

## KS24 Safe Start - Electrical Only



## SPECIFICATION

### Power

Supply voltage frequency	230 V ±15%
Power consumption	50/60 Hz
Max out switching voltage	7 VA max
Max out current (all relays)	250 Vac / 100 Vdc 3 A
Max out breaking capacity	2500 VA
Out contact operations	> 100 x 10-3
External limit contact	> 3A @ 250Vac
Line fuse 5x20mm	SLOWBLOW 3 A
Operating temperature	0 to 60 °C
Storage temperature	- 20 to 80 °C 120°C
Gasket Silicon	- 40 to 120°C
Relative Humidity	Also condensing 90 %
Enclosure	ABS/FR -40°C ÷ 80°C halogen
Dimension	200x110x60 mm
Colour	Light grey, RAL 7035
Protection class (EN69529)	IP66
Flame retardant	UL94 V-0
Mounting position	Any
Weight	<1Kg max

## APPLICATION

The Duomo KS24 Catering Kitchen Ventilation Interlock Controller monitors mechanical ventilation operation and efficacy in commercial catering establishments such as hotels, restaurants, school kitchens, prevents, and canteens.

## Why is this needed?

The key standard is BS 6173:2009, is specifically focused on the installation and maintenance of gas-fired catering appliances. However, the broader regulations that this standard supports, such as the Workplace (Health, Safety and Welfare) Regulations 1992 and the Regulatory Reform (Fire Safety) Order 2005, are not limited to just gas appliances.

These wider health, safety, and fire safety regulations cover all types of equipment and appliances used in commercial kitchens, including both gas-fired and electrically-powered appliances.

The specific language in the standards and regulations does not differentiate between the type of appliance (gas or electric), but rather focuses on the need for ventilation to be linked to the operation of the kitchen equipment as a whole. If ventilation rates fall below design or environmental limits, as specified by documents such as BS6173 and DW172, the electrical supply to the kitchen shall be automatically isolated.

Keycode startup ensures that only authorized personnel can initiate the electrical supply to the appliances.


# Key Features

- For use in commercial kitchens where all appliances are electric.
- Interlocks the supply and extract air with the electrical supply.
- Touchpad control panel
- Unique, programmable access keycode
- IP66 enclosure
- Continuously monitors ventilation interlocks
- Anti-switch bounce operation
- Can be used to start ventilation systems
- Designed to allow compliance with BS6173:2009

## DUOMO VENTILATION INTERLOCKS

Duomo provide two ventilation interlock devices compatible with the KS24. They are the ADP10 differential Air pressure switch and the FP45 current monitor.


### Duomo ADP10



The image shows a cylindrical, stainless steel differential air pressure switch. It has a circular gauge on top with a needle and numerical markings. Below the gauge is a small digital display showing '0045.20'. The device has two ports on the bottom for air pressure measurement.

- Differential Air Pressure Switch
- Adjusting range:20-300 Pa
- Max.inlet pressure:5000 Pa
- Switching hysteresis: 8-18 Pa
- Compliant with 73/23/EEC
- IP54 rating

### Duomo FP45D



The image shows a rectangular, grey fan power monitor. It has a digital display in the center with two readouts. To the right of the display are two rotary switches. The top of the device has a yellow warning label with a triangle icon and the text 'DANGER'. The bottom has another yellow warning label that reads 'WARNING This is a safety control DO NOT TAMPER'.

- Fan power monitors
- Digital display
- Monitors extract and/or supply fans
- Adjustable thresholds
- IP65 protective rating conforms with EN50022

# OPERATION

1. Apply electrical supply to the KS24. A self diagnostic test is performed. Upon completion the POWER light is lit. (Note: this does not mean that power is available to appliances yet. It means power is supplied to this controller).
2. Enter the numeric code (see Initial Password Setup).
3. Press tick to confirm the code. If the code is correct there are 3 short beeps. NOTE: In case of an incorrect code entry a 1.5 second beep will be heard.
4. During the ventilation proving phase the AIR light will flash until the ventilation interlocks are satisfied that the air flow is sufficient. If the interlocks do not signal good air flow within 30 seconds the KS24 will lockout and flash the AIR light accompanied by an intermittent beep. This can be reset by pressing the STOP button on the panel fascia. After investigating the lack of air proving interlock signal return to step 2.
5. After a successful test the Air light will become fixed. A few seconds later the electrical supply will be provided to the kitchen appliances (This will be via a contactor - not supplied with the KS24 - the maximum load of the KS24 is 3 Amps - **DO NOT CONNECT DIRECTLY TO APPLIANCES. THIS WILL RESULT IN DAMAGE TO THE KS24.**)
6. To stop the electrical supply to the kitchen appliances either:
  - a. Press a remote emergency stop push button or,
  - b. Press the STOP button on the panel fascia.
7. If the air fails during a run condition the AIR light will flash and this will be accompanied by an intermittent beep.
8. After any fault condition re-enter the key code and confirm with the tick button.

## Initial Password Setup

To enter password configuration mode:

1. press and hold keys 1, 6 and 7 together for 5 seconds until the keypad backlight turns red.
  2. Enter the numeric password you want to use (1 to 8 characters in length). At each press the active key will turn off momentarily. Press the tick to confirm the code.
  3. Press the CANCEL key to exit configuration mode at any time, leaving the password unchanged.
- \*Default password is 1, 2, 3, 4.

## Pressure Switch Contact Bounce Prevention

- 10-second delay prevents nuisance lockouts
- Minimizes disruptions from air pressure changes
- Supports uninterrupted cooking during stormy conditions
- Helps maximize kitchen efficiency and customer satisfaction

## Warranty Period

Duomo UK Ltd guarantees to replace this product if found to be defective from manufacture or component failure within 2 years from the date of manufacture.

## Exclusions

Duomo UK Ltd is not liable for consequential or special damages arising from incorrect application and installation of the product.

**Limitations on combined equipment:** When Duomo UK Ltd products are combined with equipment from other manufacturers or integrated into systems designed by others, the Duomo UK Ltd warranty only applies to their own products, not to the entire combined system or its performance.

## Fault Memory

The Trio Safestart features a unique 'fault memory' system. When the unit goes into alarm, the cause is logged in an internal memory. The next time the unit is powered up, the last cause of alarm:

**Power Light** - if the power supply to the KS24 is interrupted or the remote Emergency stop is pressed.

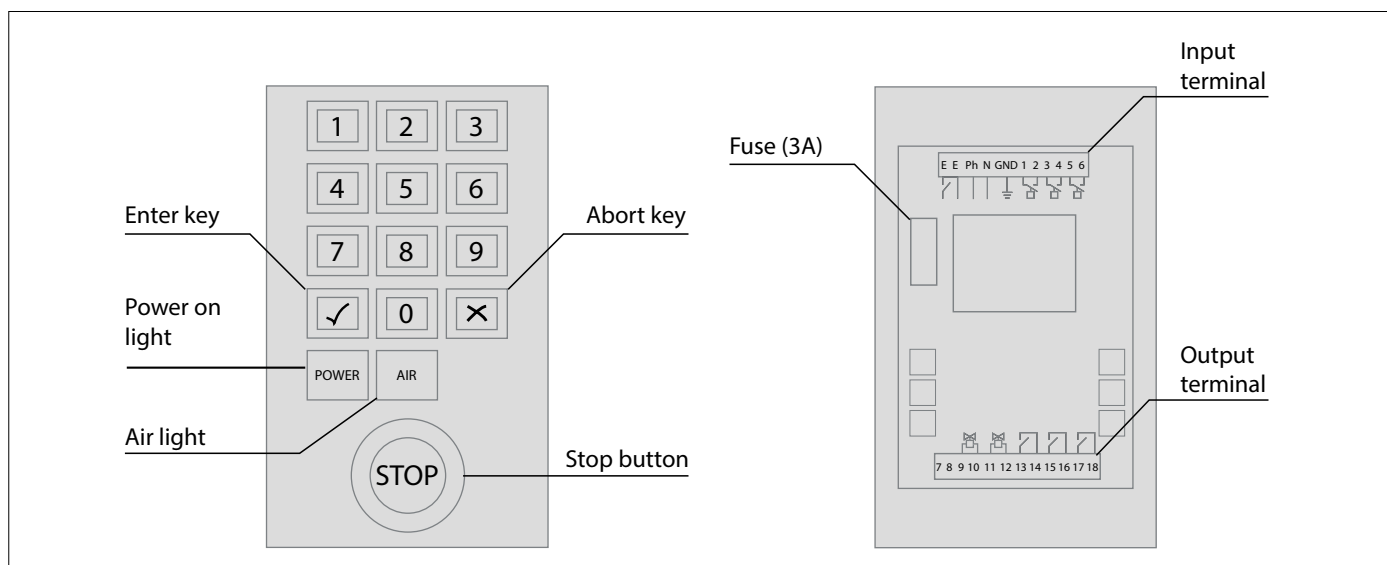
**OR**

**Air Light** - if the air proving interlocks detect insufficient air will flash during the self diagnostic stage allowing an engineer to quickly diagnose the fault on site.

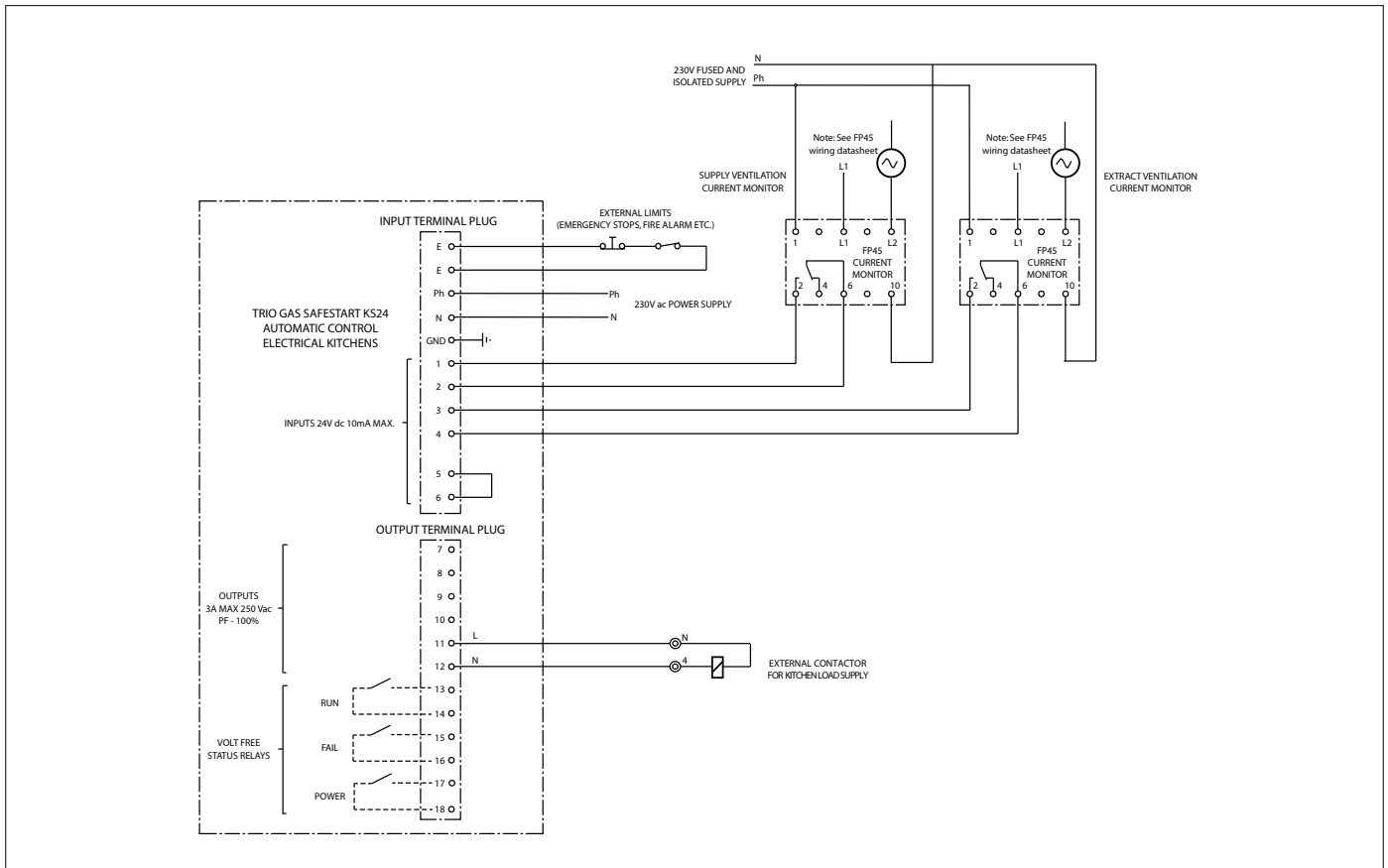
Reliable Cooking, even in Stormy Conditions

The KS24 appliance controller is designed to prevent nuisance lockouts caused by intermittent air pressure switch inputs during high winds or stormy weather.

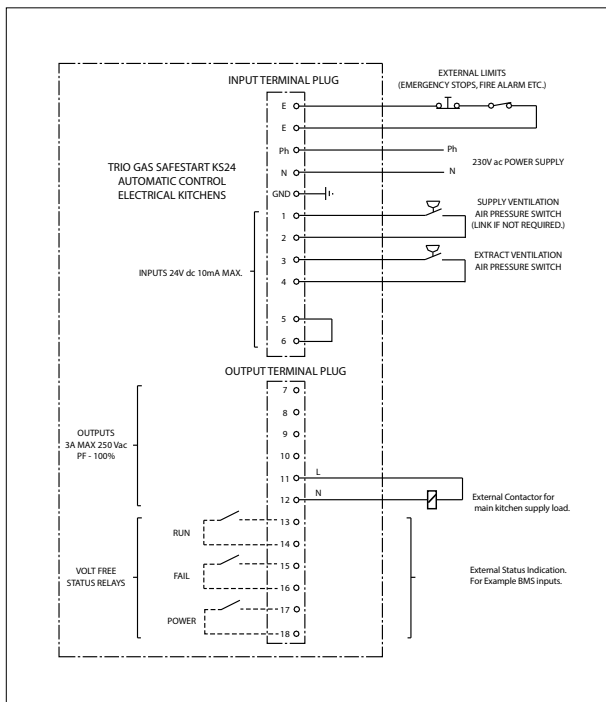
By incorporating a 10-second delay before cutting power to the appliance, the KS24 ensures temporary air pressure fluctuations don't unnecessarily disrupt the cooking process. This helps maintain consistent performance and avoid costly interruptions to your kitchen's productivity.



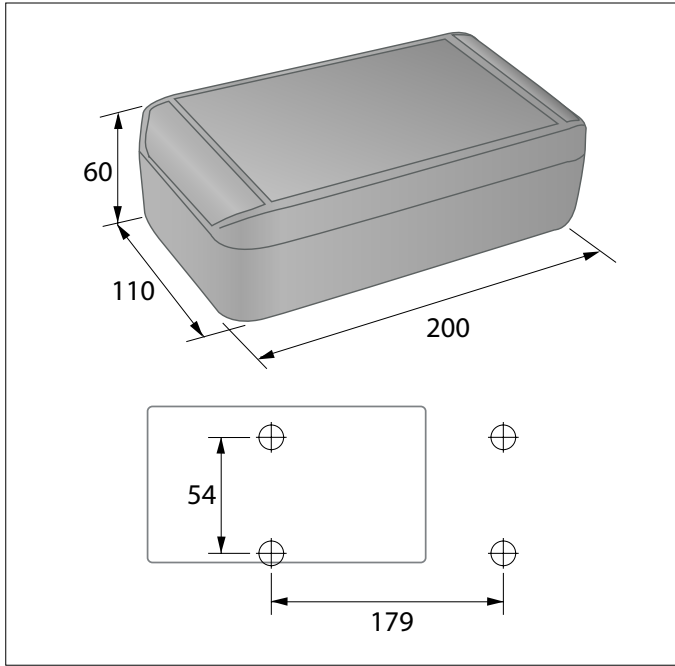
# Typical Wiring Diagram Using Duomo Power Monitors



# Typical Wiring Diagram Using Air Pressure Switches



# KS24 Dimensions



# Terminal Block

### How to start a fan system with the KS24

E - External limit/interlock (Out)	2 - Supply air pressure switch (Return)	9 - N/A
E - External limit/interlock (Return)	3 - Extract air pressure switch (Out)	10 - N/A
Ph - Power supply phase	4 - Extract air pressure switch (Return)	11 - External Contactor Coil
N - Power supply neutral	5 - N/A	12 - Contactor Coil (Neutral)
GND - Protection ground	6 - N/A	13 - Run SPST contact
1 - Supply air pressure switch (Out)	7 - N/A	14 - Run SPST contact
	8 - N/A	15 - Failure SPST contact
		16 - Failure SPST contact
		17 - Power on SPST contact
		18 - Power on SPST contact



## KS24 Safe Start

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