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AUD500C11000
Explosion-proof
Advanced Ultraviolet Flame Detector

Overview

The AUD500C Explosion-Proof Advanced Ultraviolet Flame Detector (hereafter referred to as the AUD500C) is designed to detect ultraviolet radiation from an oil or gas burner flame, for use with both batch and continuous operation.

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 continuous self-checking (Dynamic Self-Check) function, ensuring highly reliable combustion safety control.

Features

- The AUD500C conforms to standards for explosion-proof housings (Ex d IIC T4).
- For a self-checking flame sensor, the AUD500C is compact and lightweight.
  This ensures unrestricted burner mounting.
- Vertical mounting is possible and the maximum wiring distance is 200 m. This ensures flexible installation.

- Replacement and maintenance work is easy with the AUD Maintenance Kit (AUD60A1010), which includes the tube and shutter units.

Specifications

Item	Description
Applicable types of flame [1]	City gas, natural gas, propane gas, kerosene, heavy oil, coke oven gas, hydrogen, chlorine, ammonia. naphtha, ethylene, etc.
Shutter voltage	Approx. 24 Vdc (supplied from Burner Controller)
Self-checking cycle	Approx. 80 cycles / min
Insulation resistance	Between flange mounting part and F-terminal (or blue lead wire), between flange mounting part and G-terminal (or yellow lead wire), between flange mounting part and S1-terminal (or white lead wire), between flange mounting part and S2-terminal (or white lead wire): 50 MΩ min. by 500 Vdc megger at each of the above locations. (However, the tube unit must be removed)
Dielectric strength	Between flange mounting part and F-terminal (or blue lead wire), between flange mounting part and G-terminal (or yellow lead wire), between flange mounting part and S1-terminal (or white lead wire), between flange mounting part and S2-terminal (or white lead wire): 1500 Vac for 1 min or 1800 Vac for 1 s at each of the above locations. (However, the tube unit must be removed)
Ambient temperature	−20 to +60°C
Ambient storage temperature	−20 to +70°C
Ambient storage humidity	90 % RH at 40°C max. (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 for mounting part	690 kPa
Protection	IP67
Mounting posture	-45 to +90° (in vertical direction)
Mounting (on the monitoring pipe)	Flange: Parallel pipe thread G2-1/4, Adapter: Taper pipe thread R1
Accessory cable length	AWG18 heat-resistant silicone cables (4 cores), 3 or 10 m (depending on the model number)
Flame signal wire requirements and extension distance	IV wires with 2.0 mm^2 and max. 200 m in length
Flameproof housing	Ex d IIC T4/TIIS or Ex d IIC T4 Gb/NEPSI
Certified number	TIIS: TC20242 NEPSI: GYJ15.1463X [2]
Expiration date of tube unit and shutter unit	3 years

[1] For applications using coke oven gas, hydrogen, chlorine, ammonia. naphtha, ethylene, etc., in which the burner structure may impose restrictions on the mounting of the flame detector, it is necessary to check that flame monitoring is reliable.

[2] Special conditions for safety use
  - The case has at least 9.9 engaged threads.
  - The cable gland has at least 7 engaged threads.

Item	Description
Materials	Aluminum
Color	Black
Mass	Approx. 2.5 kg

Model No.

Basic model No.	Cable length	Lens type	Additional	Specifications
AUD500C11				Flameproof Type Advanced UV Sensor
	0			3 m
	1			10 m
		0		Standard
		1		Condenser
			0	None
			D	Inspection certificate provided
			Y	Traceability certification with Inspection certificate provided
			0T	Tropicalization
			DT	Tropicalization and Inspection certificate provided
			YT	Tropicalization and Traceability certification with Inspection certfcate provided
			E	Heavy duty coating and inspection certificate provided
			ET	Tropicalization, Heavy duty coating and inspection certificate provided
			H	Heavy duty coating and Traceability certification with Inspection certificate provided
			HT	Tropicalization, Heavy duty coating and Traceability certification with Inspection certificate provided

Combined burner controller

| Model No.	Description
RX-R40, RX-R44, RX-R46	Burner Control Module
AUR300C, AUR350C	Advanced Ultraviolet Burner Controller
AUR450C	Dynamic Self-checking Burner Controller

Adapter

Model No.	Description
81441151-001	Adapter (G2-1/4 → R1)

Maintenance/optional parts

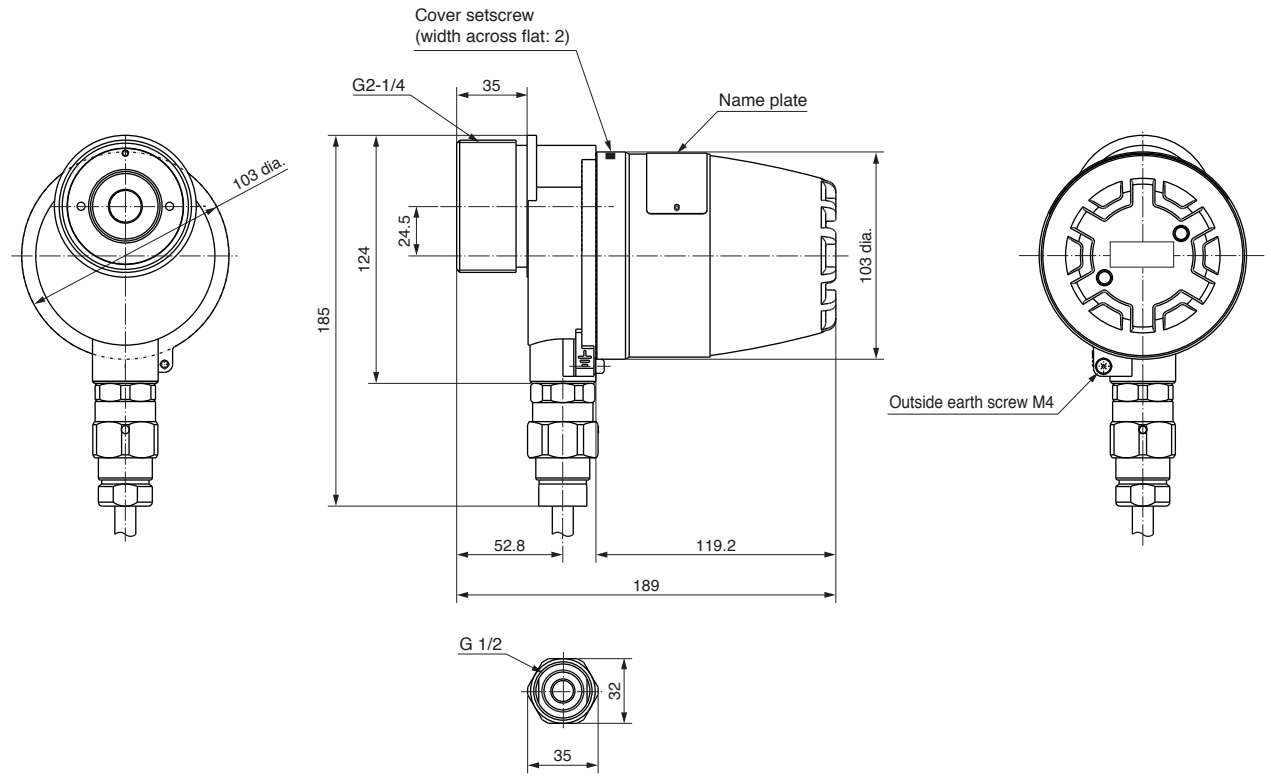| Model No.	Description
AUD60A1010	AUD Maintenance Kit (includes shutter and tube units)
81447031-001	Adapter Packing
81446985-001	O-ring

Wiring
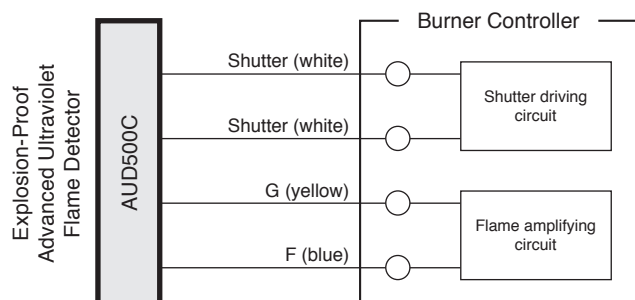
[!] **Handling Precautions**

• The flame detector has polarity. Correctly connect the wiring to the terminals indicated on the device (F-terminal and G-terminal). The attached blue cable is for the F-terminal, and the white cable is for G-terminal.
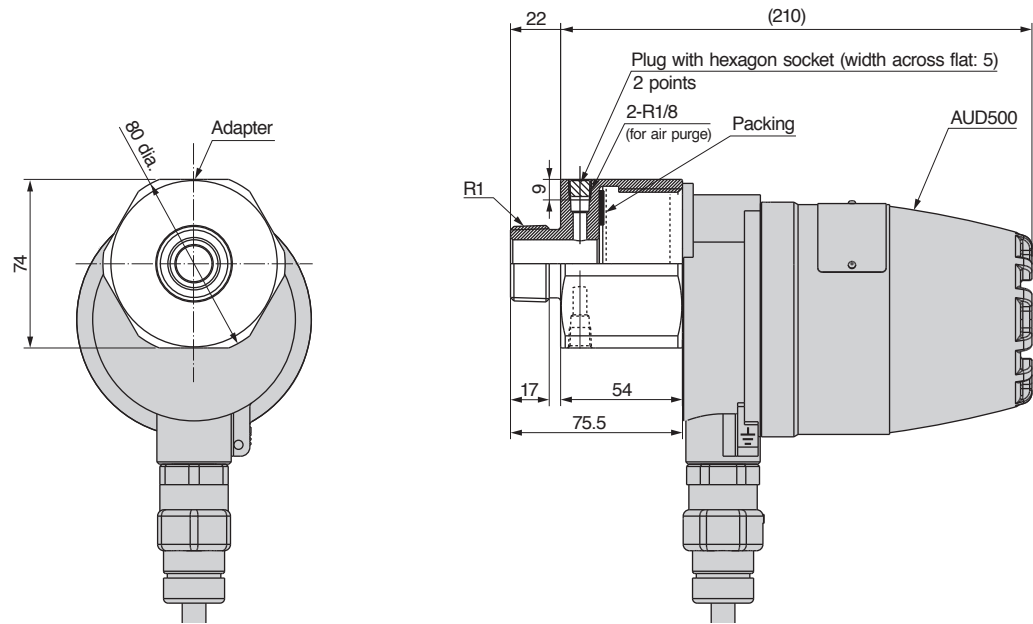
Dimensions

(Unit: mm)

・**Main body**

Cover setscrew
(width across flat: 2)

G2-1/4   35

Name plate

103 dia.

185
124
24.5
103 dia.

Outside earth screw M4

52.8   119.2

189

G 1/2

32

35

・**Adapter assembly**

80 dia.

Adapter

74

22   (210)

Plug with hexagon socket (width across flat: 5)
2 points

2-R1/8
(for air purge)   Packing   AUD500

R1

9

17   54

75.5

3

Cautions

(1) Install the AUD500C in accordance with the Technical Recommendation of National Institute of Occupation Safety and Health, "Users' Guidelines for Installations for Explosive Atmospheres in General Industry" (JNIOSH-TR-NO.44 (2012)) by the National Institute of Occupation Safety and Health or

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.".

(2) The AUD500C has acquired certification as an flameproof housing (Ex d IIC T4/TIIS or Ex d IIC T4 Gb/NEPSI). Install the AUD500C at a location that complies with this certification.

(3) The AUD500C Explosion-Proof Advanced Ultraviolet Flame Detector has an important role for safety in monitoring the burner flame.

Please adhere the procedures for safe usage stated in the user's manual.

(4) Do not mount the flame detector in the following locations:

— Locations near certain chemicals or their fumes, such as ammonia, sulfur, chlorine, ethylene compounds, acid, or any other corrosive gases.

— Locations subject to continuous vibration

(5) Be sure to use only the explosion-proof flameproof packing type cable gland that comes with the AUD500C. Use of a different adapter invalidates the explosion-proof certification.

(6) When used in atmospheres where a UV ray source exists other than the flame, take countermeasures so that no UV ray other than that of the burner is detected.

(7) Before wiring, be sure to turn the power off. Touching terminals by mistake while the power is on might result in electric shock or malfunction.

(8) The flame detector has polarity. Correctly connect the wiring to the terminals indicated on the device (F and G.)

The attached blue cable is for terminal F, and yellow cable is for terminal G.

(9) Do not put the flame sensor signal wires in the same cable with other signal wires or power wires.

(10) Make sure that the ignition transformer high-voltage cables are properly connected in order to prevent faulty contact. If there is poor contact, radio frequency waves may be generated and this could cause radio interference.

Install the ignition transformer directly onto a metal portion electrically connected to the burner.

(11) The flame sensor of the AUD500C is made of a glass. Do not subject it to vibration or shock. In particular, when transporting combustion equipment, be sure to pack the flame detector in a dedicated packing case.