R7061A

DYNAMIC SELF CHECK AMPLIFIER

INSTRUCTION SHEET

APPLICATION

The R7061A dynamic self check ultraviolet amplifier is a solid-state plug-in unit, which responds to a flame detector signal and indicates the presence of a flame when used with flame safeguard controls such as R7241, 13C7000, R4348, 84140 and C7061A flame detector,

- Self-checking circuitry tests all electronic components in the flame detection system 120 times a minute during burner operation and shuts down the burner if the detection system fails.
- Red flame indicating LED blinks when flame detector -sees- flame.
- R7061A is for use with C7061A ultraviolet flame detector (for gas, oil, or coal burners); includes solid state switch for C7061A shutter,
- May use redundant parallel C7061A detectors with the R7061A to decrease nuisance shutdowns.
- Field replaceable amplifier plugs into an edge connector on a flame safeguard control by means of a printed circuit board, keyed to ensure proper orientation.
- Meter jack for measuring flame signal with system in operation.
- Operates from the power supplied by a standard transformer in the flame safeguard control.
- Colour-coded purple plastic cover identifies the amplifier as a UV type.

SPECIFICATIONS

MODEL: R7061A Dynamic Self Check ultraviolet amplifier. Solid-state plug-in amplifier for use with flame safeguard controls and C7061A Dynamic Self Check ultraviolet flame detector.

ELECTRICAL RATINGS:
Two voltages i.e. 135 Vac and 23 Vac, 50160 Hz are provided by the flame safeguard control into which the amplifier is plugged. Tolerance of the rated voltages is -15% to +10%.

FLAME FAILURE RESPONSE TIME:
One, two or four seconds maximum (model dependent) at 20°C ambient temperature and at the rated voltage and any flame signal strength.

FLAME SIGNAL STRENGTH:
Minimum acceptable: 3μA
Maximum expected: 7μA

These values apply to the following flame safeguard controls: R4140, BC7000, R7241, F14075 CIDIE, 84138 CID.
FSP 5075, R4343B, R4348 A/B.

PROTECTION: IP40

FLAME DETECTOR (order separately):
C7061A Dynamic Self-Check ultraviolet detector.

AMBIENT TEMPERATURE LIMITS:
Operating-minus 20°C to plus 65°C. Storage-minus 40°C to plus 80°C

MOUNTING: Printed circuit board is keyed *to* edge connector on flame safeguard control to ensure correct operation.

DIMENSIONS (mm):
148 long, 71 wide, 32 thick.

WEIGHT: 227 grams.

ACCESSORIES
1. W136A Test Meter (includes 117053 Meter Connector Plug).
2. 117053 Meter Connector Plug (for older W136A models).

APPROVALS:
Models available which meet DIN 4787/4788 and ATG C31-21 requirements.

INSTALLATION

CAUTION

1. Installer must be a trained, experienced, flame safeguard control serviceman.
2. Disconnect power supply before beginning installa-tion to prevent electrical shock and equipment damage.
3. All wiring must comply with applicable local electrical codes, ordinances, and regulations.
4. Perform all required checkout tests after installation is complete.

Mounting the amplifier on the flame safeguard control (fig.1 and 2)

1. Make sure the amplifier nameplate is on the outside. Then, align the circuit board with the receptacle on the flame safeguard control.
2. Push in the amplifier until the circuit board is fully inserted into the receptacle.

IMPORTANT

DO NOT remove the amplifier cover.

Installing the flame detector

Proper flame detector installation is the basis of a safe and reliable flame safeguard installation.

IMPORTANT

Use a C7061A detector.

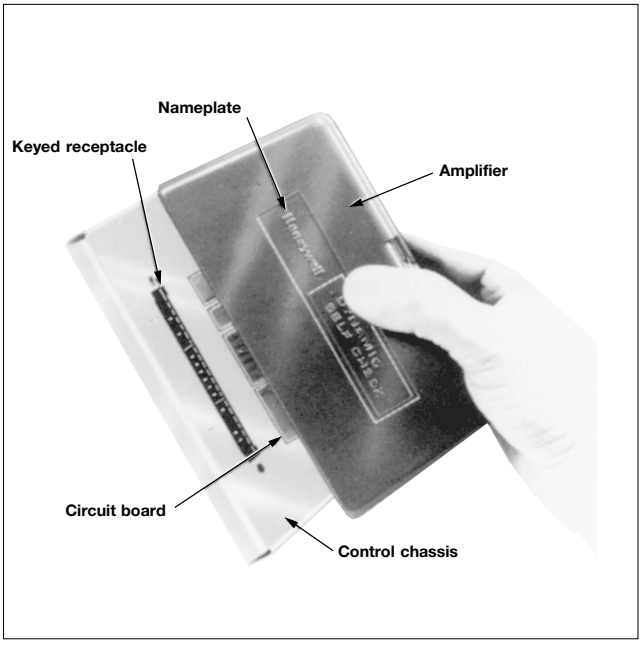

Fig. 1 Installing an R7061A dynamic self check ultraviolet amplifier

Refer to the instructions packed with the flame detector and to the burner manufacturer's instructions. Follow instruc-tions carefully to make the best possible application of the flame detector. Keep the flame signal lead wires as short as possible.

FIG. 2. INSTALLING AN A7061A IN AN 87241 BURNER CONTROL SYSTEM AND R4348 INDUSTRIAL FLAME SWITCH.

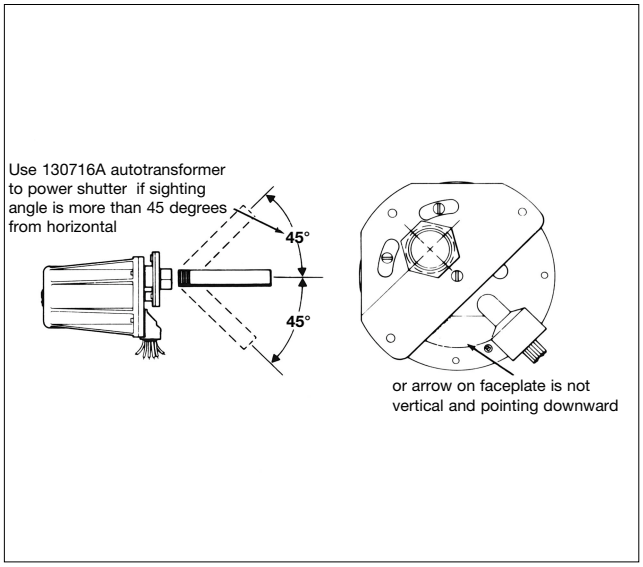

FIG. 3. CORRECT MOUNTING POSITION FOR THE C7061A.

Using redundant parallel C7061A detectors

For flames that are difficult do sight using redundant parallel C7061A flame detectors will reduce nuisance shutdowns. If only one of the parallel detectors loses the flame signal, the other will still indicate the presence of the flame and will keep the system running. A Nacre-simulating failure in either defector will cause the system to shut down.

IMPORTANT

To avoid exceeding the rating of the solid-state shutter switch in the R7061A do not connect more than two C7061A detectors in parallel.

Wiring the flame detector

All wiring must conform to local codes and ordinances. If the lead wires aren't long enough to reach the wiring sub base or terminal strip, splices must be made in a junction box.
The printed circuit board on the amplifier mates with the receptacle on the flame safeguard control to provide power and flame detector connections to the R7061A. For complete wiring details, refer to the instruction sheets for the appropriate flame safeguard control and flame detector.

CHECKOUT

Preliminary inspection

Make certain that

1. Wiring connections are correct and all terminal screws are tight.
2. Amplifier **is securely mounted on the flame** safeguard control.
3. Flame detector is clean and it is installed and positioned properly. Consult the appropriate instruction sheet. 4. Correct combination of amplifier and flame detector is used.

Flame signal measurement (Fig. 5)

CAUTION

Fallow the light off instructions in the instruction sheet for the appropriate flame safeguard programming control.

Measure the flame signal at the appropriate times defined in the CHECKOUT tests in the instruction sheet for the flame safeguard control. Consult the appropriate instruc-tion sheet for the complete flame detector checkout pro-cedure.

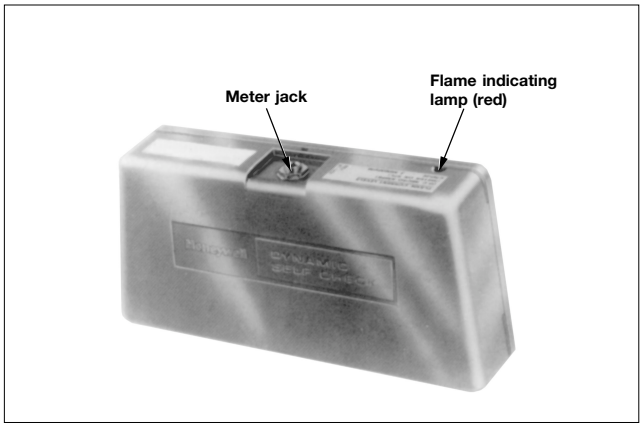

FIG. 3. R7061 AMPLIFIER MAIN PARTS.

Read the flame signal in micro amps at the meter jack on the plug-in flame signal amplifier. Use a micrometer with a damped 0 to 25 micro amp do range, such as a Honeywell

W13fiA, which has a plug for inserting into the meter jack. (A 117053 Meter Connector Plug maybe ordered separately if needed). Connect the plus (red) meter lead to the red spade tip and the minus (black) meter lead to the black spade tip before inserting the plug into the motor jack.

Set the selector switch on the test meter to the SPL (damped) position. Allow a few seconds for the current to stabilize. The red flame Indicating lamp on the amplifier should blink about 2 times a second.

The flame signal for the pilot alone, the main burner flame alone, and both together (unless monitoring only the pilot flame when using an intermittent pilot, or only the main oil flame when using direct spark ignition) must be as specified on page 2 (Specifications).

If the signal is unsteady or less than the minimum acceptable current, check the flame detector installation and circuitry as follows

1. Check the supply voltage at the wiring sub base or terminal strip.
2. Check the detector wiring for defects, including - wrong type or size of wire
   - deteriorated wire — open circuits
   - short circuits
   - leakage paths caused by moisture, soot, or accumulated dirt.
3. Clean the detector lens, filter, viewing window, and sighting pipe (as applicable).
4. Check if the UV tube needs replacement.
5. Check that the temperature at the detector does not exceed its maximum rated temperature.
6. Make sure that the flame adjustment is not too lean.
7. Make sure the detector is sighting the flame properly.
8. If necessary, resight or reposition the detector.

If you cannot obtain proper operation, replace the plug-in amplifier. If you still cannot obtain proper operation replace the flame detector.

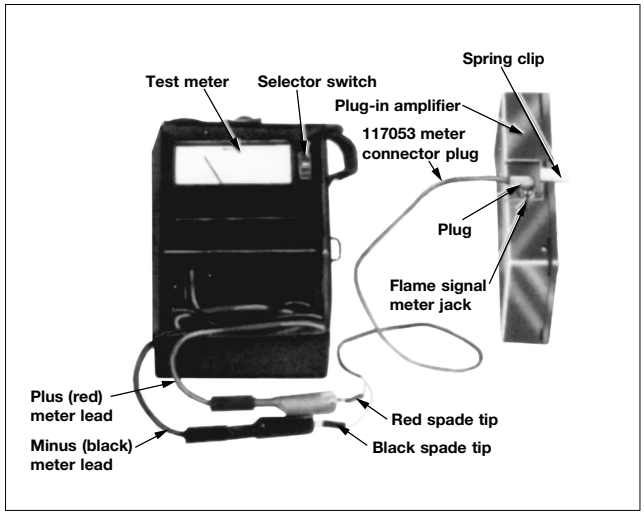

FIG. 5. MEASURING THE FLAME SIGNAL.

IMPORTANT

If you make any changes in the flame detection system, repeat ALL required tests in the CHECKOUT section of the instruction sheet for the flame safeguard control.

Flame indicating LED (RED)

After obtaining a flame signal of the correct value complete the amplifier checkout. With power applied to the amplifier observe the flame indicating LED for the following conditions:

1. No flame-the — LED should illuminate slightly. Replace the amplifier if the LED does not illuminate or if it is permanently on or blinking.
2. Flame present the — LED should blink about two times a second. Replace the amplifier if this is not the case.

Electrical ratings : the amplifier is powered from the flame safeguard unit which delivers the necessary voltages.
For R7321, ambient temperature limits Operating : -10°C to +70°C
For R7323, ambient temperature limits Operating: -10°C to +50°C
For the others, ambient temperature limits Operating: -40°C to +65°C
Storage : -50°C to +65°C

Protection : IP40

- Do not replace any component (or part) not explicitly specified as replaceable by our supplier.
- Field replaceable amplifier plugs into an edge connector on a flame safeguard control by means of a printed circuit board, keyed to insure proper orientation.

Conventional amplifiers

MODEL	BOX COLOR	RESPONSE TIME	MIN. FLAME CURRENT (1)	SENSOR GROUP	FLAME DETECTOR
R7321A 1012	Green	1 s max.	2 µA (max. 5µA)	Flame rod	Flame rod
R7323A 1020 R7323B 1018 R7323B 1026	Purple Purple Purple	1 s max. 1 s 2 s max.	3,5 µA (max. 7pA) 3,5 µA (max. 7µA) 3,5 µA (max. 7µA)	Ultraviolet Ultraviolet Ultraviolet	Minipeeper C7027A C7035A

Dynamic self-check amplifiers

MODEL	BOX COLOR	RESPONSE TIME	MIN. FLAME CURRENT (1)	SENSOR GROUP	FLAME DETECTOR
R7061A1008 R7061A1016	Purple Purple	1 s max. 2 s max.	3 µA (max. 7µA) 3 µA (max. 7µA)	Ultraviolet Ultraviolet	C7061A
R7247B1029 R7247B1037	Green Green	3 s max. 2 s max.	1,25 µA (max. 7µA) 1,25 µA (max. 7µA)	Flame rod Flame rod	07012 A.G
R7247C1027 R7247C1035	Green Green	3 s max. 2 s max.	2 µA (max. 7µA) 2 µA (max. 7µA)	Ultraviolet Ultraviolet	C7012 E/F
R7476B1005 R7476B1013	Blue Blue	3 s 2 s max.	2,5 µA (max. 5,5µA) 2,5 µA (max. 5,5µA)	Ultraviolet Ultraviolet	C7076

(1) At rated conditions

Note : The shutter stops regularly the flame detection. The measured current will not be steady. For installation and checkout, please report to the flame safeguard control documentation.

Caractéristiques électriques: l'amplificateur est alimenté par l'intermédiaire de l'unité de contrôle de flamme.
Pour le R7321, température ambiente : En fonctionnement: -10°C to +70°C
Pour le R7323, température ambiente : En fonctionnement: -10°C to +50*C
Pour les autres, température ambiente : En fonctionnement: -40°C to +65°C
En stockage: -50°C to +65°C

Protection : IP40

- Aucun composant (ou pièce) ne doit être remplacé s'il n'est pas explicitement spécifié comme tel par le constructeur.
- Amplificateur embrochable pouvant être changé sur le site, sur le connecteur des régulateurs de surveillance de flamme, au moyen du circuit imprimé comportant un détrompage qui assure la mise en place correcte.

Amplificateurs conventionnels

MODELE	COULEUR DU BOITIER	TEMPS DE REPONSE	COURANT MIN. DE FLAMME CURRENT (1)	GROUPE DU DETECTUER	DETECTEUR DE FLAMME
R7321A 1012	Vert	1 s max.	2 µA (max. 5µA)	Ionisation	Electroede de flamme
R7323A 1020 R7323B 1018 R7323B 1026	Violet Violet Violet	1 s max. 1 s 2 s max.	3,5 µA (max. 7pA) 3,5 µA (max. 7µA) 3,5 µA (max. 7µA)	Ultraviolet Ultraviolet Ultraviolet	Minipeeper C7027A C7035A

Amplificateurs dynamiques autovérifiants

MODELE	COULEUR DU BOITIER	TEMPS DE REPONSE	COURANT MIN. DE FLAMME CURRENT (1)	GROUPE DU DETECTUER	DETECTEUR DE FLAMME
R7061A1008 R7061A1016	Violet Violet	1 s max. 2 s max.	3 µA (max. 7µA) 3 µA (max. 7µA)	Ultraviolet Ultraviolet	C7061A
R7247B1029 R7247B1037	Vert Vert	3 s max. 2 s max.	1,25 µA (max. 7µA) 1,25 µA (max. 7µA)	Flame rod Flame rod	07012 A.G
R7247C1027 R7247C1035	Vert Vert	3 s max. 2 s max.	2 µA (max. 7µA) 2 µA (max. 7µA)	Ultraviolet Ultraviolet	C7012 E/F
R7476B1005 R7476B1013	Bleu Bleu	3 s 2 s max.	2,5 µA (max. 5,5µA) 2,5 µA (max. 5,5µA)	Ultraviolet Ultraviolet	C7076

(1) Aux conditions normales

Note : L'obturateur interrompt régulièrement la détection de flamme. Le courant mesuré ne sera pas stable. Pour l'installation et la vérification, se reporter à la documentation de l'unité du contrôle de flamme.

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