azbil

No. CP-SP-1328E

AUD500C11000 Series

Explosion-Proof Advanced Ultraviolet Flame Detector

User's Manual

Thank you for purchasing an Azbil Corporation product.

This manual contains information for ensuring the correct use of this product. It also provides necessary information for installation, maintenance, and troubleshooting.

This manual should be read by those who design and maintain equipment that uses this product. Be sure to keep this manual nearby for handy reference.

Azbil Corporation

NOTICE

Be sure that the user receives this manual before the product is used.

Copying or duplicating this user's manual in part or in whole is forbidden. The information and specifications in this manual are subject to change without notice.

Considerable effort has been made to ensure that this manual is free from inaccuracies and omissions. If you should find an error or omission, please contact the azbil Group.

In no event is Azbil Corporation liable to anyone for any indirect, special or consequential damages as a result of using this product.

Conventions Used in This Manual

■ The safety precautions explained in the following section aim to prevent injury to the operator and others, and to prevent property damage.

⚠**WARNING**	Warnings are indicated when mishandling this product might result in death or serious injury.
⚠**CAUTION**	Cautions are indicated when mishandling this product might result in minor injury to the user, or physical damage to the product.

■ In describing the product, this manual uses the icons and conventions listed below.


Use caution when handling the product.


The indicated action is prohibited.


Always follow the indicated instructions.

Handling Precautions:

Handling Precautions indicate items that the user should pay attention to when handling the AUD500C.

Note: Notes indicate information that might benefit the user.


This indicates the item or page that the user is requested to refer to.

(1), (2), (3): Numbers within parentheses indicate steps in a sequence or parts of an explanation.

>>: Indicates the result of an operation, details displayed on the personal computer or other devices, or the state of the device after operation.

Safety Precautions

⚠ WARNING

Use this device only in combination with Azbil Corporation's burner controllers.
Install this device in accordance with the following standards: • GB3836.13-2013: "Electrical apparatus for explosive gas atmosphere Part13: Repair and overhaul for apparatus used in explosive gas atmospheres" • GB3836.15-2000: "Electrical apparatus for explosive gas atmospheres Part15: Electrical installations in hazardous area (other than mines)" • GB3836.16-2006: "Electrical apparatus for explosive gas atmospheres Part16: Inspection and maintenance of electrical installation (other than mains)" • GB50257-2014: "Code for construction and acceptance of electric device for Explosion atmospheres and fire hazard electrical equipment installation engineering."
This device is certified to have an explosion-proof construction (Ex d IIC T4/TIIS, Ex d IIC T4 Gb/NEPSI). Install it in a location that complies with this certification.
If this device is installed near a source of ultraviolet rays other than the burner flame or in an atmosphere that interferes with UV rays, as described below, take sufficient countermeasures. • Near sources of ultraviolet rays, such as red-hot furnace walls (1371 °C or more) • Near sources of gamma rays or x-rays, such as diffraction analyzers, electron microscopes, x-ray machines, high-voltage vacuum switches, high-voltage capacitors, radioactive isotopes, etc. • In atmospheres that interfere with ultraviolet rays, due to steam, sooty smoke, oil mist, dust, etc.
Install the flame detector at an angle that does not allow the ignition spark to be detected.
Make sure that this device does not detect ultraviolet rays other than those of the burner flame. If it responds to other ultraviolet radiation, flame failure in the burner will not be detected. As a result, the outflow of fuel will continue, causing a very serious explosion hazard.
Before removing, mounting, or wiring this device, be sure to turn off the power to the device and all connected devices. Failure to do so may cause electric shock.
Before doing any wiring work, be sure to disconnect the power to prevent electrical shock.
To prevent explosion, carry out the pilot turndown test carefully. If this device detects a pilot flame that is too small to ignite the main burner, the burner controller will not be able to recognize flame failure of the main burner, allowing the outflow of fuel to continue, leading to a serious explosion hazard.
If the pilot turndown test is carried out repeatedly, completely shut down all equipment each time the test is finished, and completely discharge unburned gas or fuel that has accumulated in the combustion chamber and flue. If unburned gas and oil are not discharged completely, an explosion may occur.
Do not touch terminals F or G on this device or on the burner controller immediately after the power to the burner controller has been turned OFF. There is a danger of electric shock because terminals F and G retain a charge for up to 1 minute after the power has been turned off.
When measuring the voltage between terminal F and terminal G of this device in order to check the wiring, do not touch any part of the terminals. Doing so may result in an electric shock.
Be sure to use the flameproof packing adapter that comes with this device. Use of different packing invalidates the explosion-proof certification.

⚠ WARNING

Do not use this device without the cover. Doing so may result in an electric shock. If the cover has been removed from this device, before use be sure to reattach the cover and completely tighten its mounting screws. In the case of insufficient tightening, the explosion-proof specifications will not be satisfied, resulting in an explosion hazard.

⚠ CAUTION

This device is designed for both batch operation of the burner (at least one start and stop in a 24-hour period) and continuous operation (nonstop combustion for 24 h or longer). It must be used with a burner controller having a dynamic self-checking function.
Do not install where the product will be exposed to any of the following: • Certain chemicals or corrosive gases (ammonia, sulfur, chlorine, ethylene compounds, acid, etc.). • Splashing water or excessive humidity • High temperatures • Prolonged vibration
Be sure to observe the ambient temperature indicated in the specifications. Failure to do so may damage the device or cause faulty operation.
Installation, wiring, inspection, adjustment, etc., should be carried out by a trained and experienced technician with knowledge and technical skills related to combustion equipment and flame safeguard control devices.
If this device is operated in an atmosphere where there is steam, sooty smoke, oil mist, dust, and/or organic solvents that interfere with ultraviolet rays, take appropriate corrective measures.
When using multiple burners, mount this unit in a position where it can detect only the flame of the burner to be monitored.
Carry out the wiring work in conformity with the specified standards.
Be sure to route the signal wires of this device separately from high-voltage ignition transformer cables and power cables, and put them in a separate conduit.
After the wiring work is complete, be sure to check that there are no mistakes. Incorrect wiring can cause damage or malfunction.
Only an experienced technician with knowledge and technical skills related to combustion equipment and combustion safety should carry out the pilot turndown test.
Do not transport this device while it is mounted on the combustion equipment. Shock or vibration during transport may cause it to malfunction. Before transporting, dismount it and put it in its specially designed shipping box.
The service life of the tube unit and shutter unit components of this device is a maximum of 3 years. To ensure operational safety, be sure to replace these units with new ones within the service life period. For replacement, use the AUD Maintenance Kit (AUD60A1010), which includes the tube and shutter units.
Do not disassemble the flameproof packing. Doing so may degrade its explosion-proof performance when it is reassembled. If disassembling the flameproof packing adapter is unavoidable, such as when removing the detector, please consult with the azbil Group.

Unpacking

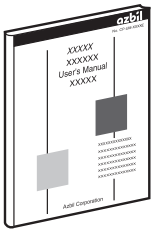
Check the following items when unpacking:

1. Check the model number to make sure you received the correct product.
2. Check for any obvious damage.
3. Check the contents of the package against the packing list to make sure that all items are included.

Items included in the AUD500C are shown below.

Handle the AUD500C and its accessories with care to prevent damage or loss of parts.

If there is any problem with your order, please contact your dealer immediately.

Product	Model No.	Qty.	Notes
Advanced ultraviolet flame detector	AUD500C	1	☞■ Model selection table (page 1)
User's Manual 	CP-SP-1328E	1	This manual
Expiration date label	81409735-001	1	Use for maintenance.

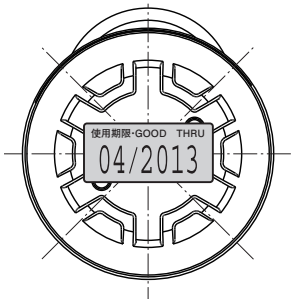
Note: For cable replacement, contact the azbil Group.

- Expiration date label

  Attach the included expiration date label to the cover of the AUD500C.

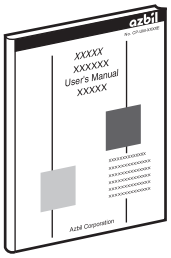
Expiration date label

Example of AUD500C11000 label location



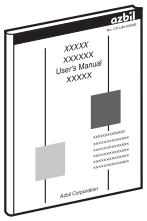
The Role of This Manual

There are eight different manuals related to the AUD500C. Read them as necessary for your specific requirements. If a manual you require is not available, contact the azbil Group or one of its dealers.



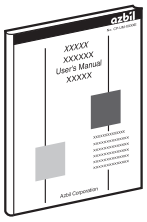
AUD500C11000 Series Explosion-Proof Advanced Ultraviolet Flame Detector User's Manual **No. CP-SP-1328E**

This manual.
It describes installation, wiring, maintenance, and troubleshooting of the AUD500.



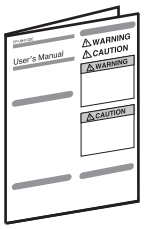
AUR300C Advanced Ultraviolet Burner Controller User's Manual **No. CP-SP-1142E**

Personnel in charge of the design, installation, operation, or maintenance of equipment that incorporates the AUR300C should read this manual thoroughly. The manual describes installation, wiring, trial-run adjustment, maintenance, etc.



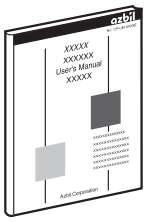
AUR450C Dynamic Self-Checking Burner Controller User's Manual **No. CP-SP-1264E**

First-time users of the AUR450C or those in charge of hardware design and/or maintenance of combustion equipment incorporating the AUR450C should read this manual thoroughly. The manual gives an overview of the product and describes installation, wiring, operation, trial-run adjustment, maintenance, and specifications.



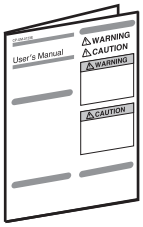
RX Series Combustion Safety Controller RX-R40/20 Series Burner Control Module User's Manual Installation **No. CP-UM-5630JE**

This manual is supplied with the RX-R40/20 series. Personnel in charge of the design and/or manufacture of equipment that incorporates the RX-R40/20 should read this manual thoroughly. The manual covers safety precautions, installation, and wiring, and gives primary specifications.



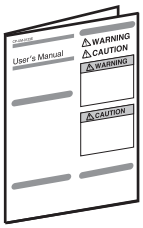
Comprehensive User's Manual for the RX Series Combustion Safety Controller (RX-L Burner Interlock Module and RX-R Burner Control Module) **No. CP-SP-1321E**

First-time users of the RX-L and RX-R or those in charge of hardware design and/or maintenance of a control panel incorporating the RX-L and RX-R should read this manual thoroughly. This manual gives an overview of the RX-L and RX-R, surveys the modules and other products used with them, explains installation, wiring, and troubleshooting, and gives hardware specifications.



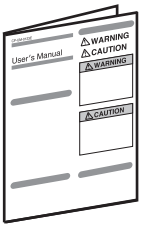
FSP300C Flame Simulator User's Manual **No. CP-SP-1209E**

Personnel using the simulator to check the operation of the AUD300C/500C or the AUR300C/350C/450C should read this manual. It describes installation, operation, and precautions for use of the FSP300.



FSP136A Analog Flame Meter User's Manual **No. CP-SP-1212E**

Personnel using the FSP136A to measure the voltage of the AUR300C/350C/450C should read this manual. It describes precautions for use of the flame meter.



AUD60A1000/1010 AUD Maintenance Kit User's Manual
No. CP-UM-5440JE

This manual describes the replacement procedure for the tube unit and shutter unit of the AUD300C1000, AUD300C2100 (discontinued), AUD500C1100, and AUD500C2010 (discontinued).

Contents

Chapter 1. OVERVIEW

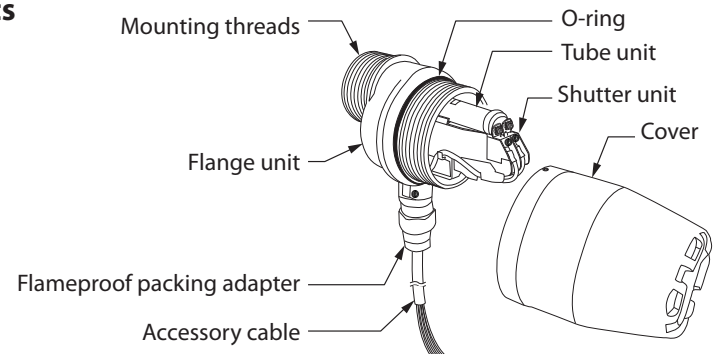
■ Overview

The AUD500C Explosion-Proof Advanced Ultraviolet Flame Detector (hereafter this/the device) is designed to detect ultraviolet radiation from an oil or gas burner flame, for use with both batch and continuous operation burners. The AUD500C is used in combination with a dedicated burner controller. By means of the built-in shutter, any malfunction of the UV flame detector or burner controller is detected by the start check and continuous self-checking function (Dynamic Self-Check), ensuring highly reliable combustion safety control.

■ Features

- The case has an explosion-proof construction (Ex d IIC T4/TIIS, Ex d IIC T4 Gb/ NEPSI).
- Thanks to its compact and lightweight structure, this self-checking flame detector is compatible with various mounting orientations.
- Improved environmental resistance and an IP67 seal allow use at an ambient temperature of 60 °C.
- Because it can be mounted vertically and has a maximum wire length of 200 m, flexible installation is possible.
- Replacement and maintenance work is easy with the AUD Maintenance Kit (AUD60A1010), which includes the tube and shutter units.

■ Names of parts



■ Model selection table

Basic model No.	Cable length	Lens	Additional	Description
AUD500C11				Explosion-proof advanced UV flame detector
	0			3 m
	1			10 m
		0		Standard type
		1		Condenser type
			0	None
			D	Inspection report
			Y	Traceability certificate
			0T	Tropicalization treatment
			DT	Inspection report + tropicalization treatment
			YT	Traceability certificate + tropicalization treatment
			E	Heavy-duty corrosion-resistant coating + inspection report
			ET	Heavy-duty corrosion-resistant coating + inspection report + tropicalization treatment
			H	Heavy-duty corrosion-resistant coating + traceability certificate
			HT	Heavy-duty corrosion-resistant coating + traceability certificate + tropicalization treatment

■ Configuration

● Combined burner controller

Model	Name
RX-R40, RX-R44, RX-R46	Burner Control Module
AUR300C, AUR350C	Advanced Ultraviolet Burner Controller
AUR450C	Dynamic Self-Checking Burner Controller

● Adapter

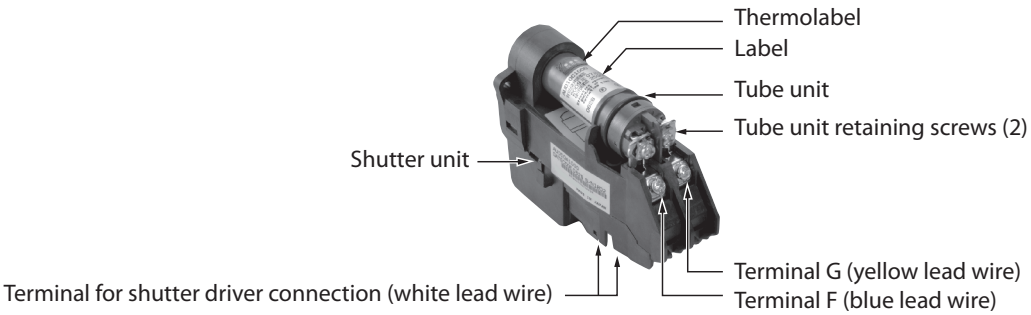
Model	Name
81441151-001	Aluminum adapter (G2-1/4 → R1)
81441151-002	SUS adapter (G2-1/4 → R1)

● Maintenance/optional parts

Model	Name
AUD60A1010*	AUD Maintenance Kit
81447031-001	Adapter packing
81446985-001	O-ring

*AUD60A1010 Maintenance Kit

- The AUD maintenance kit incorporates the shutter and tube units. The kit includes the O-ring used as a seal between the flange and cover of the AUD500.



Chapter 2. INSTALLATION

⚠ WARNING

Install this device in accordance with the following standards:
- GB3836.13-2013: "Electrical apparatus for explosive gas atmosphere Part13: Repair and overhaul for apparatus used in explosive gas atmospheres"
- GB3836.15-2000: "Electrical apparatus for explosive gas atmospheres Part15: Electrical installations in hazardous area (other than mines)"
- GB3836.16-2006: "Electrical apparatus for explosive gas atmospheres Part16: Inspection and maintenance of electrical installation (other than mains)"
- GB50257-2014: "Code for construction and acceptance of electric device for Explosion atmospheres and fire hazard electrical equipment installation engineering."

This device is certified to have an explosion-proof construction (Ex d IIC T4/TIIS, Ex d IIC T4 Gb/NEPSI). Install it in a location that complies with this certification.

If this device is installed near a source of ultraviolet rays other than the burner flame or in an atmosphere that interferes with UV rays, as described below, take sufficient countermeasures.
- Near sources of ultraviolet rays, such as red-hot furnace walls (1371 °C or more)
- Near sources of gamma rays or x-rays, such as diffraction analyzers, electron microscopes, x-ray machines, high-voltage vacuum switches, high-voltage capacitors, radioactive isotopes, etc.
- In atmospheres that interfere with ultraviolet rays, due to steam, sooty smoke, oil mist, dust, etc.

Install the flame detector at an angle that does not allow the ignition spark to be detected.

Before mounting or removing, be sure to turn off the power to this device and all connected devices. Failure to do so may result in electric shock.

Make sure that this device does not detect ultraviolet rays other than those of the burner flame. If it responds to other ultraviolet radiation, flame failure in the burner will not be detected. As a result, the outflow of fuel will continue, causing a very serious explosion hazard.

⚠ CAUTION

Do not install where the product will be exposed to any of the following:
- Certain chemicals or corrosive gases (ammonia, sulfur, chlorine, ethylene compounds, acid, etc.).
- Splashing water or excessive humidity.
- High temperatures
- Prolonged vibration

Be sure to observe the ambient temperature indicated in the specifications. Failure to do so may damage the device or cause faulty operation.

Installation, wiring, inspection, adjustment, etc., should be carried out by a trained and experienced technician with knowledge and technical skills related to combustion equipment and flame safeguard control devices.

If this device is operated in an atmosphere where there is steam, sooty smoke, oil mist, dust, and/or organic solvents that interfere with ultraviolet rays, take appropriate corrective measures.

When using multiple burners, mount this unit in a position where it can detect only the flame of the burner to be monitored.

When discarding this product, dispose of it as industrial waste, following local regulations.

■ What to know before installation

- For proper installation of the device, thoroughly read the instruction manuals for the burner, boiler, and other equipment provided by the combustion equipment manufacturers. Make an appropriate installation plan according to those instruction manuals.
- This device must monitor actual flames. Make the mounting position of the device as close to the flame as possible unless that position affects the equipment layout around the burner, the operating temperature, etc. The shorter the distance between the device and the burner nozzle, the more ultraviolet radiation can be detected.
- Mount this device away from the ignition transformer. Mount the ignition transformer as close to the burner as possible, and be sure to ground the transformer.

■ Methods of monitoring burner flame

● Monitoring of the pilot flame only (continuous, intermittent pilots)

The main burner must be reliably ignited even with the smallest pilot flame that this device can detect. For this reason, throttle the pilot manual fuel valve so that the main burner can be barely ignited. Under this condition, adjust the device so that only the tip of the pilot flame is monitored. Adjust the device so that the monitored area is as close to the tip of the flame as possible, and is also along the axis of the pilot flame.

● Monitoring of both pilot and main flames (continuous, intermittent pilots)

Adjust the device so that it monitors the area where the pilot and the main flames overlap.

● Monitoring of main flame only (interrupted pilot)

Adjust the device so that it monitors the part of the main flame that is the most stable in any combustion condition (low fire, high fire, etc.). In special combustion conditions, the use of two detectors is recommended in order to monitor the low and high fire positions separately.

● Separate monitoring of pilot and main flames (continuous, intermittent pilots)

Make sure that the detector monitoring the main flame cannot mistakenly detect the pilot flame. If it detects the pilot flame when there is a flame failure of the main burner, the flame failure will not be detected, and the fuel supply will not be shut off.

● Monitoring if there are multiple burners in the same combustion chamber

Mount a UV sensor on each burner, making sure in each case that another burner's flame is not detected.

Note that there is an electrical discharge inside this device's tube unit while a flame is detected. Since ultraviolet rays are emitted from the tube due to this electrical discharge, if multiple detectors are used, their position must be adjusted so that detectors cannot detect ultraviolet rays emitted from the tube unit of other detectors.

● Redundant system (redundant monitoring)

Redundant monitoring is recommended to avoid unnecessary shutoff as much as possible and to ensure the reliability of the system. A redundant system can be made if two pairs of this device plus a burner controller are used to monitor the flame of one burner. If either flame detector does not output a flame signal or if there is a false flame signal, an alarm will be generated, but combustion will continue.
If both burner controllers detect a flame failure at the same time, the combustion system will be shut down. This kind of redundant system prevents unnecessary shutoff caused by flame fluctuation or a malfunction of this device or of the burner controller.

■ Mounting position

Taking the following items into account, determine the optimal mounting position.

● Temperature

Use this device in a location where the ambient temperature is within the −20 to +60 °C range.

[!] Handling Precautions

- If the above temperature range is not observed, a malfunction of the tube unit or shutter unit of this device, or unnecessary shutoff, may occur.
- If the actual temperature is expected to be outside of the operating temperature range, provide a shielding plate between the combustion chamber and this device, or use air purging or the like so that the temperature is within the operating temperature range.

● Vibration

Mount the device in a location where the acceleration is 4.9 m/s^2 or less.

[!] Handling Precautions

- Vibration may shorten the service life of the tube unit or shutter unit, or may cause faulty operation or malfunction.

● Outdoor use

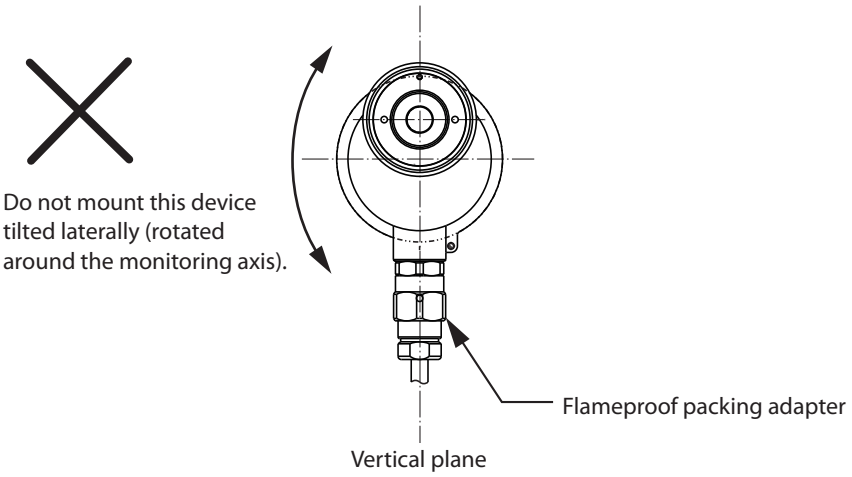
Provide a roof, etc., to protect against rain.

[!] Handling Precautions

- The surface of the case may change color due to sunshine or other causes. However, this will not affect the functioning of the product.

■ Mounting orientation

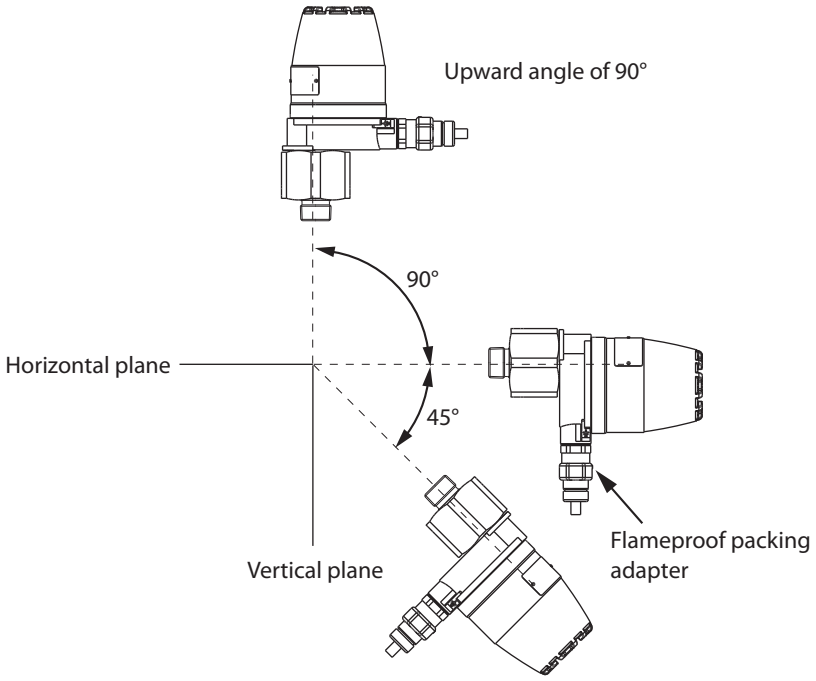
Mount this device on a vertical surface with the flameproof packing adapter facing downward.



The allowable mounting angle of this device ranges from having the back tilted upward at a 90° angle (with the flameproof packing adapter horizontal) to having the back tilted downward at a 45° angle.

[!] Handling Precautions

- If the orientation is wrong, the shutter of the shutter unit may be damaged or malfunction may occur.



■ Mounting of the monitoring pipe

● Monitoring pipe materials

Use a mounting pipe with a black inside wall. If the inside wall of the pipe has a stainless steel or electroplated surface, ultraviolet rays will be reflected irregularly inside the pipe, causing a malfunction.

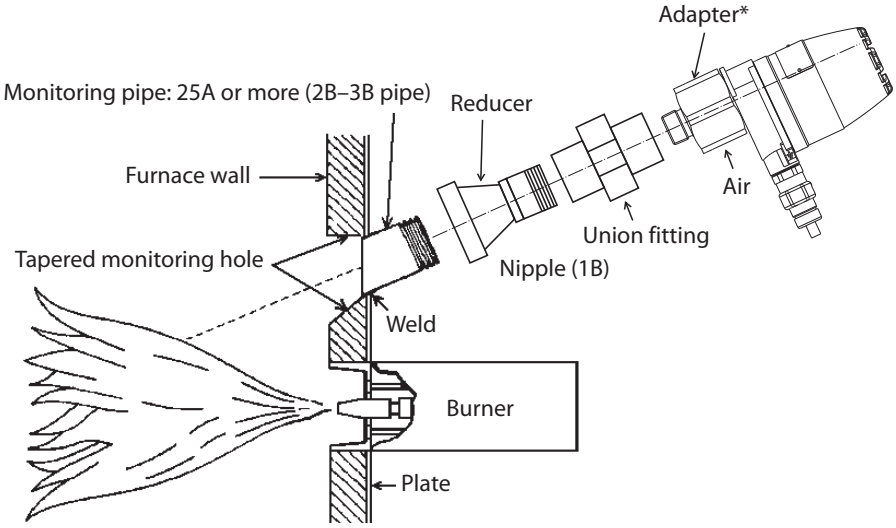
● Monitoring pipe size

To detect a large amount of ultraviolet radiation from the flame, this device's light-receiving surface must have a wide field of view. If the recommended flame voltage of 2.0 V DC cannot be ensured, change the monitoring pipe to a wider one so that sufficient ultraviolet radiation is received.

- Use as large a monitoring pipe as possible. Connect the pipe to the device using a reducer.
- Make the monitoring pipe as short as possible. However, make sure that the operating ambient temperature does not exceed 60 °C.

● Mounting space

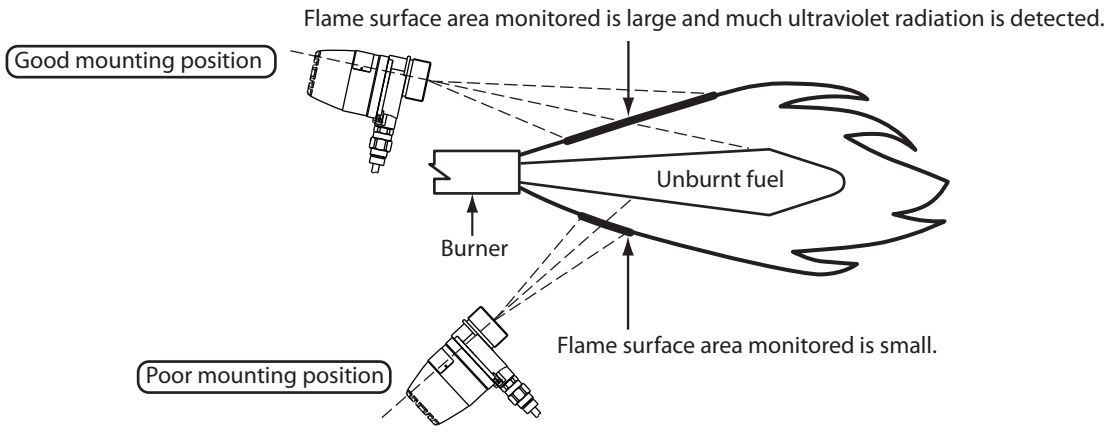
Leave a sufficient space for easy maintenance, inspection, and service work.



* If air purging is needed, supply air from the air-purge hole (R1/8) in the adapter.

! Handling Precautions

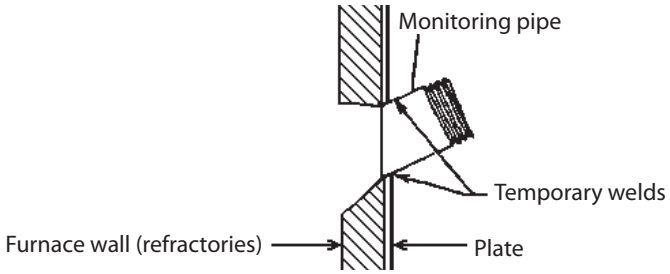
- Mount this device so that it monitors the burner at an angle from above. If it monitors the burner at an angle from below or from the same level, dust, soot, etc., will accumulate on the monitoring window or in the monitoring pipe. This may block the ultraviolet rays, preventing flame detection.
- Mount this device so that its monitoring orientation intersects the flame axis at as small an angle as possible. This maximizes the overlap between the flame and the area monitored by the device. Thus, the amount of detected ultraviolet rays also increases.



● Temporary welding for monitoring pipe positioning

(1) Preparing a monitoring pipe and making the mounting hole
- Make the mounting hole at the selected location for the monitoring pipe.
- Cut threads on one end of the monitoring pipe and cut it to the desired length, making it as short as possible.

(2) Welding the monitoring pipe temporarily
- Weld the monitoring pipe temporarily to the plate of the combustion chamber of the boiler, etc. Do not weld the monitoring pipe completely at this time, because inspection and adjustment are required for successful flame detection.



(3) Mounting of the AUD500C
- Screw the adapter into the AUD500C mounting threads.
  Tightening torque: 12–18 N·m
- Attach them using a union fitting or the like, making sure that the cable gland faces downward.

(4) Air purging for the monitoring pipe
- Remove the adapter plug and attach an air-purge pipe (R1/8) to the adapter. During the air purge, the internal pressure of the adapter must be higher than that of the furnace.

Note

- Air purging of the inside of the monitoring pipe is useful for cooling this device and keeping the monitoring area of the device clean. In particular, if the inside temperature of the monitoring pipe exceeds 60 °C, cooling by air purge or other means is needed.

Chapter 3. WIRING

⚠ WARNING

Install this device in accordance with the following standards:
- GB3836.13-2013: "Electrical apparatus for explosive gas atmosphere Part13: Repair and overhaul for apparatus used in explosive gas atmospheres"
- GB3836.15-2000: "Electrical apparatus for explosive gas atmospheres Part15: Electrical installations in hazardous area (other than mines)"
- GB3836.16-2006: "Electrical apparatus for explosive gas atmospheres Part16: Inspection and maintenance of electrical installation (other than mains)"
- GB50257-2014: "Code for construction and acceptance of electric device for Explosion atmospheres and fire hazard electrical equipment installation engineering."

Before doing any wiring work, be sure to disconnect the equipment power to prevent electrical shock.

Be sure to use the flameproof packing adapter that comes with this device. Use of a different adapter invalidates the explosion-proof certification.

When measuring the voltage between terminal F and terminal G of this device in order to check the wiring, do not touch any part of the terminals. Doing so may result in an electric shock.

⚠ CAUTION

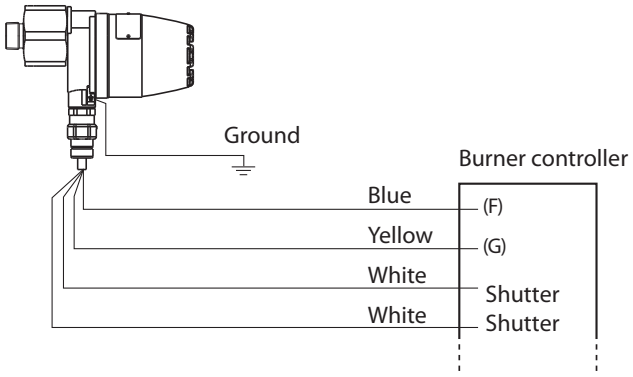
Installation, wiring, inspection, adjustment, etc., should be carried out by a trained and experienced technician with knowledge and technical skills related to combustion equipment and flame safeguard control devices.

Be sure to route the signal wires of this device separately from high-voltage ignition transformer cables and power cables, and put them in a separate conduit.

Do not disassemble the flameproof packing. Doing so may degrade its explosion-proof performance when it is reassembled. If disassembling the flameproof packing adapter is unavoidable, such as when removing the detector, please consult with the azbil Group.

■ Wiring diagram

AUD500C Advanced Ultraviolet Flame Detector



Run all wires connected to the burner controller through wiring conduits and conduit boxes. Also, be sure to route power wiring to the controller separately from other power wires.

[!] Handling Precautions

- Do not run the wiring to this device in the same wiring conduit as power lines or high voltage cables from the ignition transformer.
- Put high-voltage ignition transformer cables and the ground wire in the same conduit, and ground one end of the conduit. If an automotive spark plug is used, pay special attention to wiring.
- If the surge from the ignition transformer adversely affects the detector, ground both ends of the conduit between the detector and the burner controller, or change the cable routing.

■ Wiring check

Before applying voltage to this device, check that the wiring is correct.

● Steps

(1) In the relay box, disconnect the blue and yellow wires that come from the AUD500C.

(2) Turn on the power to the burner controller.

(3) Measure the DC voltage between terminals F and G in the relay box using a circuit tester or a digital voltage meter.

(4) Connect the + tester probe to terminal G (yellow wire) and the – tester probe to terminal F (blue wire).
>> If the reading is between 160 and 220 V DC, the leads are connected correctly. If a negative voltage is measured, terminals F and G are reversed.

(5) Next, measure the DC voltage (shutter voltage) between terminals S1 and S2 (both wires are white).

[!] Handling Precautions

- Terminals S1 and S2 do not have a specified polarity. When using a multimeter, before measuring the shutter voltage, check the polarity using a wide voltage range so that the needle does not go off the scale on the minus side.

>> If the reading is between 15 and 24 V DC, the leads are connected correctly.* If the meter indicates a constant voltage, either 24 or 0 V DC, the cause is probably a wiring mistake.

* If there is a flame, the shutter voltage fluctuates within the 0–24 V DC range.

(6) In the relay box, reconnect the blue and yellow wires that come from the AUD500C one minute or longer after the power to the burner controller has been turned OFF.

[!] Handling Precautions

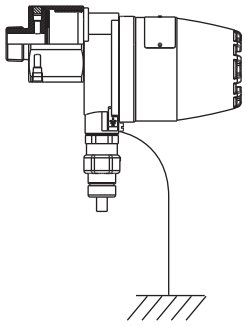
- Terminals F and G retain an electrical charge for about 1 minute after the power has been turned off. Within this time, touching terminal F or G may result in electric shock.

■ Grounding

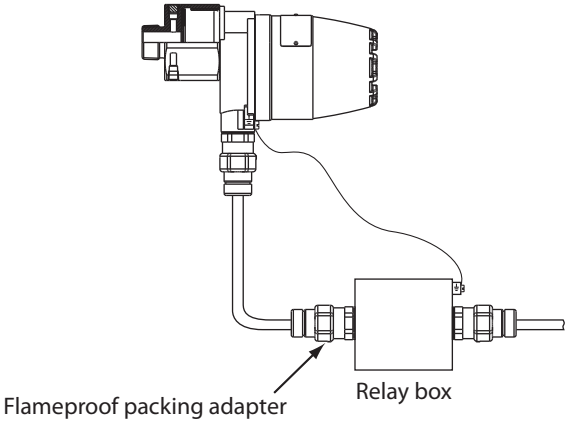
Before applying voltage to this device, check that the wiring is correct.

● Methods

(1) Directly ground this device's external ground terminal.



(2) Connect this device's external ground terminal to the ground terminal of the relay box.



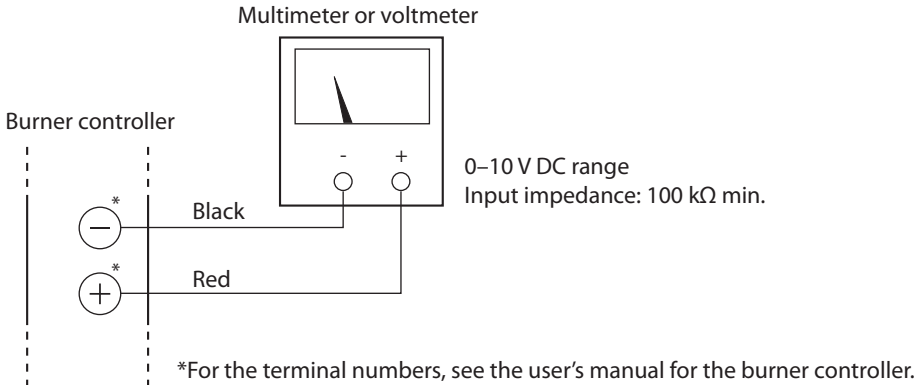
[!] Handling Precautions

- Connect the ground cable to the ground terminal with an M4 (5.5 mm^2) ring-tongue crimp terminal.
- Use the flameproof packing adapter when connecting cables to the relay box.

Chapter 4. ADJUSTMENT

■ Before measuring the flame voltage

Before measuring the flame voltage, execute an operational check of this device using the flame voltage output terminals of the burner controller.



(1) Connect a multimeter to the + and − terminals of the burner controller.

(2) Check that voltage is output normally by placing an ultraviolet light generator or the like directly in front of the ultraviolet receiver of this device.

[!] Handling Precautions

- Before using fire, check that there is no flammable gas around this device.

■ Measuring the flame voltage

If there are both pilot and main flames, measure the voltage of each. Measure the flame voltage for the maximum (high fire) and minimum (low fire) combustion.

(1) Mount this device on the monitoring pipe temporarily.

(2) Start burner combustion.

(3) To determine the optimal monitoring position, measure the flame voltage of the burner controller using a multimeter while gradually changing the monitoring pipe position. Find the position where the measured voltage is as high and stable as possible.

Recommended flame voltage	Check item
The flame voltage must be stable at 2.0 V DC or more. (It may fluctuate in a range of 0.1–0.3 V synchronized with the shutter operation of this device.)	• Is the flame properly monitored? • Is the detector's light-receiving lens clean? • Is there accumulated soot, etc., in the monitoring pipe?

[!] Handling Precautions

- If the flame voltage exceeds 4 V, install an orifice to limit the amount of ultraviolet radiation. If the amount of ultraviolet radiation is too large, UV rays may enter the tube unit due to diffuse reflection even when the shutter is closed, causing a malfunction.

■ Pilot turndown test

This test is intended to check that any pilot flame detected by this device will reliably ignite the main burner, even if the gas pressure and air pressure have changed to their worst possible conditions.

⚠ WARNING

- To prevent explosion, carry out the pilot turndown test carefully. If this device detects a pilot flame that is too small to ignite the main burner, the burner controller will not be able to recognize flame failure of the main burner, allowing the outflow of fuel to continue, leading to a serious explosion hazard.
- Be sure to use the flameproof packing adapter that comes with this device. Use of a different adapter invalidates the explosion-proof certification.

⚠ CAUTION

- Installation, wiring, inspection, adjustment, etc., should be carried out by a trained and experienced technician who has knowledge and technical skills related to combustion equipment and flame safeguard control devices.
- Only an experienced technician who has knowledge and technical skills related to combustion equipment and combustion safety should carry out the pilot turndown test.

For the pilot turndown test procedure, follow the user's manual of the burner controller used with this device or the instruction manual provided by the combustion equipment manufacturer.

■ Ignition spark response test

⚠WARNING

Make sure that this device does not detect ultraviolet rays other than those of the burner flame. If it responds to other ultraviolet rays, flame failure in the burner will not be detected. As a result, fuel will continue to be discharged, causing a very serious explosion hazard.

● Steps

(1) Close the manual shutoff valves of the pilot and main burners.

(2) Start the burner so that ignition is attempted. When the ignition spark is generated, check that the flame relay of the burner controller does not turn ON.

(3) If the flame relay turns ON, adjust the monitoring point of this device to avoid effects from the ignition spark and its reflection.

[!] Handling Precautions

- The following shows various sources other than flame that may activate this device. Check that the device's operation is not affected by these sources under any operating conditions.

  Example:

Ultraviolet ray sources	Red-hot furnace walls at 1370 °C or more
	Ignition transformer and welding arc spark
	Gas lasers
	Sunlamps
	Disinfecting lamps, UV lamps, fluorescent lamps
	Strong flashlights (toward UV sensor)
Gamma and x-ray sources	X-ray and gamma diffraction analyzers
	Electron microscopes
	X-ray cameras
	High-voltage vacuum switches
	High-voltage capacitors
	Radioactive isotopes
	Any other sources of UV rays, gamma rays, or X-rays

■ Permanent mounting of monitoring pipe

(1) After all adjustments have been done, if the equipment operates properly with the specified flame voltage output, turn OFF the power to the equipment, remove the detector, and weld the monitoring pipe permanently.

(2) Remount the device on the monitoring pipe securely and do all wiring.

■ Final check

For reliable burner control, run the equipment through at least one cycle to check all control operations.

Chapter 5. TROUBLESHOOTING

⚠ WARNING

Before removing, mounting, or wiring this device, be sure to turn off the power to the device and all connected devices. Failure to do so may cause electric shock.

Do not touch terminals F or G on this device or on the burner controller immediately after the power to the burner controller has been turned OFF. There is a danger of electric shock because terminals F and G retain a charge for up to 1 minute after the power has been turned off.

⚠ CAUTION

Installation, wiring, inspection, adjustment, etc., should be carried out by a trained and experienced technician with knowledge and technical skills related to combustion equipment and flame safeguard control devices.

● Required items

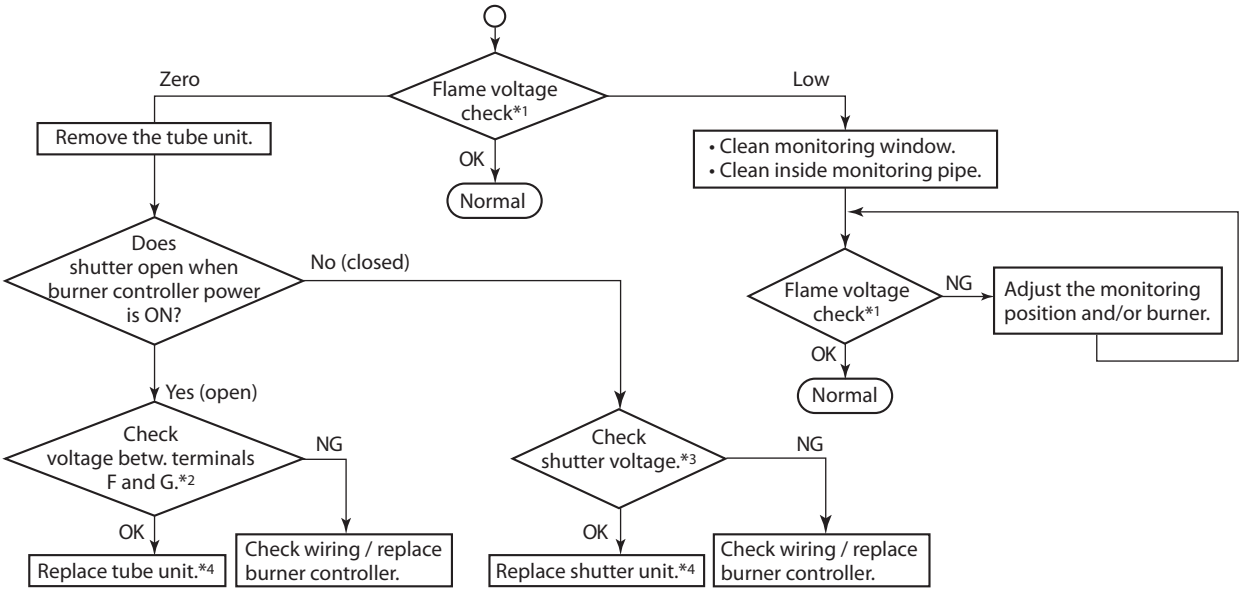
- Multimeter* DC range: 0–10 V, 0–30 V, 0–300 V
  * Input impedance: 100 kΩ min.
- ☞ ● Maintenance/optional parts (P. 2)

● Troubleshooting procedure

(1) Check the following operating conditions.

Item	What to Check
Supply power	Is the power switch ON? Are power terminal screws loose? Is the voltage within the allowable range?
Wiring	Do wires go to the right terminals? Is there a broken wire? Is there deteriorated or damaged insulation?
Ambient temperature	Is the temperature no higher than 60 °C?
Ambient humidity	Is the ambient humidity no higher than 90 % RH? Is there condensation inside the device?

(2) Check the device according to the flowchart below.



*1. 2.0 V DC or more is normal. *2. 160–220 V DC is normal. *3. Fluctuation between 0 V and 15–24 V DC is normal.
*4. When replacing the tube unit, replace the shutter unit also. When replacing the shutter unit, replace the tube unit also.

Chapter 6. MAINTENANCE AND INSPECTION

⚠ WARNING

Before mounting, removing, or wiring this device, be sure to turn OFF the power to the module and any connected devices. Failure to do so may result in an electric shock.

Do not touch terminals F or G on this device or on the burner controller immediately after the power to the burner controller has been turned OFF. There is a danger of electric shock because terminals F and G retain a charge for up to 1 minute after the power has been turned off.

Do not use this device without the cover. Doing so may result in electric shock. If the cover is removed, be sure to reattach it, and firmly tighten the retaining screws. If screws are not sufficiently tightened, the specifications for explosion-proof equipment will not be met, resulting in an explosion hazard.

⚠ CAUTION

Installation, wiring, inspection, adjustment, etc., should be carried out by a trained and experienced technician with knowledge and technical skills related to combustion equipment and flame safeguard control devices.

The service life of the tube unit and shutter unit components of this device is a maximum of 3 years. To ensure operational safety, be sure to replace them with new ones within the service life period. For replacement, use the AUD Maintenance Kit (AUD60A1010), which includes the tube and shutter units.

■ Periodic inspection

(1) Turn off the power to the burner controller.

(2) Clean the monitoring window and monitoring pipe periodically.
Remove the device from the monitoring pipe and clean the inside of the monitoring pipe and the quartz glass with a clean cloth.

(3) To check the function of the tube unit, periodically conduct a safety shutoff test.
☞ AUR300C Advanced Ultraviolet Burner Controller User's Manual, No. CP-SP-1142E
AUR350C Advanced Ultraviolet Burner Controller with Communications User's Manual, No. CP-SP-1175E
AUR450C Dynamic Self-Checking Burner Controller User's Manual, No. CP-SP-1264E
Comprehensive User's Manual for the RX Series Combustion Safety Controller (RX-L Burner Interlock Module and RX-R Burner Control Module), No. CP-SP-1321E

(4) Adjust the burner so that it operates properly as recommended by the burner manufacturer.

● Maintenance and inspection cycle

Points to check	Frequency
Dirty monitoring window and monitoring pipe, loose screws	Once a month or more
Safety shutoff test	Once a month or more
Measurement of flame voltage	Once a month or more
Pilot turndown test	Once a year or more

[!] Handling Precautions

- If burner shutoff will cause serious loss, conduct inspection more frequently.
- If the burner manufacturer provides specific instructions for maintenance and inspection, be sure to observe them.
- For inquiries about device failure, repair service, etc., contact the azbil Group.

■ Replacement of the shutter unit and tube unit using the AUD Maintenance Kit (AUD60A1010)

The AUD maintenance kit includes the tube and shutter units, as well as expendables like O-rings.

[!] Handling Precautions

- When replacing, handle the tube unit gently, taking care not to jar it.
- When attaching the cover after replacement, fit the O-ring onto the flange unit properly. Failure to do so will impair its sealing performance.

● Removal

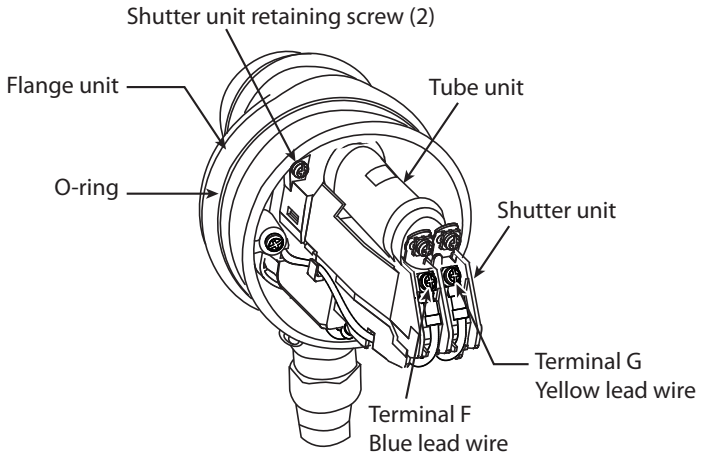
(1) Turn off the power to the burner controller.

(2) After 1 minute or more, loosen the cover setscrew and unscrew the cover.

(3) Remove the 4 terminal screws to disconnect the lead wires (2 white, 1 blue, and 1 yellow) from the shutter unit.

(4) Remove the 2 shutter unit retaining screws.

(5) Dismantle by separating the flange unit and shutter unit at the top.

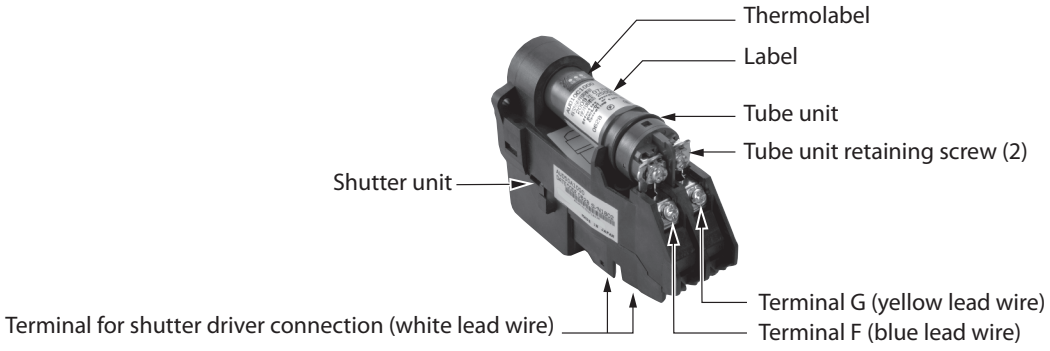


(6) Remove the O-ring from the flange unit

● Installation

(1) Fit the O-ring that is included in the AUD Maintenance Kit onto the flange unit.

(2) Loosen the 2 screws holding the new (AUD Maintenance Kit) tube unit and remove the tube unit, holding it by the back of the unit.



(3) After removing the tube unit, mount the shutter unit only on the flange unit using the 2 retaining screws.

[!] Handling Precautions

- Before mounting, insert the lead wires (blue and yellow) into the slits of the shutter unit. When mounting the unit onto the flange unit, hold the white lead wires under the shutter unit so that they stay in the cable guide groove.

(4) Be sure to connect the lead wires to the 4 terminals of the shutter unit correctly.

[!] Handling Precautions

- The blue lead wire goes to terminal F and the yellow one to terminal G. Connect the two wires according to the "F" and "G" shown on the polarity indication label on the shutter unit.

● Wiring check for tube and shutter units

(1) Turn on the burner controller to check whether terminals F and G are properly connected.

(2) Measure the DC voltage between terminals F and G using a multimeter or digital voltmeter.

(3) Connect the + tester probe (red) to terminal G (yellow lead wire) and the – tester probe (black) to terminal F (blue lead wire).

Terminal	Meter probe	Voltage
F	–	160–220 V DC
G	+	

>> If the reading is between 160 and 220 V DC, the leads are connected correctly. If a negative voltage is measured, terminals F and G are reversed.

(4) Next, measure the DC voltage (shutter voltage) between terminals S1 and S2 (both lead wires are white).

[!] Handling Precautions

- Terminals S1 and S2 do not have a specified polarity. When using a multimeter, before measuring the shutter voltage check the polarity using a wide voltage range so that the needle does not go off the scale on the minus side.

>> If the reading is between 15 and 24 V DC, the leads are connected correctly. If the meter indicates a constant voltage, either 24 or 0 V DC, the cause is probably a wiring mistake.

(5) The wiring check is complete. After 1 minute or more, mount the tube unit onto the shutter unit, holding the back of the tube unit, and tighten the 2 retaining screws to secure the unit.

(6) Check to make sure that the O-ring is still fitted properly on the flange unit.

(7) Screw the cover on and tighten the cover setscrew.

Handling Precautions

- The tube unit has polarity. Correctly mount the tube unit on the shutter unit according to the "F" and "G" shown on the polarity indication label on the top of the shutter unit. The shutter unit has a stepped surface which fits that of the tube unit. For that reason the tube unit cannot be mounted the wrong way. Do not attempt to force it.
- When transporting or storing the tube unit, always put it in its specially designed shipping box.
- If the thermolabel attached to the tube unit has changed color from white to black, the temperature may have exceeded the operating temperature range. If the ambient temperature of the Advanced Ultraviolet Flame Detector is too high, cool down the device using air purging or the like. The thermolabel gives only a rough estimate of the temperature. Check the correct ambient temperature using a thermometer.
- When attaching the cover, fit the O-ring onto the flange unit properly.
- Tighten terminal screws and retaining screws for the shutter and tube units to a torque of 0.7 N·m.
- Tighten the cover setscrew on the AUD500C to a torque of 1.5 N·m or greater.
- Do not damage the threads or the areas of contact between the flange and the cover. If there is damage, explosion-proof performance cannot be maintained.
- Once the cover has been removed, be sure to replace the O-ring with a new one. When reassembling, put grease on the O-ring, the cover where it contacts the O-ring, and the threads.

  Note
  • Thickener: lithium soap
  • Worked penetration (NLGI grade): 0 to 3
  • Dropping point: 175 °C or more
  • Operating temperature: –20 to +120 °C

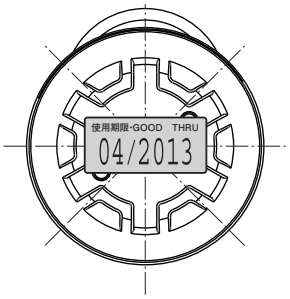
  Recommended grease
  • Shell Sunlight Grease (Showa Shell Sekiyu K. K.)
  • EPNOC GREASE AP (N) (JX Nippon Oil & Energy Corporation)
  • Daphne Eponex Grease EP (Idemitsu Kosan Co.,Ltd.)
  • Sumi Grease BG (Sumico Lubricant Co., Ltd.)
- After attaching the cover, tighten the cover setscrew so its top is level with the surface of the cover. If the top of the setscrew is too high or too low, the O-ring can be damaged.

● **Expiration date label**

Affix the expiration date label included in the AUD Maintenance Kit to the cover as shown below.

Expiration date label

Label location on the AUD500C11000



■ Replacement of adapter packing

If the adapter packing is more than 10 years old or is cracked or otherwise damaged, replace it with new packing.

Chapter 7. SPECIFICATIONS

■ Specifications

Item	Description
Compatible flame*1	Flame from natural gas, propane gas, kerosene, heavy oil, coke oven gas, hydrogen, chlorine, ammonia, naphtha, ethylene, etc.
Self-checking cycle	Approx. 80 cycles/min
Insulation resistance	50 MΩ min. with 500 V DC megger, between the flange and terminals F (blue lead wire), G (yellow lead wire), S1 (white lead wire), and S2 (white lead wire) when the wiring is removed from the burner controller (also, the tube unit must be removed)
Dielectric strength	1500 V AC for 1 minute or 1800 V AC for 1 s between the flange and terminals F (blue lead wire), G (yellow lead wire), S1 (white lead wire), and S2 (white lead wire) when the wiring is removed from the burner controller (also, the tube unit must be removed)
Operating temperature	–20 to +60 °C
Storage ambient temperature	–20 to +70 °C
Storage ambient humidity	90 %RH max. at 40 °C (without condensation)
Vibration resistance	4.9 m/s^2 max., 10 to 55 Hz for 2 hours each in X, Y and Z directions
Pressure resistance at the monitoring pipe connection	690 kPa
Protective structure	IP67
Mounting orientation	–45 to +90° (vertical mounting)
Mounting thread (for connection of the monitoring pipe)	Flange: G2-1/4 straight thread Adapter: R1 tapered thread
Accessory cable length	0.75 mm^2 heat-resistant silicone lead wires (4): 3 or 10 m (depending on the model)
Allowable wiring length	2.0 mm^2 600 V PVC-insulated cable (IEC 60227-3): 200 m max.
Material	Housing: Aluminum Mounting threads: Aluminum
Color	Black: Models without heavy-duty corrosion-resistant coating Dark beige: Models with heavy-duty corrosion-resistant coating
Mass	Approx. 2.5 kg
Explosion-proof structure	Ex d IIC T4/TIIS, Ex d IIC T4 Gb/NEPSI
Explosion-proof certification No.	Technology Institution of Industrial Safety (TIIS): No. TC20242 NEPSI: GYJ15.1463X*2
Effective life of tube and shutter units	3 years

*1. In the case of the use of coke oven gas, hydrogen, chlorine, ammonia, naphtha, ethylene, etc., there may be restrictions on mounting a flame detector, so before use check that flame monitoring is possible.

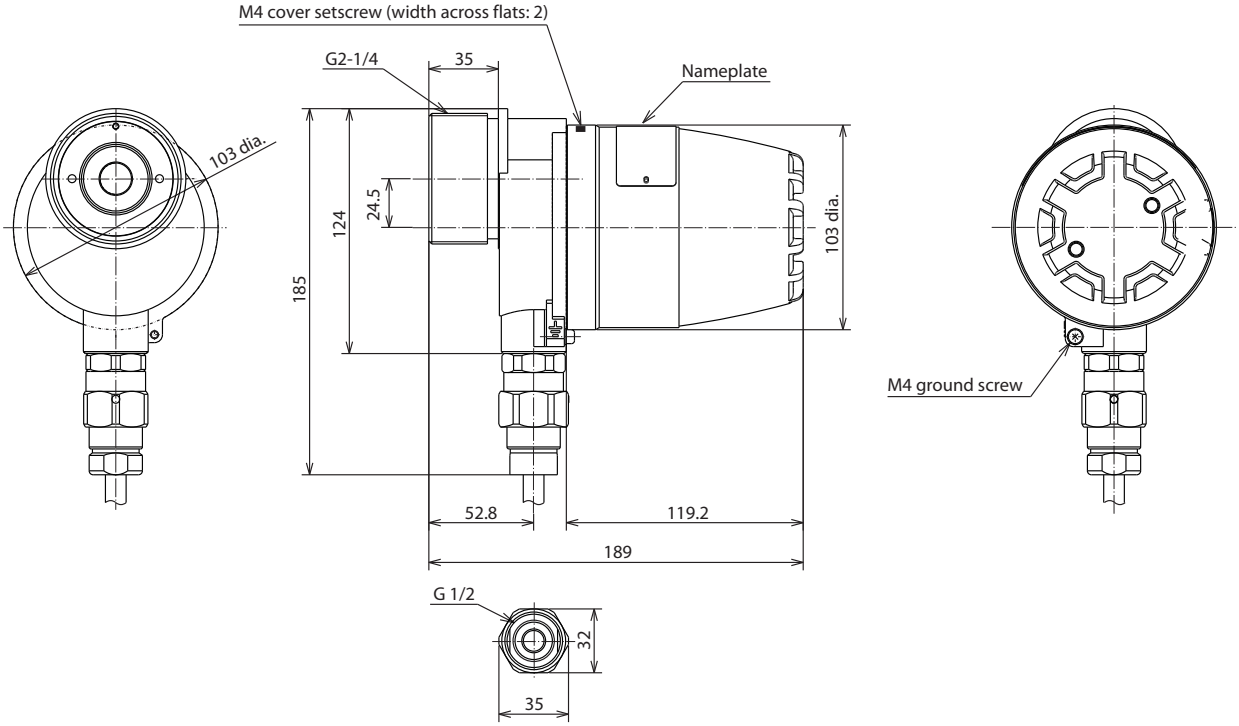
*2. Requirements for safe use

- The case must have a depth of at least 9.9 threads.
- The cable gland must have a depth of at least 7 threads.

■ External dimensions

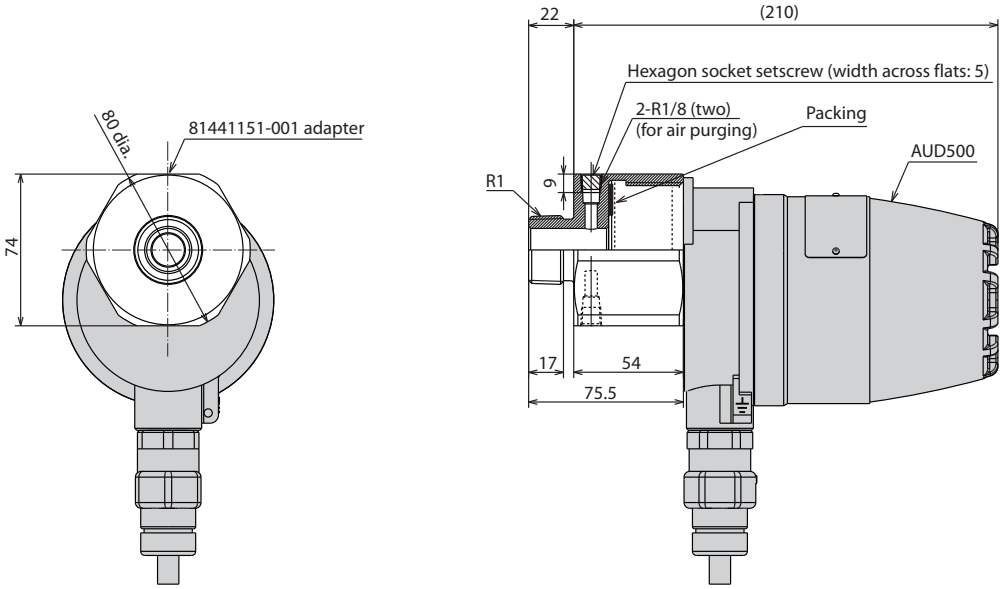
● Detector

Unit: mm



● Detector with adapter

Unit: mm



! Handling Precautions

- Tighten the adapter to a torque of 12–18 N·m. If the torque is less than 12 N·m, the degree of sealing will be insufficient.

Revision History (CP-SP-1328E)

Printed	Edn.	Revised pages	Description
Nov. 2010	**1**		
Aug. 2011	**2**	22	NEPSI: GYJ16241 was changed to GYJ111053
Oct. 2011	**3**	15	Table in Handling Precautions changed.
Nov. 2012	**4**	 2, 22 22	Company name changed. Model No. table and color specification changed. Approx. 75 cycles/min was changed to Approx. 80 cycles/min
Dec. 2012	**5**	ii, 3, 9 1, 3, 22 22	Warnings were changed. The specification of the explosion-proof housing was changed from "Ex d II C T4" to "Ex d II C T4/TIIS or Ex d II C T4 Gb/NEPSI." The self-checking cycle was changed from 75 to 80 cycles/min. Explosion-proof certification Nos. were changed. *2 was added.
Oct. 2014	**6**	ii, 3, 9 End of the manual	A Warning was changed. AAS-511A-014-04
Mar. 2016	**7**	 End of the manual	Overall revision. 7th ed = 9th Jp ed. Terms and Conditions were changed (to version No. AA511A-014-06).
Sep. 2016	**8**	2, 18 21 End of the manual	Photos were changed Color was changed from "Violet" to "Black." Terms and Conditions were changed (to version No. AA511A-014-09).

Terms and Conditions

We would like to express our appreciation for your purchase and use of Azbil Corporation's products.
You are required to acknowledge and agree upon the following terms and conditions for your purchase of Azbil Corporation's products (system products, field instruments, control valves, and control products), unless otherwise stated in any separate document, including, without limitation, estimation sheets, written agreements, catalogs, specifications and instruction manuals.

1. Warranty period and warranty scope

1.1 Warranty period

Azbil Corporation's products shall be warranted for one (1) year from the date of your purchase of the said products or the delivery of the said products to a place designated by you.

1.2 Warranty scope

In the event that Azbil Corporation's product has any failure attributable to azbil during the aforementioned warranty period, Azbil Corporation shall, without charge, deliver a replacement for the said product to the place where you purchased, or repair the said product and deliver it to the aforementioned place.

Notwithstanding the foregoing, any failure falling under one of the following shall not be covered under this warranty:

(1) Failure caused by your improper use of azbil product
(noncompliance with conditions, environment of use, precautions, etc. set forth in catalogs, specifications, instruction manuals, etc.);
(2) Failure caused for other reasons than Azbil Corporation's product;
(3) Failure caused by any modification or repair made by any person other than Azbil Corporation or Azbil Corporation's subcontractors;
(4) Failure caused by your use of Azbil Corporation's product in a manner not conforming to the intended usage of that product;
(5) Failure that the state-of-the-art at the time of Azbil Corporation's shipment did not allow Azbil Corporation to predict; or
(6) Failure that arose from any reason not attributable to Azbil Corporation, including, without limitation, acts of God, disasters, and actions taken by a third party.

Please note that the term "warranty" as used herein refers to equipment-only-warranty, and Azbil Corporation shall not be liable for any damages, including direct, indirect, special, incidental or consequential damages in connection with or arising out of Azbil Corporation's products.

2. Ascertainment of suitability

You are required to ascertain the suitability of Azbil Corporation's product in case of your use of the same with your machinery, equipment, etc. (hereinafter referred to as "Equipment") on your own responsibility, taking the following matters into consideration:

(1) Regulations and standards or laws that your Equipment is to comply with.
(2) Examples of application described in any documents provided by Azbil Corporation are for your reference purpose only, and you are required to check the functions and safety of your Equipment prior to your use.
(3) Measures to be taken to secure the required level of the reliability and safety of your Equipment in your use
Although azbil is constantly making efforts to improve the quality and reliability of Azbil Corporation's products, there exists a possibility that parts and machinery may break down.
You are required to provide your Equipment with safety design such as fool-proof design, *1 and fail-safe design*2 (anti-flame propagation design, etc.), whereby preventing any occurrence of physical injuries, fires, significant damage, and so forth. Furthermore, fault avoidance, *3 fault tolerance,*4 or the like should be incorporated so that the said Equipment can satisfy the level of reliability and safety required for your use.

*1. A design that is safe even if the user makes an error.
*2. A design that is safe even if the device fails.
*3. Avoidance of device failure by using highly reliable components, etc.
*4. The use of redundancy.

3. Precautions and restrictions on application

Azbil Corporation's products other than those explicitly specified as applicable (e.g. azbil Limit Switch For Nuclear Energy) shall not be used in a nuclear energy controlled area (radiation controlled area).
Any Azbil Corporation's products shall not be used for/with medical equipment.
The products are for industrial use. Do not allow general consumers to install or use any Azbil Corporation's product.
However, azbil products can be incorporated into products used by general consumers. If you intend to use a product for that purpose, please contact one of our sales representatives.
In addition,
you are required to conduct a consultation with our sales representative and understand detail specifications, cautions for operation, and so forth by reference to catalogs, specifications, instruction manual, etc. in case that you intend to use azbil product for any purposes specified in (1) through (6) below.
Moreover, you are required to provide your Equipment with fool-proof design, fail-safe design, anti-flame propagation design, fault avoidance, fault tolerance, and other kinds of protection/safety circuit design on your own responsibility to ensure reliability and safety, whereby preventing problems caused by failure or nonconformity.

(1) For use under such conditions or in such environments as not stated in technical documents, including catalogs, specification, and instruction manuals
(2) For use of specific purposes, such as:
* Nuclear energy/radiation related facilities
[For use outside nuclear energy controlled areas] [For use of Azbil Corporation's Limit Switch For Nuclear Energy]
* Machinery or equipment for space/sea bottom
* Transportation equipment
[Railway, aircraft, vessels, vehicle equipment, etc.]
* Antidisaster/crime-prevention equipment

* Burning appliances
* Electrothermal equipment
* Amusement facilities
* Facilities/applications associated directly with billing

(3) Supply systems such as electricity/gas/water supply systems, large-scale communication systems, and traffic/air traffic control systems requiring high reliability
(4) Facilities that are to comply with regulations of governmental/public agencies or specific industries
(5) Machinery or equipment that may affect human lives, human bodies or properties
(6) Other machinery or equipment equivalent to those set forth in items (1) to (5) above which require high reliability and safety

4. Precautions against long-term use

Use of Azbil Corporation's products, including switches, which contain electronic components, over a prolonged period may degrade insulation or increase contact-resistance and may result in heat generation or any other similar problem causing such product or switch to develop safety hazards such as smoking, ignition, and electrification.
Although acceleration of the above situation varies depending on the conditions or environment of use of the products, you are required not to use any Azbil Corporation's products for a period exceeding ten (10) years unless otherwise stated in specifications or instruction manuals.

5. Recommendation for renewal

Mechanical components, such as relays and switches, used for Azbil Corporation's products will reach the end of their life due to wear by repetitious open/close operations.
In addition, electronic components such as electrolytic capacitors will reach the end of their life due to aged deterioration based on the conditions or environment in which such electronic components are used.
Although acceleration of the above situation varies depending on the conditions or environment of use, the number of open/close operations of relays, etc. as prescribed in specifications or instruction manuals, or depending on the design margin of your machine or equipment, you are required to renew any Azbil Corporation's products every 5 to 10 years unless otherwise specified in specifications or instruction manuals.
System products, field instruments (sensors such as pressure/flow/level sensors, regulating valves, etc.) will reach the end of their life due to aged deterioration of parts.
For those parts that will reach the end of their life due to aged deterioration, recommended replacement cycles are prescribed. You are required to replace parts based on such recommended replacement cycles.

6. Other precautions

Prior to your use of Azbil Corporation's products, you are required to understand and comply with specifications (e.g., conditions and environment of use), precautions, warnings/cautions/notices as set forth in the technical documents prepared for individual Azbil Corporation's products, such as catalogs, specifications, and instruction manuals to ensure the quality, reliability, and safety of those products.

7. Changes to specifications

Please note that the descriptions contained in any documents provided by azbil are subject to change without notice for improvement or for any other reason.
For inquires or information on specifications as you may need to check, please contact our branch offices or sales offices, or your local sales agents.

8. Discontinuance of the supply of products/parts

Please note that the production of any Azbil Corporation's product may be discontinued without notice.
For repairable products, we will, in principle, undertake repairs for five (5) years after the discontinuance of those products. In some cases, however, we cannot undertake such repairs for reasons, such as the absence of repair parts.
For system products, field instruments, we may not be able to undertake parts replacement for similar reasons.

9. Scope of services

Prices of Azbil Corporation's products do not include any charges for services such as engineer dispatch service.
Accordingly, a separate fee will be charged in any of the following cases:

(1) Installation, adjustment, guidance, and attendance at a test run
(2) Maintenance, inspection, adjustment, and repair
(3) Technical guidance and technical education
(4) Special test or special inspection of a product under the conditions specified by you

Please note that we cannot provide any services as set forth above in a nuclear energy controlled area (radiation controlled area) or at a place where the level of exposure to radiation is equivalent to that in a nuclear energy controlled area.

azbil

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