English

TOSHIBA

INSTALLATION MANUAL

Multi function sensor (CO_2 / PM)

Model name: **TCB-SFMCA1V-E**

Thank you for purchasing the “Multi function sensor” for TOSHIBA Air Conditioner.
Before starting the installation work, please read this manual carefully and install the product properly.

* This product is used in combination with a heat recovery ventilation unit. Do not use the multi function sensor on its own or in combination with other companies' products.

- **After completing the installation work, perform a test run to confirm that there are no abnormalities.**
- **Ask the customer to keep this Manual together with the Heat recovery ventilation unit's Installation Manual.**

Safety Precautions

The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.

Indication	Meaning of Indication
⚠ WARNING	**Text set off in this manner indicates that failure to adhere to the directions in the warning could result in serious bodily harm (1) or loss of life if the product is handled improperly.**
⚠ CAUTION	**Text set off in this manner indicates that failure to adhere to the directions in the caution could result in slight injury (2) or damage (3) to property if the product is handled improperly.**

1: Serious bodily harm indicates loss of eyesight, injury, burns, electric shock, bone fracture, poisoning, and other injuries which leave aftereffect and require hospitalization or long-term treatment as an outpatient.

2: Slight injury indicates injury, burns, electric shock, and other injuries which do not require hospitalization or longterm treatment as an outpatient.

3: Damage to property indicates damage extending to buildings, household effects, domestic livestock, and pets.

⚠WARNING

Ask for installation to be performed by the dealer or a professional.
This product should only be installed by a qualified installer.

Before starting to install the Multi function sensor (CO_2 / PM), read carefully through the Installation Manual, and follow its instructions to install the Multi function sensor (CO_2 / PM).

Only a qualified installer or qualified service person is allowed to install the Multi function sensor (CO_2 / PM). If the Multi function sensor (CO_2 / PM) is installed by an unqualified individual, a fire, electric shocks, injury, water leakage, noise and/or vibration may result.

Do not move or repair any unit by yourself. There is high voltage inside the unit. You may get electric shock when removing the cover and main unit.

Do not use the product under the following operating environment and conditions.
This may result in a fire or electric shock, or injuries caused by the product falling down.

- Locations where the ambient temperature exceeds the maximum ambient temperature in the “Features”
- Locations which generate corrosive gases, flammable gases and salt damage
- Locations exposed to rain or water, or where there is a lot of oil splashes (including the areas under the eaves)
- Locations where a strong breeze blows past
- Locations exposed to intense vibration/impact
- Locations where a lot of sulfur dioxide exists e.g. hot springs etc.
- Locations in contact with flammable materials
- Locations where there is a lot of dust and metallic powder

In addition, do not use the unit in the bathroom or kitchen as the design is not waterproof or oil proof.

⚠CAUTION

Wear cotton or other thick gloves during installation work.
Failure to observe this precaution may result in injury from parts, etc.

1. Precautions during installation

- **This multi function sensor is designed for use with the heat recovery ventilation unit only. Make sure a compatible model is installed.**

- **Be sure to connect this multi function sensor to the header unit for systems in which only heat recovery ventilation units are connected in a group connection(*1).**
  For systems linked to an air conditioner, be sure to connect this multi function sensor to the heat recovery ventilation unit with the smallest indoor address(*2).
  In systems that are linked to an air conditioner, if this multi function sensor is connected to an incompatible air conditioner, Fan speed [AUTO] cannot be selected from the remote controller.
  It is possible to run the ventilation unit at an automatic fan speed control regardless of the fan speed set by the remote controller. Refer to section 11 in the Setting Manual for details.
  For the VN-U0150/U0200 series,be sure to connect to the master unit.
  *1 Even if this sensor is connected to a header unit, the follower unit will not perform automatic fan speed control. Connect this sensor to the follower unit as well if you wish to perform automatic fan speed control with the follower unit too. However, the CO_2 / PM2.5 concentration displayed in the remote controller will be the value measured by the sensor of the header unit.
  *2 Even if this sensor unit is connected to the heat recovery ventilation unit with the smallest indoor address, automatic fan speed control will not be performed by other follower units. Connect this sensor to another heat recovery ventilation unit as well if you wish to perform automatic fan speed control with the other heat recovery ventilation unit too. However, the CO_2 / PM2.5 concentration displayed in the remote controller will be the value measured by the sensor of the heat recovery ventilation unit with the smallest indoor address.

- **As PM2.5 concentration control aims to reduce the indoor PM2.5 concentration through ventilation, in outdoor locations where the PM2.5 concentration is high (along main roads or those who live in industrial regions), we recommend using a high performance filter (ePM1 55%). (If you are not going to use a high performance filter (ePM1 55%), we recommend that you disable the PM2.5 concentration control setting.)**

- **Do not use this multi function sensor in applications that require a high level of safety and reliability such as medical devices, fire prevention devices and so on.**
  In addition. do not install in an environment where strong magnetism is generated.

- When using indoor in an environment where cigarette smoke is constantly being generated, this sensor may deteriorate and the correct concentration may not be displayed.
- The product cannot be used in an environment where there is a lot of sulfur dioxide present e.g. hot springs etc. This will lead to a degradation of the sensor.
- This CO_2 sensor is equipped with internal temperature and humidity sensors to correct the measured value as required.
  However, if the sensor is exposed to volatile organic compounds (VOC)(*3), take note that the measurement accuracy of the CO_2 concentration may deteriorate due to the pollution effect.
  *3 Volatile toluene and xylene emitted by alcohols, solvents and gasoline that are contained in paints, adhesives, ink and other materials, trichloroethylene used in washing metals and devices, methylene chloride (dichloromethane) etc.
- At night and during periods where few people go in and out of the room or office, the CO_2 automatic calibration function uses the lowest CO_2 concentration as a reference value (≈ general atmospheric CO_2 concentration) for detecting the concentration in future. Therefore, the CO_2 concentration detected by the CO_2 sensor may differ from the actual indoor CO_2 concentration. As a result, in locations where the indoor and outdoor CO_2 concentrations are believed to be constantly higher compared to the general concentration (along main roads, in industrial regions etc.), the detected CO_2 concentration may deviate greatly from the actual concentration. In such a situation, disable autocalibration in the DN code settings first before use. In addition, implement force calibration function where necessary.
- Do not carry out modifications such as attaching a filter for the purpose of preventing infiltration by dust etc. to the opening of each sensor installed in this multi function sensor. Sensor will no longer be able to detect the correct value.

2. Operating precautions

- **This multi function sensor is not a measuring instrument based on the Measurement Law.**
  Do not use the sensor unit as a safety device to detect and prevent toxic gases or flammable gases that will result in oxygen deficiency, carbon monoxide poisoning and so on.

- The concentration is detected be each sensor in the indoor suction (RA) air path of the heat recovery ventilation unit. As unevenness will also occur in the living room concentration, a difference between the concentration displayed in the remote controller and the environmental measurement etc. may result. If there is a difference between the concentration displayed in the remote controller and the concentration in the environmental measurements etc., you may adjust the sensor sensitivity or correct the concentration to be displayed in the remote controller.
  (Environmental measurements: Measurements, investigations and analysis of the concentration etc. that are conducted in order to understand the atmospheric and other environmental conditions)
- In this multi function sensor, the heat recovery ventilation unit cannot be started/stopped automatically.
- When running at Fan speed [AUTO], the ventilation mode is fixed as the [Heat exchange] mode regardless of the heat exchange mode set from the remote controller.
  (The remote controller display will remain in the ventilation mode set.)
- During 24-hr ventilation operation and nighttime heat purge operation, the automatic fan speed control is not performed by this sensor.
- If you want to remove odors, dust, etc. by ventilation regardless of the indoor concentration, select [High] instead of [AUTO] for the fan speed.
- Due to the impact of sudden changes in the temperature and humidity (rain etc.), the detection accuracy of this sensor may change and the indoor concentration may not be detected correctly. In such a situation, run the unit with the fan speed set to [High] for a while instead of [AUTO].
- When running at Fan speed [AUTO], the fan speed may increase automatically and the noise may get louder.

3. Other precautions

- As the detection concentration of each sensor may differ depending on the operating environment, product installation conditions and so on, the target concentration may be exceeded depending on the operating environment.
- This multi function sensor is designed for use in a typical indoor air environment. When it is used in an extremely dusty room etc., the concentration may not be detected correctly.

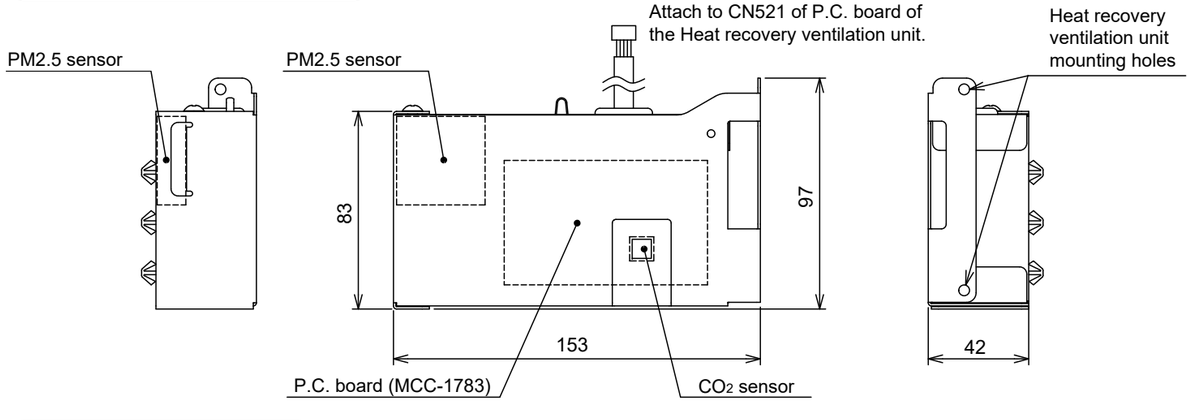
1. Compatible models

Heat recovery ventilation unit: VN-U***

2. Supplied accessories

Component name	Screws	Setting Manual	Owner's Manual
Form			This manual
Qty.	2	1	1

3. External diagram

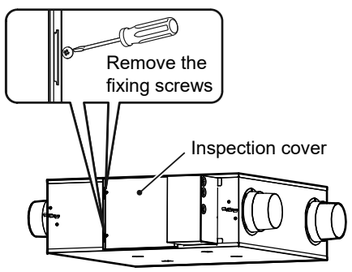


4. How to install

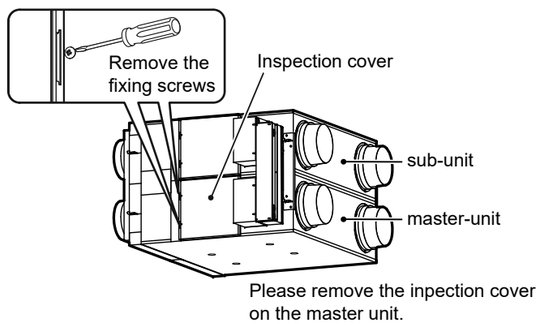
*** Be sure to install the multi function sensor (CO_2 / PM) before installing the indoor unit.**

1) Remove the fixing screws at the 2 locations while supporting the inspection cover with your hand and then remove the inspection cover.

VN-U0015 to U0100 series

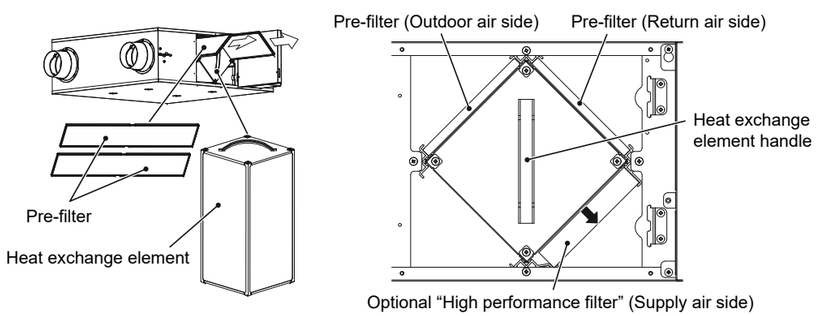


VN-U0150, U0200 series

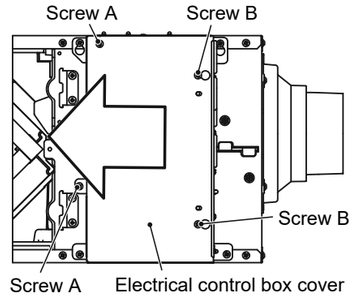


2) Remove the heat exchange element and filter.

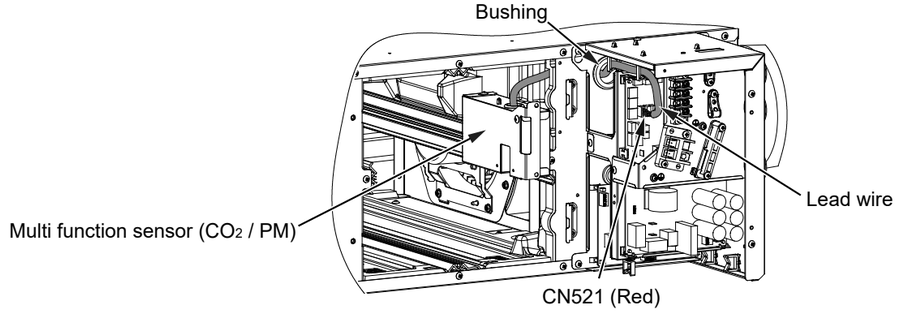
NOTE: The single heat exchange element weighs 2 - 4 kg. Be careful not to drop it.



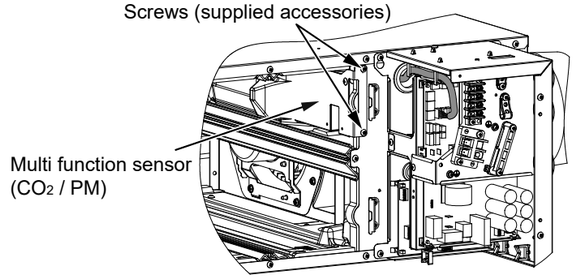
3) Remove screws A (M4 × 6 mm, 2 pcs) and loosen screws B (M4 × 6 mm, 2 pcs) fixing the cover of the electrical control box, then slide the electrical control box cover in the direction of the arrow to remove it.



4) Pass the lead wire of the multi function sensor (CO_2 / PM) through the bushing of the heat recovery ventilation unit, then connect the connector to the heat recovery ventilation unit P.C. board CN521 (5P: Red).



5) Attach the multi function sensor (CO_2 / PM) to the heat recovery ventilation unit with the two supplied screws.



6) Attach the electrical control box cover, heat exchange element and inspection cover at their original positions.

7) Follow the instructions in the included "Setting Manual" to set the multi function sensor (CO_2 / PM) from the wired remote controller.

- Be sure to configure the settings or the concentrations will not be displayed in the remote controller and automatic fan speed control will also not be performed.

5. Handing this manual to the customer

After completing the installation, conduct a test run to see if there are any faults, then explain the precautions pertaining to this product to the customer according to the contents described in this manual.

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