

# Burner control unit series EFC

The EFC range of burner control units are designed to detect a flame single or double stage industrial gas burners with intermittent service.

The status of the burner is clearly show via the various LED lights on the front panel. The EFC can be supplied with an internal ignition transformers and can also control one or two solenoid valves. Flame detection can be done via a single rod, two rods or UV cell. Remote control of the burner control unit is also possible.

The EFC range is supplied in a thermoplastic fireproof housing that allows for installation next to the burner. It is also available in a rack mounted version for control panel applications.

Burner control unit EFC is manufactured in accordance with EC Directive 90/396/EEC and with norms ED298.



## TECHNICAL DATA

<b>Supply voltage</b>	115V o 230V 50-60 Hz
<b>Power consumption</b>	5 VA
<b>Working temperature</b>	0÷60 °C
<b>Installation</b>	In any position
<b>Standards</b>	In accordance with EN 298 e 90/396/EEC
<b>EN 298 classification</b>	BMRLXN
<b>Max contact load</b>	1 A
<b>Housing material</b>	Fireproof plastic
<b>Enclosure</b>	IP40
<b>Dimensions</b>	115 x 125 x 120 mm
<b>Flame detection</b>	Single rod, double rod or UV cell
<b>Electrical rating</b>	8 kV ED 19% on 3', on request 5 kV ED 100%
<b>Peso</b>	2,3 Kg with transformers -1,2 Kg without transformers

## SETTINGS

- Prepurge time (Wt) : 1s ÷70s
- Ignition Time (It) : 5s ÷12s
- Safety time (St) from flame failure to solenoid valve shut-off : 2 or 3s
- Burner control unit reset : every 24 hours even with autotest
- At flame failure : one automatic restart is allowed

# MODELS

**EFC** = Burner control unit

**EFCQ** = Burner control unit - Rak version

### Type

**1** = Single solenoid valve

**2A** = Two solenoid valves (both valves open)

**2B** = Two solenoid valves (only main valve open)

### Ignition transformers

**TR** = With transformers

**X** = Without transformers

### Supply voltage

**B** = 115V 50-60 Hz

**C** = 230V 50-60 Hz

### Detection

**M** = Single rod

**2** = Double rod

**UV** = UV cell

### Prepurg time

**2** = 2s

**10** = 10s

**20** = 20s

EFC

2B

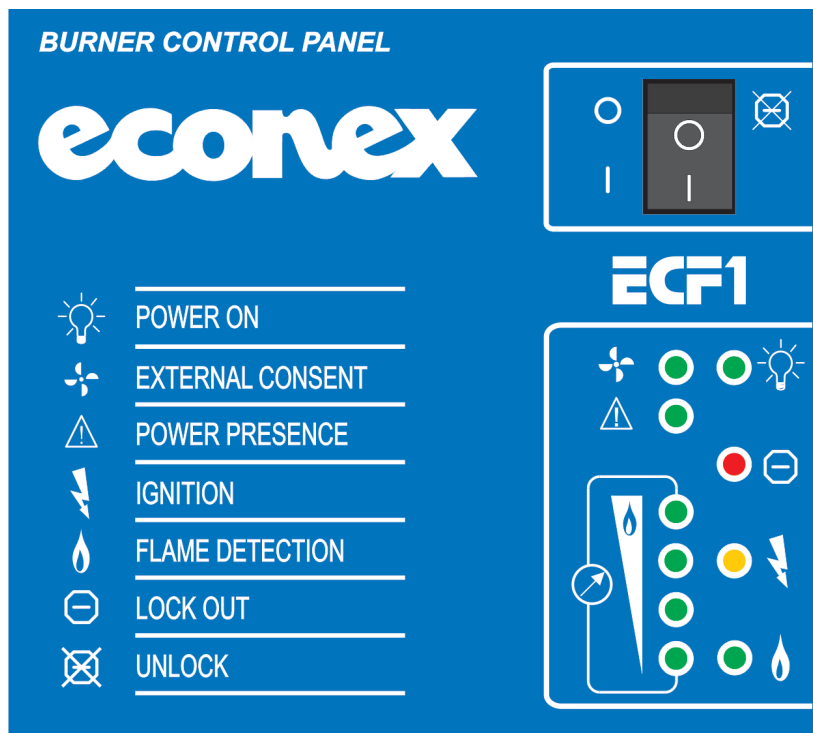
TR

C

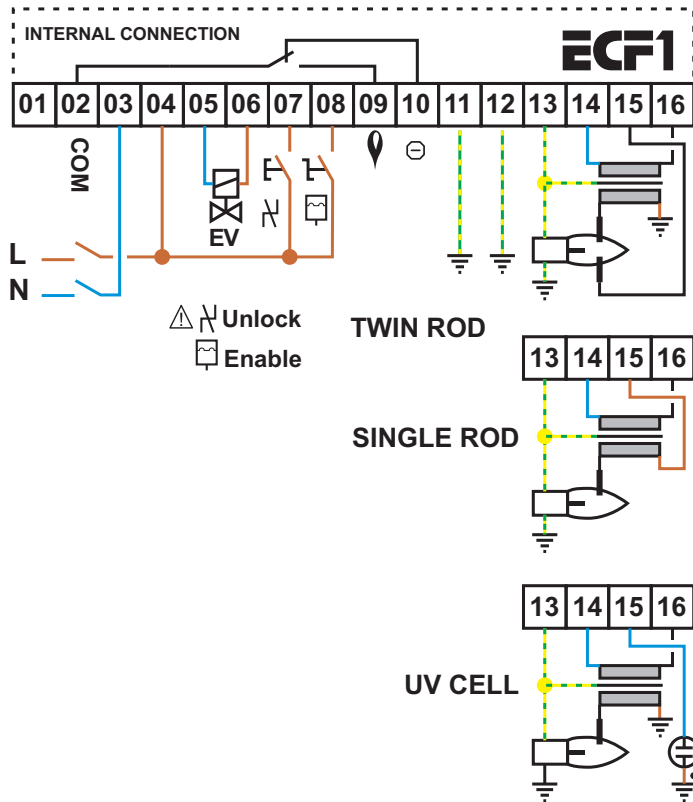
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20

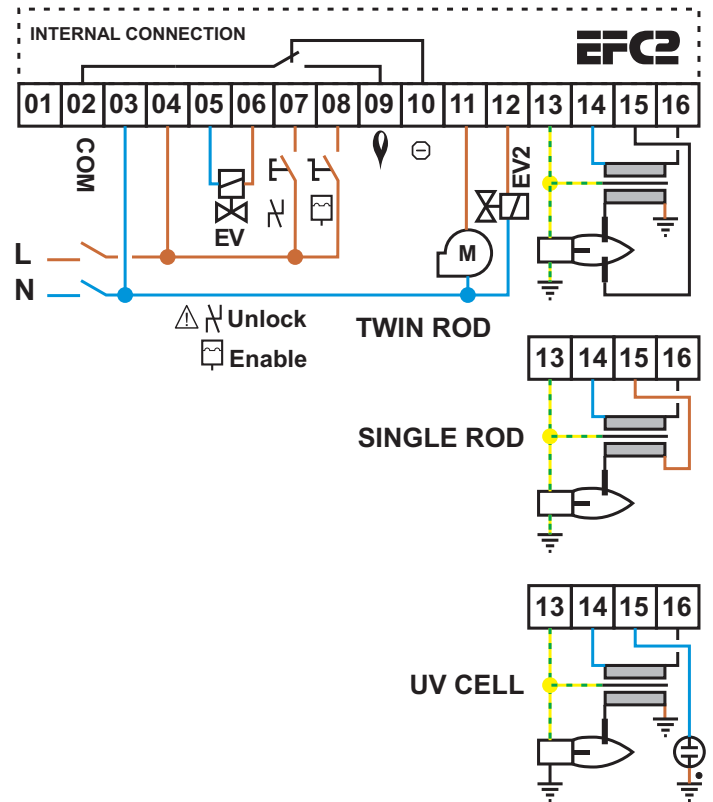
## FRONTAL VIEW OF EFC BURNER CONTROL UNIT



## SINGLE SOLENOID VALVE



## DOUBLE SOLENOID



Disconnect power before wiring.

By 3-phase systems use the same phase on the inputs. By solenoid valve output no power supply is allowed.

Enable the EFC only by voltage-free contacts from the safety sequence (all the main safety devices such as thermostats, Gas min., gas max., leakage control, pre-purge, etc.)

**Do not reverse phase and neutral.**

Output voltage of solenoid valve and ignition transformer is same as supply voltage.

Maximum voltage for solenoid valve and ignition transformer is 1A.

Maximum voltage for alarm contacts 1A 230Vac - no internal fuse protection is provided..

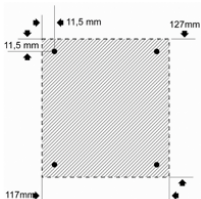
Properly earthing EFC device to the burner body in order to avoid missfunction.

**⚠ Do not connect any cable to the terminal**

**To be used only by authorised personnel for remote reset/operations keeping the burner under strict control.**

### ASSEMBLY

- EFC burner control can be mounted in any position
- Fixed rear part to be assembled by means of 4 preformed holes, to be removed by pressure.



- Suitable for pipe connection collars
- By wiring the burner control device, drill in the rear side only and use cable glands ensuring an IP40 enclosure at least
- By wiring the burner control device, use ionisation wires preferably (max. length 10 m. and 1 mm section) to be laid away from turbulence and external electrical influences.
- By wiring ignition cables a 1 mm section is recommended. Avoid contact with metal parts

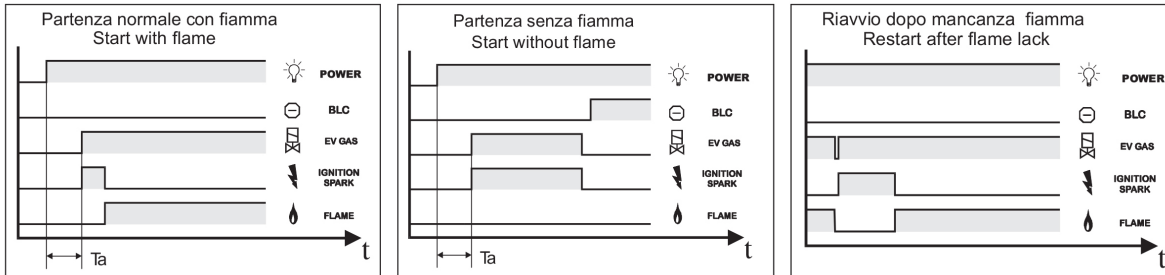
## Model EFC1 - Single solenoid valve

Five seconds after power is supplied to the EFC1 burner control unit, the unit energizes the gas solenoid valve and starts the ignition of the burner flame, for about seven seconds.

If a flame is detected, the EFC1 keeps the solenoid valve open.

If the flame doesn't ignite or extinguishes, the EFC1 will make another attempt to ignite the flame, and in case of second failure, the EFC1 goes into lock out mode.

The EFC1 must be manually re-started through the main switch, before beginning a new starting sequence.



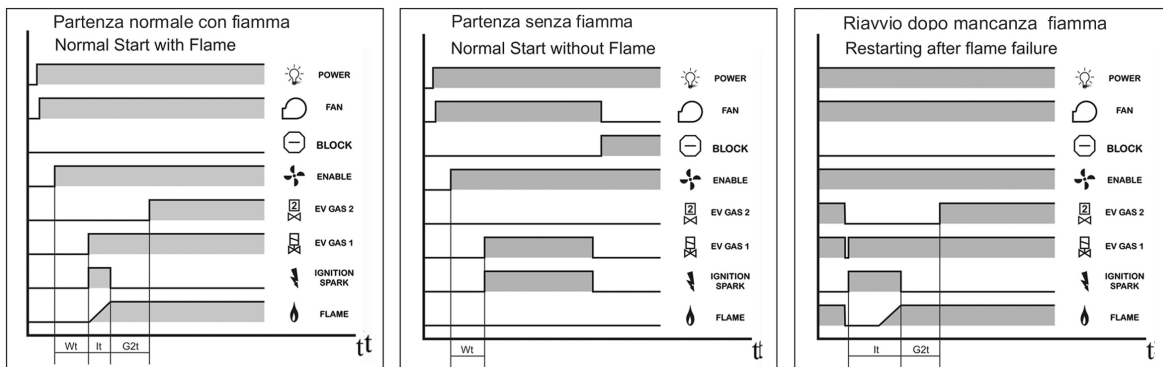
## Model EFC2A - Double Solenoid Valve

When power is supplied the EFC2A, it closes the contact for the fan, for the period of time selected in the pre-purge time ( $Wt$ ). Once pre-purge is complete, the EFC2A opens the first solenoid valve EV1, and, at the same time ignition starts for about 7 seconds.

If a flame is detected, the EFC2A opens the second solenoid valve, EV2, and both solenoid valves are kept energized/open.

If the flame fails to ignite or extinguishes, the EFC2A will shut off solenoid valve EV2, and performs another attempt to ignite the flame. In case of a new failure, the burner control unit goes into lock-out mode.

The EFC2A must be manually re-started through the main switch, before beginning a new sequence.



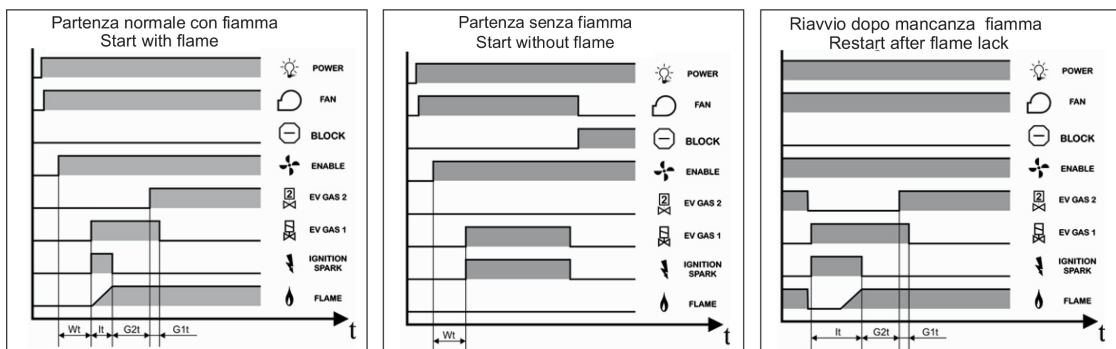
## Model EFC2B - Double Solenoid valve

When power is supplied the EFC2B, it closes the contact for the fan, for the period of time selected in the pre-purge time ( $Wt$ ). Once pre-purge is complete, the EFC2A opens the first solenoid valve EV1, and, at the same time ignition starts for about 7 seconds.

If a flame is detected, the EFC2A opens the second solenoid valve, EV2, and after 8 seconds ( $G2t$ ), the power supplied to EV1 is cut.

If the flame doesn't ignite or extinguishes, the EFC2B shuts-off solenoid valve EV2, energizes solenoid valve EV1, and performs another attempt to ignite the flame. In case of a new failure, the burner control unit goes into lock-out mode.

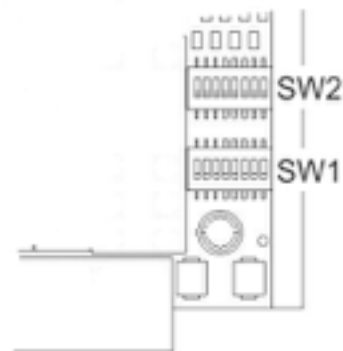
The EFC2B must be manually re-started through the main switch, before beginning a new sequence.



## SETTING

Some functions and values of EFC device can be set through 2 series of 8 micro-switches marked as SW1 and SW2, on the edge of the electronic board.

Micro-switches are factory set at 0.



## SW1 SETTING

### Setting of pre-purge times

Prepurge time 5 sec	
Prepurge time 1 sec	
Prepurge time 8 sec	
Prepurge time 10 sec	
Prepurge time 20 sec	
Prepurge time 30 sec	
Prepurge time 50 sec	
Prepurge time 70 sec	

### Setting time of ignition spark

5 sec		12 sec	
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### Setting time of ignition spark

2 sec		3 sec	
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## Operation setting

### Respark by flame loss

YES		NO	
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### Number of respark attempts

N° 1		N° 3	
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### Continuos service self ceck

Enabled		Inihited	
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## SW2 SETTING

### EV2 gas ON time

3,5 sec		10 sec	
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### EV1 gas OFF after EV2 gas

NO		YES	
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### EV1 gas OFF time

3,5 sec		10 sec	
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### Post - purge

YES		NO	
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### Post - purge time

3,5 sec		10 sec	
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### Fan ignition control

By ignition		Remote control	
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