wire connection diagram

⚠ CAUTION

- Connect the wires shown as dotted lines.
- Be sure to connect the ground wire.
- A power supply isolator must be installed when wiring power supply to unit.
- Always use a single pole isolator for the main switch power connection.
- All supply circuits must be disconnected, and do not touch the components for more than 5 minutes, before obtaining access to the terminal devices.
- If using earth leakage breaker for isolator, rating of sensed current should be more than 10mA.



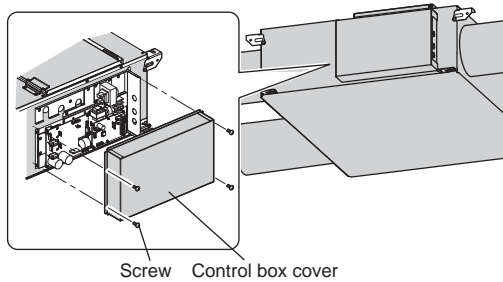
Symbol explanation

M1:	Motor for exhaust fan
M2:	Motor for supply fan
GM:	Motor for Bypass damper
LS:	Micro switch
TH1:	Thermistor for outside air
TH2:	Thermistor for return air
TM1:	Terminal block (Power supply)
TM2:	Terminal block (Fan speed selection)
TM3:	Terminal block (By-pass mode selection)
TM4:	Terminal block (Monitor output)
LED1(red):	Power supply indicator lamp
LED2(red):	Inspection indicator lamp
LED3(green):	Inspection indicator lamp
LED11(green):	Inspection indicator and trial operation lamp
CN1:	Connector (Power supply)
CN2:	Connector (Transformer primary)
CN3:	Connector (Motor for By-pass damper)
CN4:	Connector (Reactor)
CN5:	Connector (Reactor)
CN6:	Connector (Supply fan motor)
CN7:	Connector (Exhaust fan motor)
CN8:	Connector (Signal for supply fan motor)
CN9:	Connector (Signal for exhaust fan motor)
CN10:	Connector (Signal line)
CN14:	Connector (Transformer secondary)
CN15:	Connector (Signal line)
CN16:	Connector (Thermistor)
CN17:	Connector (Micro switch)

Installation method (continued)

Connecting the power supply cable

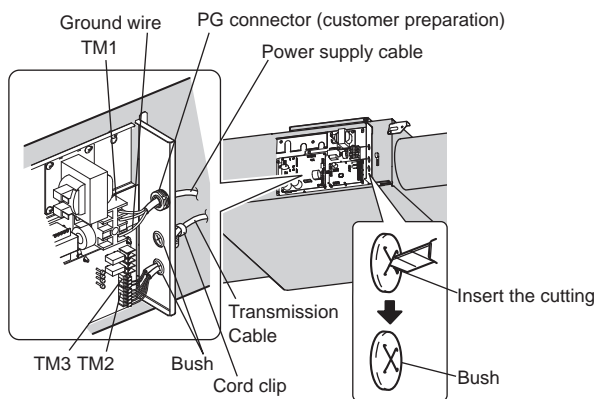
1) Remove the screws and the control box cover



2) Connecting the power supply cable

Pass the power cable through the bush* and connect to the TM1 terminal block using the round terminals. Connect the ground wire to the ground terminal and secure tightening the bush.

(*: for PG connector or the like)



CAUTION

- Always separate the power supply cable and the cable to the control unit by 10 cm or more to prevent malfunctioning of the unit.
- If the length of the stripped power cables wires is too long, the conductors may touch and short out.
- Power supply cable size : 1.5 mm² or more.

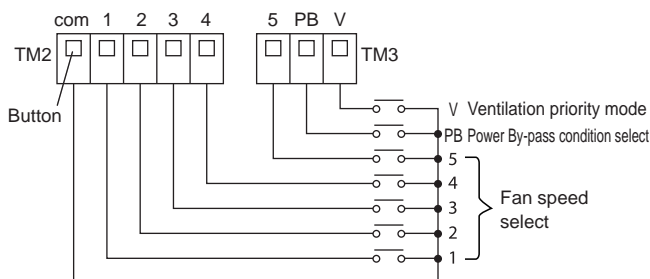
- (1) Refer to the wiring diagram and screw down the ground wire and the cables to the terminal block.
- (2) Secure the power supply cable with the PG connector and the Transmission cables with the cord clip.

Upon completion of the wiring connections, replace the control box cover.

3) Connecting the cables for fan speed select and By-pass condition select

Connect the cables and the contacts as below.

Put the wires deeply to the holes of contact with pushing the button. Confirm no unconnected wire.



contact: 12VDC 10 mA
 cable for operation: 0.5mm² to 1.0mm²
 maximum length: 20m from terminal block
 peeling wire length: 9~10mm

CAUTION

- Power By-pass mode is not available even if only PB contact is on. (*1)
- Be sure to connect Fan speed 5 wiring.

Unit operating method

■ Fan speed select

Operated fan speed is followed as below table by the fan speed select contacts.

Fan speed select contact	Fan speed
All contacts : OFF	OFF
1 : ON	Fan speed 1
2 : ON	Fan speed 2
3 : ON	Fan speed 3
4 : ON	Fan speed 4
5 : ON	Fan speed 5
Multi contacts : ON	Higher fan speed operate

CAUTION

- Fan operating may be delayed from the time of contact ON depending on the select timing.

■ By-pass condition select

By-pass damper is automatically operated based on the OA and RA temperature.

■ Power By-pass condition select (*1)

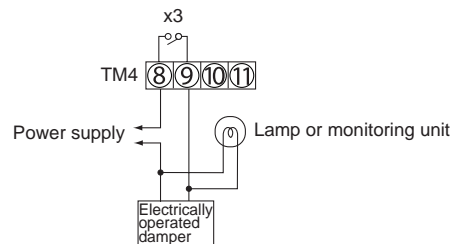
When turning on Power By-pass contact with any fan speed contacts on, unit operation becomes power By-pass mode.

4) The following system configuration can be created. Connect the necessary parts.

- (1) If you would like to connect to a Electrically operated damper, etc., or would like to fetch operation monitor output.
- (2) If you would like to fetch Malfunction monitor output.

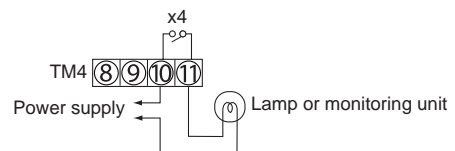
(1) When connect to an Electrically operated damper, etc., or take operation monitor output:

Connect the power supply from the Electrically operated damper to ⑧ and ⑨ of the monitor output terminal block (TM4) with reference to the wire connection diagram.



(2) When take Malfunction monitor output:

Connect to ⑩ and ⑪ of the monitor output terminal block (TM4) with reference to the wire connection diagram.



CAUTION

It is recommended to connect Malfunction monitor output to check the malfunction externally.

Function settings

SW1

1		Trial operation
2		Operation monitor out put with delay function
3		Setting for exhaust fan in cold region operation mode
4		Ventilation priority mode during ventilation setting input on
5		Operating monitor output
6		By-pass auto ventilation priority setting
7		Auto air volume increasing during bypass setting
8		Not to used

SW2

4		Decreasing exhaust fan power
3		Increasing exhaust fan power
2		Decreasing supply fan power
1		Increasing supply fan power

● All switches are OFF at factory setting.

1 Trial operation

	OFF	ON	Operation
SW1	1		Normal operation
		1	Trial operation

2 Operation monitor out put with delay function * (TM4 ⑧⑨)

	OFF	ON	Operation
SW1	2		Not available
		2	Available

3 Exhaust fan speed setting in cold region operation mode *

	OFF	ON	Operation
SW1	3		Not fixed
		3	Exhaust fan : speed 5 fixed

4 Ventilation priority mode during ventilation setting input on

	OFF	ON	Operation
SW1	4		Bypass ventilation mode fixed
		4	Lossnay ventilation mode fixed

* Below 8°C, even SW1-4 is fixed any setting, ventilation mode should be Lossnay ventilation.

5 Operating monitor output (TM4 ⑧⑨)

	OFF	ON	Operation
SW1	5		Not available
		5	Available

* During SW1-2 on, operating monitor out is prior to "2 operation motor out put with delay function".

6 By-pass auto ventilation priority setting

	OFF	ON	Operation
SW1	6		When outdoor temperature is 17°C or higher within 24 hours, then bypass ventilation starts by comparison OA and RA.
		6	When outdoor temperature is 28°C or higher within 24 hours, then bypass ventilation starts by comparison OA and RA.

7 Auto air volume increasing during bypass setting

	OFF	ON	Operation
SW1	7		Not increasing.
		7	When unit is in by-pass operation except power by-pass mode, the unit fan speed is automatically increased 1 step.

8 Fan speed fine-tuning

	ON	OFF	Operation
SW2	2	1	All supply air fan speeds are default settings.
	2	1	
	2	1	Each supply air fan speed settings except power bypass mode are increased.
	2	1	Each supply air fan speed settings are decreased.
	4	3	All exhaust fan speeds are default settings.
	4	3	
	4	3	Each exhaust fan speed settings except power bypass mode are increased.
	4	3	Each exhaust fan speed settings are decreased.

* Operation monitor out put with delay function

Corresponds to operation mode output (TM4 ⑧⑨)

Supply fan with following function

- Start the output (TM4 ⑧⑨) 10 seconds after supply fan operates but also when the thermistor for outside air (TH1) detect -5°C or lower.
- Stop the output (TM4 ⑧⑨) when thermistor for outside air (TH1) detects a temperature higher than -15°C or stop the supply fan or malfunction of TH1.
- Lossnay continues to operate for 3 minutes, after stopping the output (TM4 ⑧⑨)
- Error code is shown on the remote controller and stop the output in case of followings.
 - 1) TH1 detects higher than 15°C within 15 minutes after the output starts.
 - 2) TH1 detects -10°C or lower, 60 minutes after the output starts.
 - 3) TH1 detects continuously 70°C or higher for more than 1 minute.

*Cold region operation mode

The unit operation is based on the measured OA temperature as below.

Operation mode	OA temperature	SA fan	EA fan
Normal	-10°C<OA	Continuous running	Continuous running
SA intermittent	-15°C<OA<-10°C	Repeat 10min. Stop / 60min. running	Continuous running
SA stopped	OA<-15°C	Repeat 55min. Stop / 5min. running	Continuous running Fan speed 5 is fixed in SA fan stopped operation in the case of SW1-3.

SA : supply air EA : exhaust air OA : outside air

Trial operation

After the system has been installed and before the ceiling panel is installed, make sure that wires are properly connected, then test the system's operation.

- (1) Remove the control box cover.
- (2) Turn the trial operation switch (SW1-1) "On".
 - LED11 will be on with the Fan speed 1 setting and with By-pass ventilation operating for 1 min.
Then, it will change to energy recovery ventilation mode.
- (3) Turn the trial operation switch (SW1-1) "Off".
- (4) Install the cover in its original position on the control box.

Trouble shooting

Cause of failure	LED indication (Blinking)				Motor operation
	Small PCB (right)		Large PCB (left)		
	LED1 (red)	LED11 (green)	LED2 (red)	LED3 (green)	
Supply fan over current failure	Twice	-	Once	-	stop
Exhaust fan over current failure	-	Twice	-	Once	
Shortage of power supply voltage	Twice	-	3times	-	
Over voltage of power supply	Twice	-	4times	-	
Supply fan motor operating failure	Twice	-	5times	-	
Exhaust fan motor operating failure	-	Twice	-	5times	
Supply fan motor sensor failure	Twice	-	6 or 7times	-	
Exhaust fan motor sensor failure	-	Twice	-	6 or 7times	
Communication failure between upper and lower PCB	9times	9times	9times	9times	
Damper failure	3times	-	-	-	running
Outside air sensor failure	4times	-	-	-	
Room air sensor failure	5times	-	-	-	
External interlocked unit failure	8times	-	-	-	

If troubles occur as above, turn off all fan speed contacts immediately and contact to your dealer.

 **The unit may not operate properly if the power supply voltage is lower than the rating voltage. (220-240V)**



mitsubishi electric corporation

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