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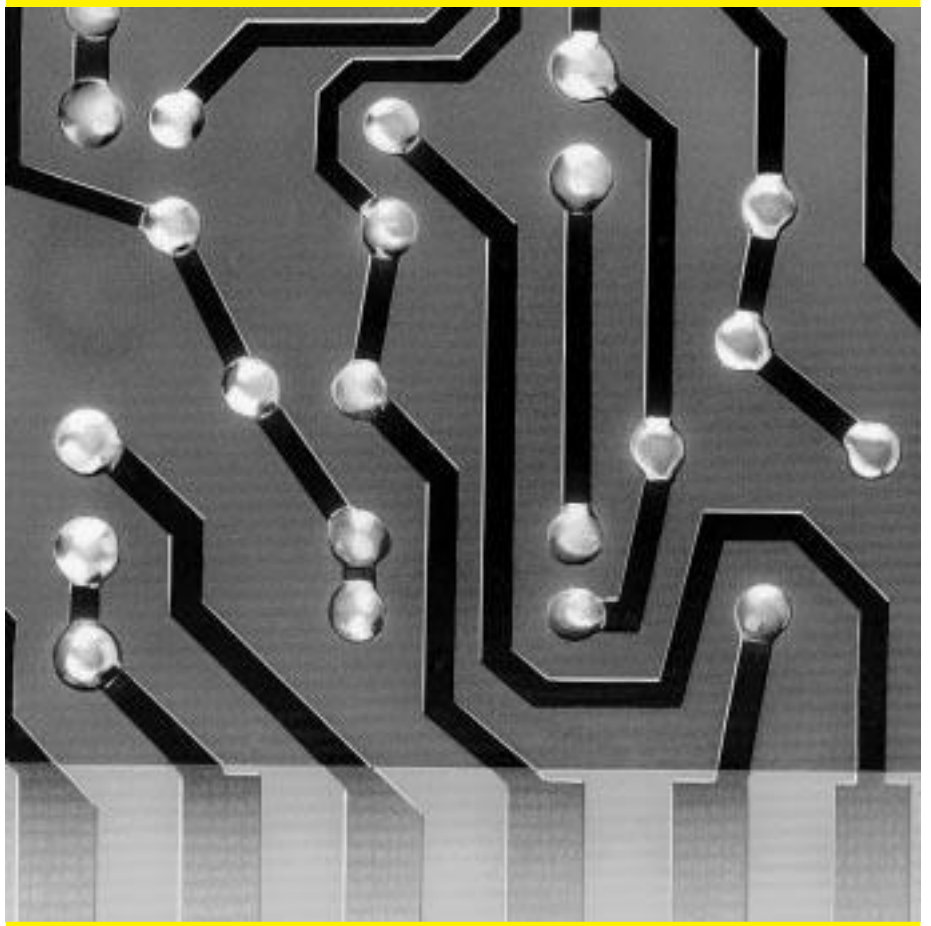
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# krom schroder



Flame relay

IFW 15 T-N



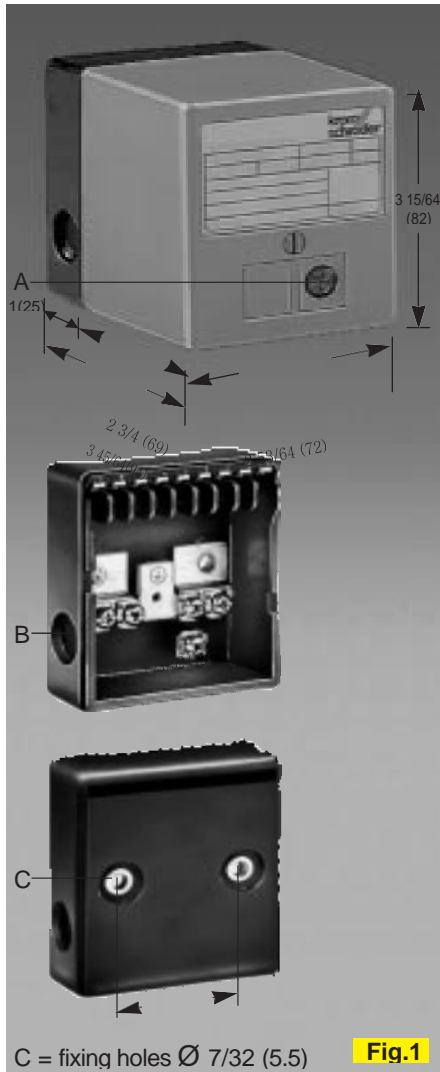


Fig.1

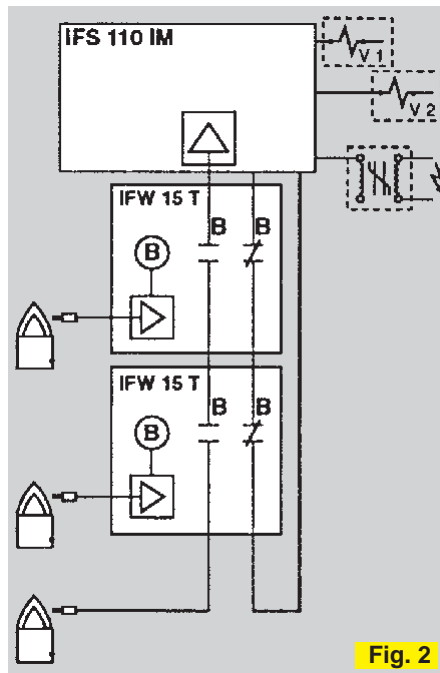


Fig. 2

### Flame relay IFW T-N

- /// For signaling flame
- /// For multi-burner control during intermittent operation in conjunction with automatic burner control IFS 110IM
- /// UV-detector or ionization control with flame rod
- /// Potential free contacts
- /// Integrated "ON" lamp
- /// FM approved
- /// Kromschroder is a company certified to ISO 9001

### Application

To detect and signal an existing flame using flame rod or UV-detector. Used for multi- burner control together with the IFS 110 IM automatic burner control or wherever a fully automatic control is not required.

### Design (Fig. 1)

Housing made of high-impact plastic Top section can be plugged in, features amplifier stage and green "ON" lamp (A).

Socket with terminals, ground rail and screwed supports.

Five openings provided for external wire connection (B).

Terminals: 2 x AWG 16 (2 x 1.5 mm)

### Method of Operation of Multi-Burner Control (Fig. 2)

The principle of the multi-burner control is that a number of burners are controlled as one.

A type IFS 110 IM automatic burner control, which can also monitor the first burner (only where ionization control is used), is utilized for the overall control function.

Each of the remaining burners of this group are monitored by one IFW 15 T-N flame relay.

### Technical Data

Operating voltage:  
110 VAC/120 VAC + 10/-15%,  
50/60 Hz

Power consumption: 12 VA

Output voltage for ionization  
sensor: 220 VAC

Sensor current:  $\Sigma$  1  $\mu$ A DC

Output signal:  
Potential free contacts, one NC, one  
NO  
contact

Contact rating: max. 2 A

Flame signal: lamp in  
device

Ambient temperature: -4 °F to 140 °F  
(-20 °C to +60 °C)

Cable gland: Five openings for external  
wire connection

Terminals: 2 x AWG 16 (2 x 1.5  
mm<sup>2</sup>) Mounting position: any  
Weight: 0.8 lbs (0.37 kg)

### Function Description

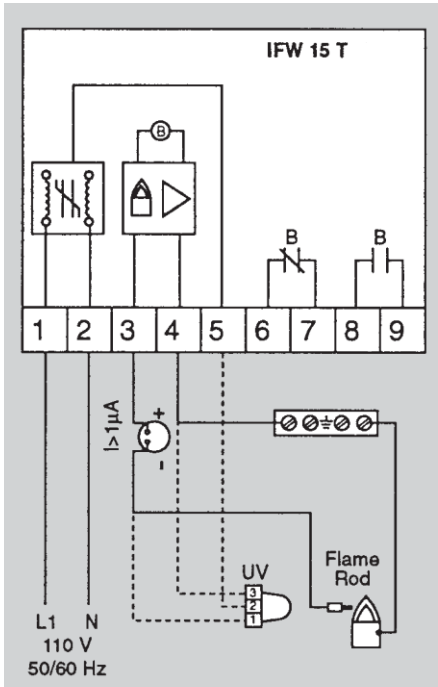
The flame relay is immediately operational once the operating voltage is applied. When a flame is present, the active dc signal switches relay B. Depending on the application at hand, the contacts of this relay B can be used for control functions.

### Multi-burner Control

Theoretically, there is no limit to the number of burners which can be controlled. There must be assurance, however, that all burners can be ignited within the trial for ignition period for the automatic burner control (3;5 or 10 sec). Very long gas lines might result in delayed ignition of a burner and cause a shutdown of the entire system. Experience demonstrates that a number of automatic burner controls should be used when systems with more than 10 burners are involved.

The flame signal feeder line to the automatic burner control is run via terminals 8 and 9 (normally open contact). The normally closed contact is connected to terminals 7 and 11 on the automatic control (see connection diagrams and terminal connection diagram).

In the flame monitored by an IFW 15 T-N goes out during operation, the flame signal to the automatic control is interrupted and all other burners are switched off within one second . If an outside light is detected before the ignition (simulation of a flame), the system goes to lockout.



### Instructions for Planning of System

Adhere to the following instructions when planning systems:

Distance from burner to relay IFW 15 T-N and automatic burner control IFS 110 IM is max. 150 ft (50 m).

Use unshielded high-voltage cables for flame signal line. Keep them away from the ignition line and other sources of interfering radiation.

Maximum length of the ignition line is 15 ft (5 m), therefore install the ignition transformer near the burner.

During monitoring with a flame rod, a burner can be monitored by the automatic burner control IFS 110 IM (Fig. 3).

During monitoring with an UV-detector one flame relay IFW 15 T-N must be used per burner. One diode of the type GP 10Y, Order No. 0 401 2102, is to be provided as per wiring diagram (Fig. 4).

To prevent the flame from continuing to burn on after shutdown, install the pilotgas valve directly by the burner.

The maximum output load on automatic burner control IFS 110 IM is 1 A; the total output current is max. 2. A.

A control relay must be supplied for the ignition output.

Ignition and monitoring with just one electrode (one-electrode operation) is only possible with a surge arrester if the switching frequency is low (about 5 times per day).

There are 4 grounding screws in the lower section of the housing.

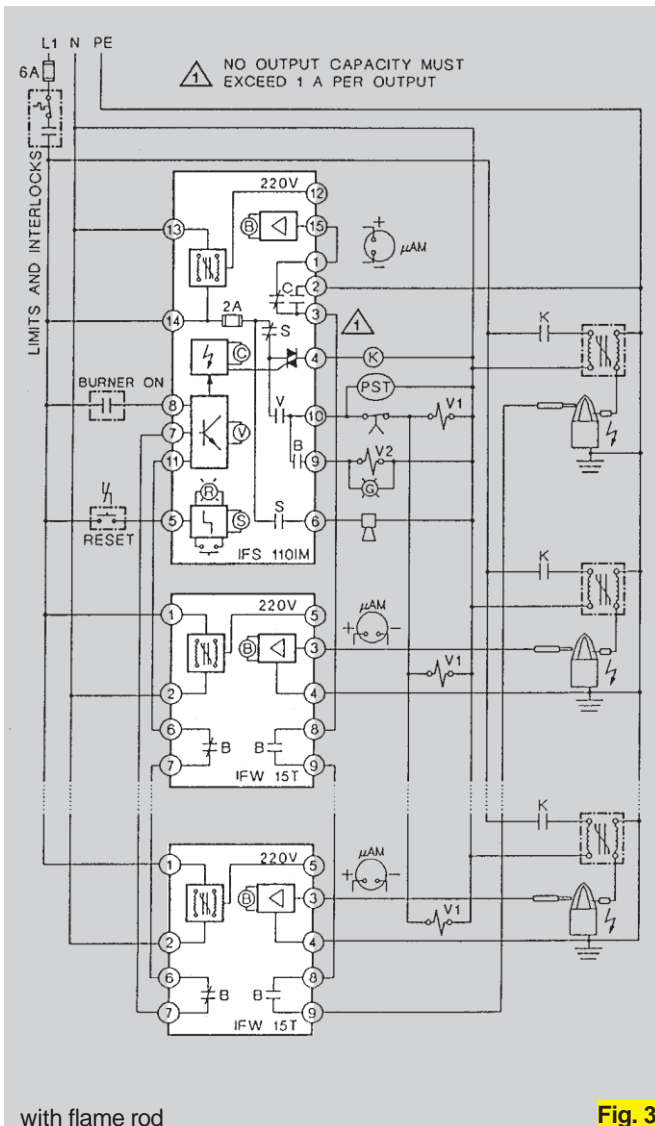


Fig. 3

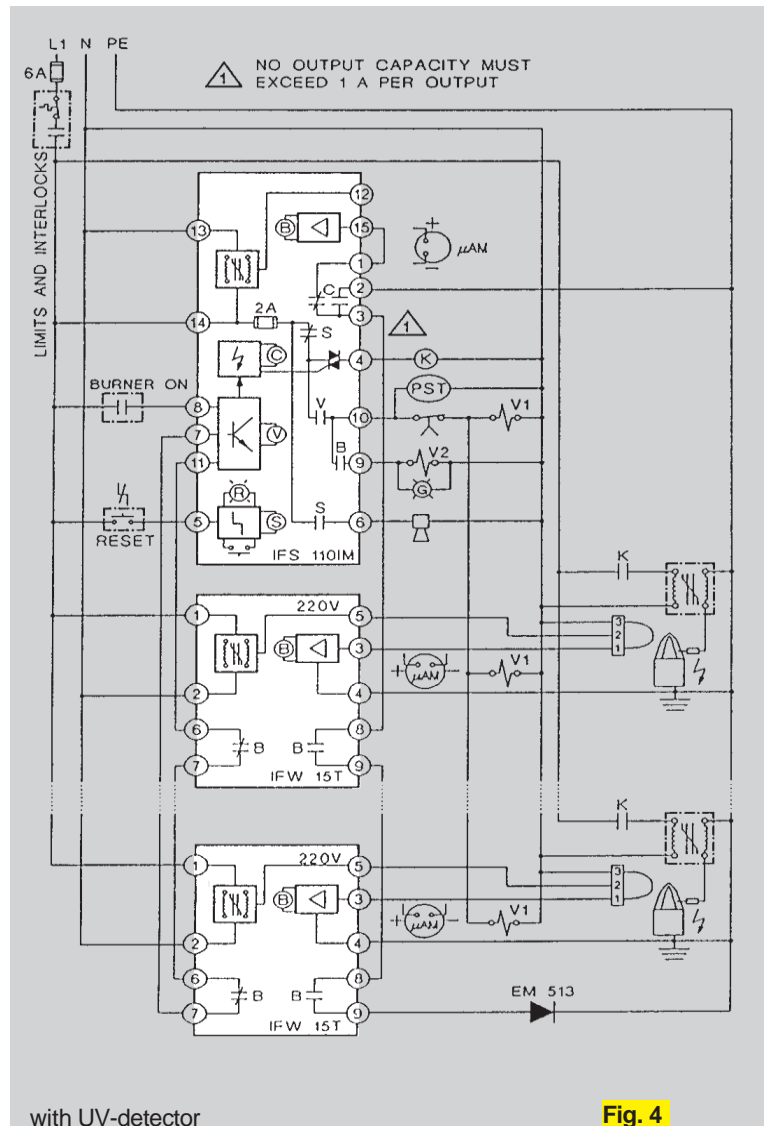


Fig. 4



Fig. 5

### Accessories

Diode GP 10Y, Order No. 0 401 2102  
High- voltage cable for ionization line and ignition line FZLSi 1/6 up to 350 °F (180 °C), Order No. 0 425 0410.

### Flame control with flame rod

(Fig. 5)

An alternating voltage (220 V) is applied between the flame rod, which projects into the flame, and the grounded burner. As soon as the flame is established a small current flows through it and is rectified by the flame. The electronic amplifying stage detects only this direct current signal which, after amplification, is used to energize a relay. A flame cannot be simulated.

The flame must touch the burner tube. High voltage cable should be used as ionization line in order to avoid losses through insulation: FZLSi 1/6 order No. 0425 0410

The cable should be laid as far away as possible from power cords and sweep radiation sources. Several ionization lines can be laid together – possibly in plastic pipes.



Fig. 6

Do keep away from the furnace wall for approx. 0.7 ft (20 cm); this applies particularly to long ionization line up to 150 ft (50 m).

### Flame control with UV-detector

(Fig. 6)

The UV-detector mainly consists of a tube which is sensitive to light and of electronic components. The tube responds to the ultra violet (UV) radiation from a gas flame, it does not react to sunlight and light from filament lamps.

### Note

A d.c. ammeter is put into the flame signal line in order to measure the flame signal current. The amperage must be at least 1 µA and is usually between 5 and 15µA.

Voltage surges, short-circuits or leakage paths in the flame signal line result in an alternating signal which will be registered as a fault condition with both types of control.

For other than standard 110/120VAC systems consult Kromschroder Inc. for details.

