

# CHILLER THERMOSTAT

## Model FSD3

KIOUR

### ATTENTION

Firmware V5

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

FSD3 is a thermostat for chiller cabinets, 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; one digital input for controlling the cabinet's door; 3 relays: compressor 30A 250VAC, fan 10A 250VAC, ON/OFF 10A 250VAC; a buzzer in case of an alarm; it can connect to the monitoring and controlling network CAMIN via serial input using an interface with MODBUS protocol (see page 2 – Serial input of the thermostat).

### 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.

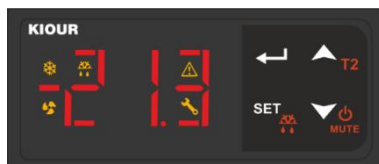


Dimensions are in mm. The device is mounted in panel hole 29x71mm and it is restrained with plastic side brackets.



### INDICATIONS AND BUTTONS FUNCTION

Display indications	
	compressor ON
	deFrost 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 manual deFrost
	down arrow mute buzzer ON/OFF cabinet
	up arrow

For more indications regarding the alarms please see the alarm's table at page 3.

### ADJUSTING ROOM'S TEMPERATURE – SET POINT

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

### INDUSTRIAL FACTORY SETTINGS OF CABINET

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

Cabinet's model	Program
Counters RU	31
Saladette / Glass door RU	32

### ON / OFF CABINET










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

### MANUAL DEFROST

- Press for 3 seconds to start manual defrost with duration 20 minutes. Manual defrost starts regardless of the room temperature.

## PROGRAMMING A PARAMETER

**ATTENTION:** to gain full access to the parameter's menu, the 5<sup>th</sup> parameter **Cod** must be adjusted to **22** (see parameter table page 4).

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

Alarm buzzer / Serial input with 5pin connector / Digital input door

3 relays: compressor relay 30A res. 250VAC normally open contact / fan relay 10A res. normally open contact / ON/OFF 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 sensors and door switch

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: V5

## SERIAL INPUT OF THE THERMOSTAT

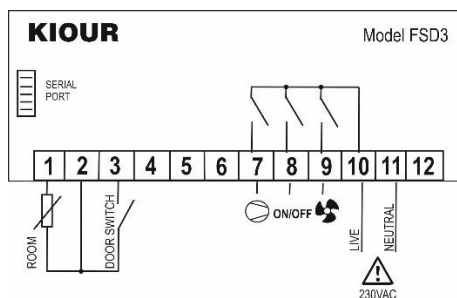
FSD3 can connect to CAMIN network or to data logger model Mini Logger or to any MODBUS network:

- CAMIN network: the thermostat can connect via a network interface NET-INS-485 to the CAMIN network. CAMIN is a software application designed to collect data, monitor and fully control a network of up to 250 thermostats using cable wiring. It can also send SMS and emails in case of an alarm.
- Mini Logger: the thermostat can connect to a data logger and store temperatures, relay status and alarms to a microSD. A cable is used to connect the data logger with the thermostat and parameter Add must be adjusted to 1.
- Parameter programming key: the parameter values can be stored or retrieved from the programming key.

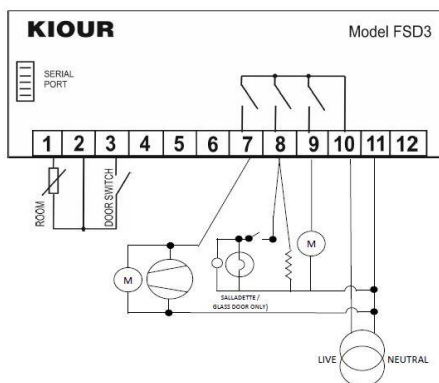
## ELECTRICAL DIAGRAMS

**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 been 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 FSD3



### Saladette cabinet's and Glass door RU



**PARAMETER'S TABLE**

No	code	description	min	max	UOM	INDUSTRIAL FACTORY SETTINGS	
						COUNTERS RU	SALADETTE RU
						Program 31	Program 32
1	SPo	SET POINT: room temperature setting	LSP	HSP	°C/°F	0.0	3.0
2	ALo	Low alarm room threshold	-50.0	AHi	°C/°F	-5.0	-5.0
3	AHi	High alarm room threshold	ALo	150	°C/°F	+15.0	+15.0
4	dr1	Time between two successive defrost, where 0 = defrost is deactivated.	0	12	hours	4	4
5	Cod	Access code to the following parameters Cod = 22.	0	255	-	31	32
6	diF	Differential of room temperature SPo (thermostat delay)	0.1	25.5	°C/°F	3.0	3.0
7	dd2	Defrost duration. Manual defrost lasts 20 minutes.	1	90	minutes	25	25
8	dP3	Dripping timer, where the compressor is OFF after defrost	0	10	minutes	0	0
9	dY4	Display indication during defrost 0 = indication of room's temperature 1 to 99 minutes = indication dFr from 1 to 90 min counting from the beginning of defrost	0	99	minutes	25	25
10	dE5	Defrost end temperature Defrost end temperature is the room temperature. Automatic defrost does not start if the evaporator temperature is greater than the defrost end temperature dE5. Manual defrost starts regardless of the room temperature and ends after 20 minutes.	0.0	25.5	°C/°F	12.0	12.0
11	dt6	(not in use)					
12	AF1	(not in use)					
13	At2	Time delay in activating "AHi" and the buzzer. This setting does not apply to "ALo", sensor malfunction and door alarm. 0 = immediate buzzer activation 1 to 120 minutes = delay in buzzer activation	0	120	minutes	20	20
14	Fo1	(not in use)					
15	Ft2	Evaporator's fan operation. During defrost the fan operates. -1 = continuous function 0 = parallel with the compressor	-1	0	-	-1	-1
16	tSd	delay of room temperature on screen	0	20	sec	0	0
17	Co1	(not in use)					
18	CP2	Compressor's minimum time OFF	0	4	minutes	2	2
19	CF3	Compressor's operation in case of room's sensor malfunction 0 = 40% ON compressor (3 minutes ON, 4 minutes OFF) 1 = ON compressor constantly	0	1	-	0	0
20	UFu	Serial input operation 0 = operates with CAMIN network and key memory 1 = connection with an external device for alarm output ATTENTION: when parameter Add is different than zero, the UFu parameter automatically is programmed to zero.	0	1	-	1	1
21	SE1	Room sensor offset	-9.9	+15.5	°C/°F	0.0	0.0
22	SE2	(not in use)					
23	oS2	(not in use)					
24	LSP	Lower setting limit of SPo	-50.0	HSP	°C	0.0	3.0
25	HSP	Maximum setting limit of SPo	LSP	150	°C	+10.0	+10.0
26	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	°C/°F	0	0
27	SEn	Sensor type NTC/PTC 0 = PTC 1 = NTC	0	1	-	1	1
28	trE	Response time of the device on network	0	100	msec	20	20
29	Add	Device address on network	0	255	-	1	1
30	diP	(not in use)					
31	Odo	Door switch operation 0 = OFF 1 = NO (normally open) 2 = NC (normally close) If the cabinet's door remains open for 2 minutes, the alarm dor is activated and the compressor stops.	0	2	-	0	0

**ALARM TABLE**

1	LF1	Room sensor malfunction
2	ALo	Low room temperature
3	AHi	High room temperature
4	dor	Open door (If the cabinet's door remains open for 2 minutes, the alarm dor is activated and the compressor stops)
5	EEr	error in memory RAM: re-enter the SPo of the cabinet (see ADJUSTING ROOM'S TEMPERATURE – SET POINT page 1)
The alarms are automatically deactivated once the cause of the alarm disappears.		

**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.

