

### ATTENTION

Read carefully these instructions before installing and using this device and keep them for future reference. Attention to installation and electrical wiring. Use this device only as described in this document and never use itself as a security device. The device must be disposed of in accordance with local standards for the collection of electrical and electronic equipment.



### DESCRIPTION

FBX is a heating controller for heated cupboards and Bain-marie, suitable for all applications and has the following specifications: one NTC/PTC temperature sensor which controls the room temperature; 3 indication digits with resolution 0.5°C and 4 buttons; 2 relays: external resistance relay 30A 250VAC which is restrained on the plastic box of the controller with a holding frame and one ON/OFF relay 10A 250VAC.

### THERMOSTAT'S DIMENSIONS

**ATTENTION:** Read carefully the technical specifications and make sure that the working conditions are appropriate. According to safety standards, the device must be fastened in such a way that it cannot be removed without the use of tools.

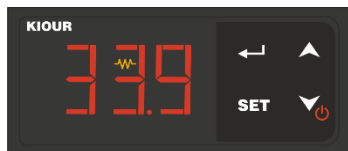


Dimensions are in mm. The device is mounted in panel hole 29x71mm and it is restrained with plastic side brackets.



### INDICATIONS AND BUTTONS FUNCTION

Display indications	
	resistance ON
	fan ON
	alarm ON
	malfunction ON



Keyboard	
	enter/exit the parameter's menu confirm new value of a parameter
	display the parameter's value
	down arrow ON/OFF cabinet
	up arrow

For more indications regarding the alarms please see the alarm's table at page 2.

### ADJUSTING ROOM'S TEMPERATURE – SET POINT

1. Press to display the first parameter **SPo**.
2. Press to display its value. With or change its value.
3. Press to save the new value. The cabinet is working properly with the new adjustment.

### INDUSTRIAL FACTORY SETTINGS OF CABINET

1. Choose from the following table the corresponding program of your cabinet.
2. Press to display the first parameter **SPo**. Press once and the parameter **Cod** is displayed.
3. Press to display its value and press to enter the cabinet's program. Press to store the cabinet's program to parameter **Cod**.
4. Press again to exit the parameter menu. All appropriate settings are now stored and the cabinet is working properly.










Cabinet's model	Program
Bain-Marie	31
Heated Cupboard	32

### ON/OFF THERMOSTAT

1. Press for 3 seconds to activate or deactivate the cabinet.

## PROGRAMMING A PARAMETER

**ATTENTION:** to gain full access to the parameter's menu, the 2<sup>nd</sup> parameter **Cod** must be adjusted to **22** (see parameter table page 2).

1. Press  to enter the parameter menu.
2. Choose the parameter you want to adjust by pressing  or  and press  to display its value.
3. Press  or  to change its value and then press  to store the new value.  
Press  if you want to cancel the new value and the parameter's name is displayed.
4. Press  to exit the parameter menu.

## TECHNICAL SPECIFICATIONS OF THE THERMOSTAT

Power supply: 230VAC 50/60Hz / Maximum power consumption: 3W

It is recommended using a power supply safety fuse: 0.5A (not included)

Room and evaporator temperature sensors NTC 10K 1% 25°C IP68 with rubber tube and temperature range -37±110°C (-34±230°F) or PTC 1K 25°C with metal tube and temperature range -50±110°C (-58±230°F) / Accuracy: ±0.5°C

2 relays: external resistance relay 30A res. 250VAC normally open contact / relay 10A res. normally open contact / Max current load 16A

Connections: cable cross section 2.5 mm<sup>2</sup> for all relays / cable cross section from 0.25 to 1.0 mm<sup>2</sup> for the sensor

Connections with terminal blocks using cable with cable cross section up to 2.5 mm<sup>2</sup> / It is recommended using a torque wrench with maximum torque 0.4Nm

Operating temperature: -15±55°C / Storage temperature: -20±80°C

Dimensions front 79x36mm and depth 79mm / Protection IP 65 front

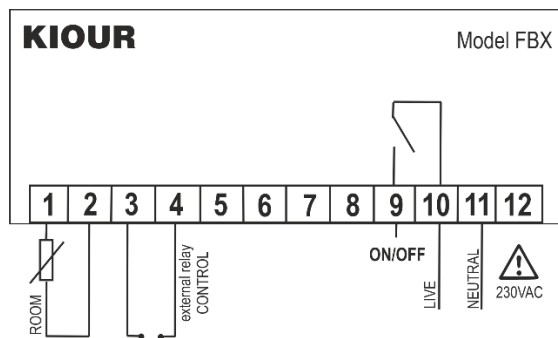
The device is mounted on panel hole 29x71mm and it is restrained with plastic side brackets.

Firmware: V2

## ELECTRICAL DIAGRAMS

**ATTENTION:** according to safety standards, the device must be properly positioned and protected from any contact with electrical parts. The device must be fastened in such a way that it cannot be removed without the use of tools. Disconnect the main safety switch of the installation before proceeding to any maintenance. Disconnect the power supply of the device before proceeding to any maintenance. Do not place the device near heat sources, equipment containing strong magnets, in areas affected by direct sunlight or rain. Prevent electrostatic discharges and sharp objects from being inserted to the device. Separate signal cables from power supply cables to prevent electromagnetic disorders. Signal cables must never be in the same pipe with the power supply cables.

### Thermostat FBX



## PARAMETER TABLE

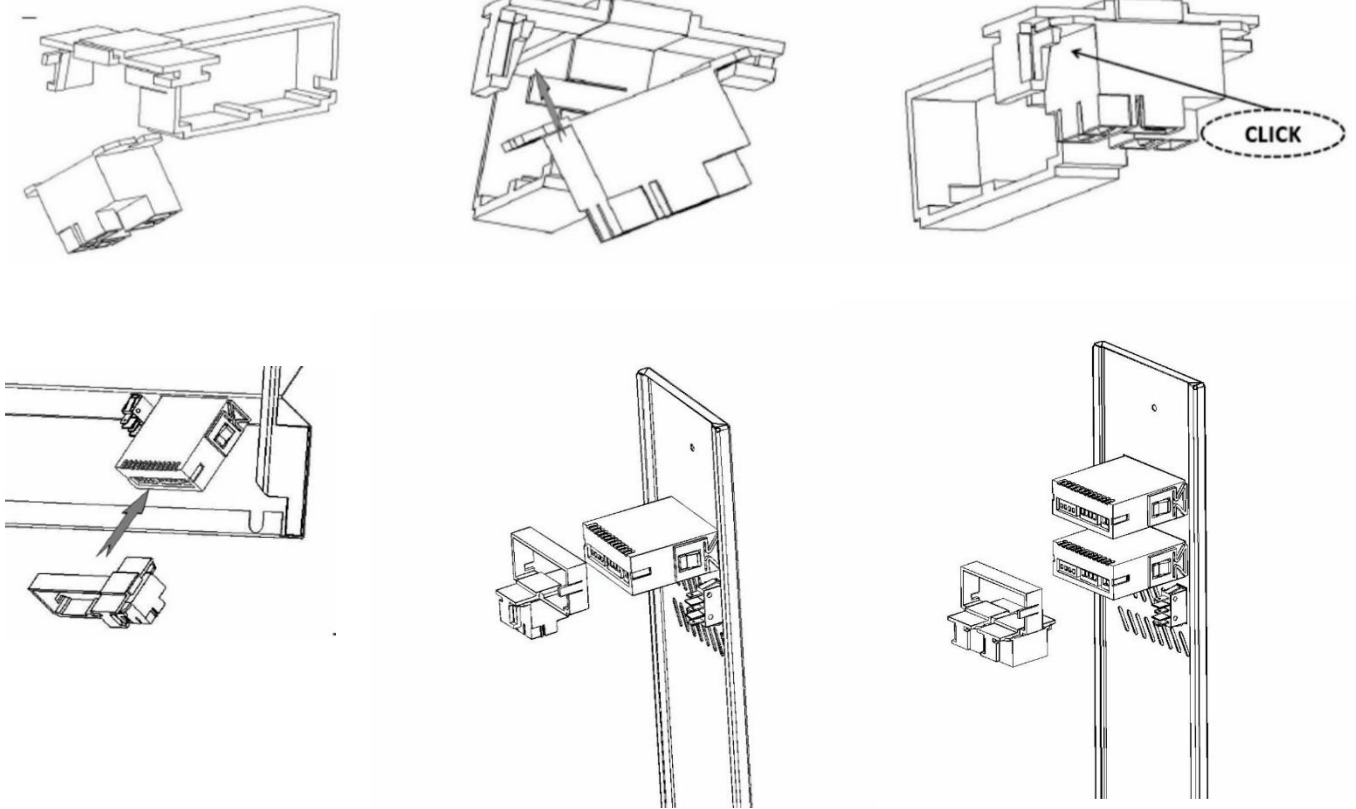
No	Code	description	min	max	UOM	INDUSTRIAL FACTORY SETTINGS	
						Bain-Marie	Heated Cupboard
						Program 31	Program 32
1	SPo	SET POINT: room temperature setting	SLo	SHi	°C/°F	75	70
2	Cod	<b>Access code to the following parameters Cod = 22.</b>	0	255	-	22	22
3	SLo	Lower setting limit of SPo	-50.0	SHi	°C/°F	25	25
4	SHi	Maximum setting limit of SPo	SLo	150	°C/°F	90	72
5	diF	Differential of room temperature SPo (thermostat delay)	0.1	25.5	°C/°F	5	3
6	AJ1	Room sensor offset	-9.9	15.5	°C/°F	0	3
7	LAo	Relay ON/OFF operation and fan indication on screen 0 = relay ON and fan indication turns ON 1 = relay OFF and fan indication turns OFF	0	1	-	1	0
8	dEC	Temperature indication in integer or decimal form 0 = integer display 1 = decimal display	0	1	-	0	0
9	Sen	Sensor type NTC/PTC 0 = PTC 1 = NTC	0	1	-	0	0
10	C_F	Temperature measurement unit: toggling between °C/°F do not adjust the SPo automatically, it must be changed by the user 0 = °C 1 = °F	0	1	-	0	0

## ALARM TABLE

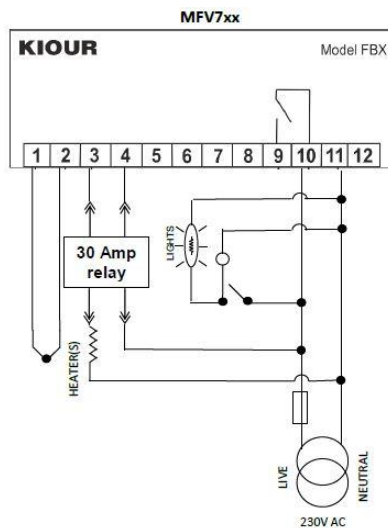
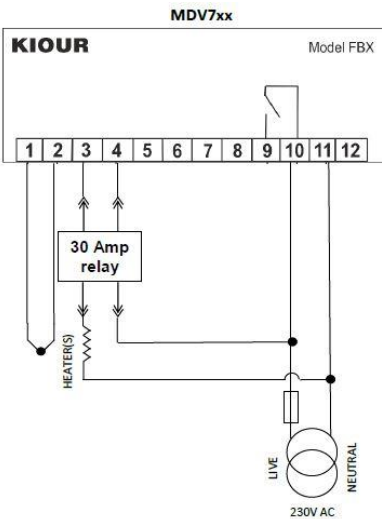
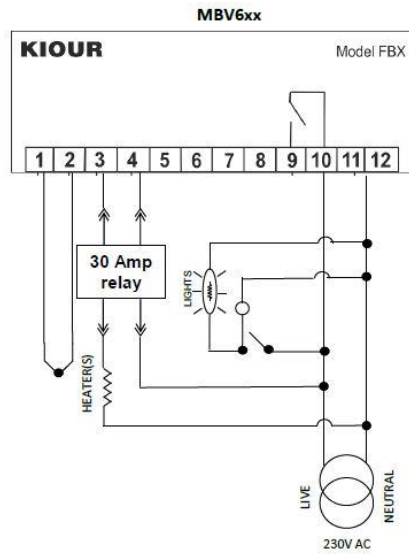
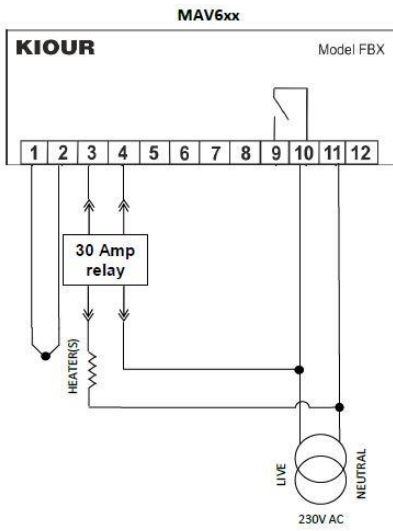
1	LF1	Room sensor malfunction
2	EEr	error in memory RAM: re-enter the SPo of the cabinet (see ADJUSTING ROOM'S TEMPERATURE – SET POINT page 1)
<b>The alarms are automatically deactivated once the cause of the alarm disappears.</b>		

## RELAY HOLDING COMPONENTS

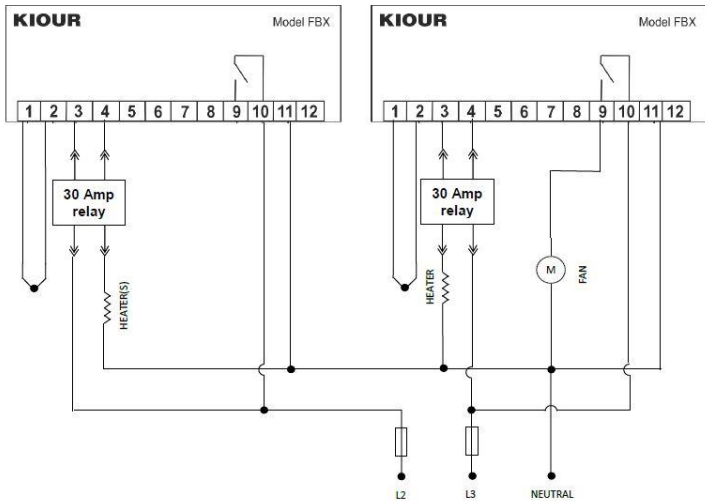
The relay holding components consist of a plastic frame and a plastic base restraint. Three relays can be restrained on the frame simultaneously. The relay is secured over the frame with the help of the restraint and then the frame is secured over the controller's shell. The connections of the relay should be facing down to be protected from falling liquid, as in the following pictures.



## ELECTRICAL DIAGRAMS

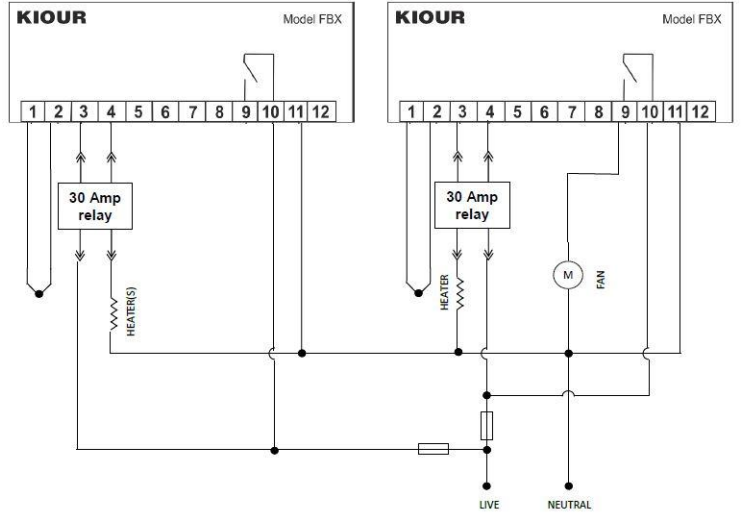


MHV7xx

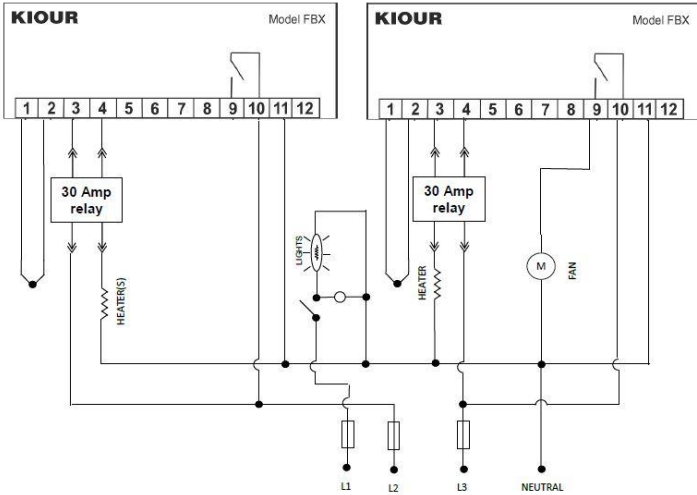


ΣΥΝΔΕΣΤΕ ΣΕ ΤΡΙΦΑΣΙΚΟ ΔΙΑΚΟΠΤΗ  
CONNECT TO THREE-PHASE SWITCH  
2x230V

MHV7xx 1-PHASE

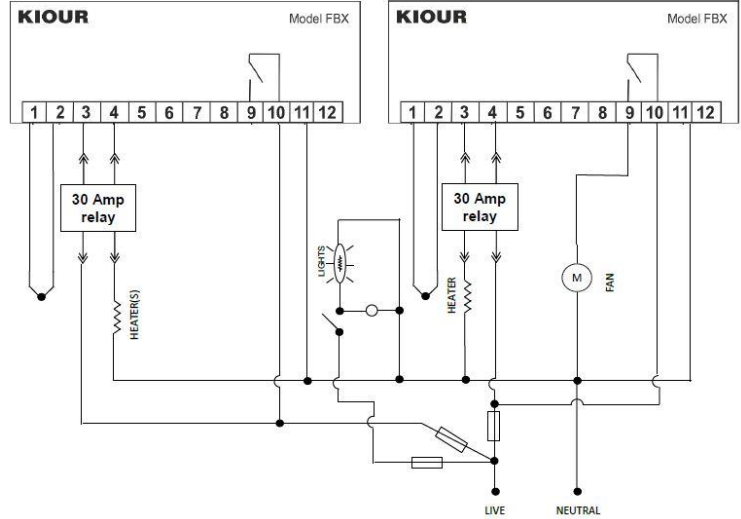


MIV7xx

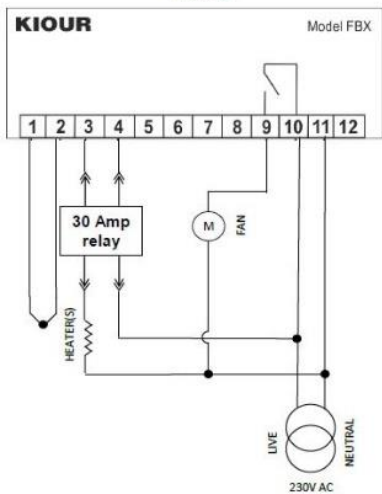


ΣΥΝΔΕΣΤΕ ΣΕ ΤΡΙΦΑΣΙΚΟ ΔΙΑΚΟΠΤΗ  
CONNECT TO THREE-PHASE SWITCH  
3x230V

MIV7xx 1-PHASE



GES7xx



Made in Greece.

The device is under two year's guarantee. The guarantee is valid only if the manual instructions have been applied. The control and service of the device must be done by an authorized technician. The guarantee covers only the replacement or the service of the device. KIOUR preserves the right to adjust its products without further notice.

