CHILLER – FREEZER THERMOSTAT
Model RN5+ (COMPATIBLE WITH RN2 / RN3 / RN4 / RN4+ / RN5)

KIOUR

ATTENTION

Firmware V4.1

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. Disconnect the power supply before performing any type of maintenance operation. Do not expose the device to liquid leakage, high temperatures over +55ºC, high humidity over 80%. The device must be disposed of in accordance with local standards for the collection of electrical and electronic equipment.

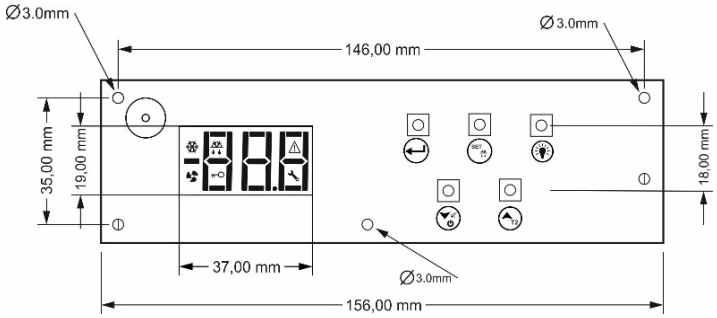
DESCRIPTION

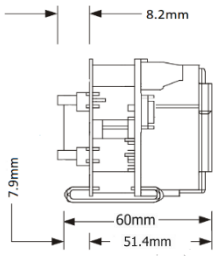
RN5+ is a thermostat for chiller or freezer cabinet, without plastic enclosure, suitable for all applications including the ones with anti-explosive standards and has the following specifications: room and evaporator temperature is controlled with NTC / PTC sensors; 3 indication digits with resolution 0.5°C and 5 buttons; one serial input for controlling the cabinet's door; 5 relays: compressor 30A 250VAC, fan 10A 250VAC, deFrost 10A 250VAC, lamp 10A 250VAC and door resistance in chillers or drainage resistance in freezers 10A 250VAC; defrosting may be electric or by hot gas; a buzzer in case of an alarm; a serial data port in order to connect either to cloud online IoT platform Cortex or to a computer via CAMIN software for full monitoring and data logging of the device (see page 2 – Serial input of the thermostat). The device is mounted through panel hole and secured by screws.

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.*

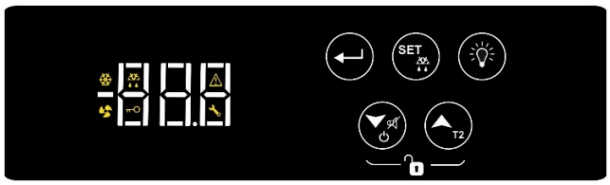
Dimensions are in mm. The device is mounted through panel hole and secured by 3 screws (Φ=3mm).





INDICATIONS AND BUTTONS FUNCTION

Display indications	
❄	compressor ON
dFr ❄	deFrost ON
🌀	fan ON
⚠	alarm ON
Loc 🔑	keyboard locked
🔧	malfunction ON
- - -	evaporator's sensor is deactivated



Keyboard	
↵	enter/exit the parameter's menu confirm new value of a parameter
SET	display the parameter's value manual deFrost
💡	ON/OFF lamp
▼	down arrow mute buzzer ON/OFF cabinet
▲ T2	up arrow display the evaporator temperature T2 (and the room temperature if Set Point is constantly displayed)

For more indications regarding the alarms please see the alarm's table at page 6.

UNLOCKING THE THERMOSTAT

By pressing at the same time ▼ ▲T2 for 3 seconds, the countdown starts and the keyboard unlocks while the yellow small key on the display turns off. Instantly the temperature measurement unit ºC/ºF is displayed. The keyboard locks automatically after 60 seconds of inertia.

ADJUSTING ROOM'S TEMPERATURE – SET POINT

1. Unlock the keyboard by pressing at the same time ▼ ▲T2 and the countdown starts for 3 seconds.
2. Press ↵ to display the first parameter **SPo.**
3. Press SET to display its value. With ▼ or ▲T2 change its value.

4. 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. Unlock the keyboard by pressing at the same time ▼ ▲T2 and the countdown starts for 3 seconds.
3. Press ↵ to display the first parameter **SPo**. Press 4 times ▼ and the parameter **Cod** is displayed.
4. Press SET to display its value and press ▲T2 to enter the cabinet's program**.** Press ↵ to store the cabinet's program to parameter **Cod**.
5. Press ↵ again to exit the parameter menu. The indication "YES" is displayed and all appropriate settings are now stored.
6. Toggle cabinet's power supply in order to work properly and based on the registered settings.

Cabinet's model	Program
Upright chiller with freon R134a	**33**
Upright chiller with propane R290	**38**
Upright freezer with stainless door with freon R404A	**36**
Upright freezer with stainless door with propane R290	**34**
Upright freezer with glass door with freon R404A	**37**
Upright freezer with glass door with propane R290	**35**
Freezer counters	**39**
Refrigerated counters	**31**
Saladette	**32**

CAUTION!

When the temperature probe is PTC, parameter 27 must be changed to **SEn = 0**

PTC probes are as shown in the image:

⏻ ON / OFF CABINET

1. To activate the cabinet, press for 3 seconds ▼.
2. To deactivate the cabinet, unlock the keyboard by pressing at the same time ▼ ▲T2 and the countdown starts for 3 seconds. Press for 3 seconds ▼.

CABINET'S LIGHT

1. If the cabinet has a light, press and hold 💡 to turn it ON or OFF.

MANUAL DEFROST

1. Unlock the keyboard by pressing at the same time ▼ ▲T2 and the countdown starts for 3 seconds.
2. Press for 3 seconds SET to start a manual defrost with duration based on the parameter **dd2** (table page 3).

*For more information regarding the defrost check the description of parameter **dt6** (table at page 4 - parameter No 11).*

INDICATION OF THE EVAPORATOR'S TEMPERATURE T2 (AND ROOM'S TEMPERATURE WHEN THE SET POINT IS CONSTANTLY DISPLAYED)

1. Unlock the keyboard by pressing at the same time ▼ ▲T2 and the countdown starts for 3 seconds.
2. Press and hold ▲T2 to display the evaporator's temperature for 2 seconds and then the cabinet's temperature (if parameter **diP** is adjusted to constantly display the Set Point and not the room's temperature).
3. If the evaporator's temperature is deactivated from the parameter **OS2,** it is displayed "- - -".

PROGRAMMING A PARAMETER

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

1. Unlock the keyboard by pressing at the same time ▼ ▲T2 and the countdown starts for 3 seconds.
2. Press ↵ to enter the parameter menu.
3. Choose the parameter you want to adjust by pressing ▼ or ▲T2 and press SET to display its value.
4. Press ▼ or ▲T2 to change its value and then press ↵ to store the new value.
   Press SET if you want to cancel the new value and the parameter's name is displayed.
5. Press ↵ to exit the parameter menu.

TECHNICAL SPECIFICATIONS OF THE THERMOSTAT

Model **RN+** power supply: 230VAC 50/60Hz / Maximum power consumption: 3W. Model **RNW+** switching power supply 100-264VAC 50/60Hz 5W
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 -50÷+112°C (-58÷+230°F) or PTC 1K 25ºC with metal tube and temperature range -50÷+150°C (-58÷+302°F) / Accuracy: ±0.5°C
Alarm buzzer / Serial input with 5pin connector / Digital input door
5 anti-explosive relays: compressor relay 30A res. 250VAC normally open contact / fan relay 10A res. normally open contact / defrost relay 10A res. normally open contact / lamp relay 10A res. normally open contact / door resistance relay or drainage resistance 10A res. normally open contact / Max current load 16A.

Connections: cable cross section 2.5 mm² for all relays / cable cross section from 0.25 to 1.0 mm² for the sensors and door switch / Use cable with appropriate temperature ratings – terminal block temperature possible rise above 60°C
Connections with terminal blocks 18A using cable with cable cross section up to 2.5 mm² / It is recommended using a torque wrench with maximum torque 0.4Nm
Operating temperature: -15÷+55°C / Storage temperature: -20÷+80°C
No plastic enclosure / Protection IP 00 / Device Class: 2
The device is mounted on appropriate panel holes and secured with 3 screws (Φ=3mm). The holes are created only for button and display access. An appropriate membrane with protection IP65 must be placed over the panel to secure the device from liquid leakage and human interference.
Firmware: V4.1

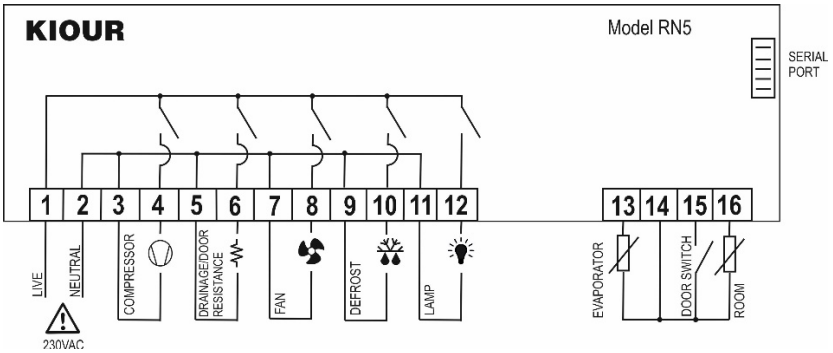
SERIAL INPUT OF THE THERMOSTAT

RN5+ connects via serial input to cloud IoT and the online CORTEX platform or to a local computer with the CAMIN program or to any Modbus network.

- Cloud and CORTEX platform: connection to the cloud and the CORTEX platform for monitoring - recording and managing the thermostat from your mobile, tablet or any computer.
- CAMIN program: local connection and monitoring - recording and management of the thermostat through the CAMIN program installed on a local computer.

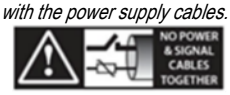
ELECTRICAL DIAGRAM OF THE THERMOSTAT

***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.*

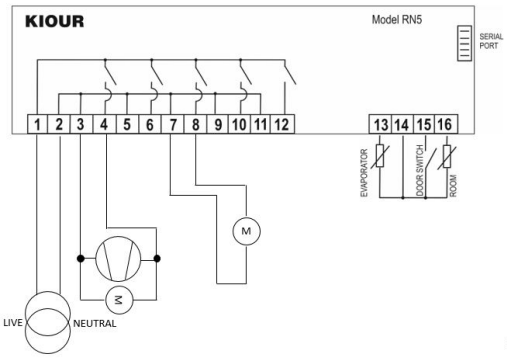


ELECTRICAL DIAGRAM OF THE CABINET

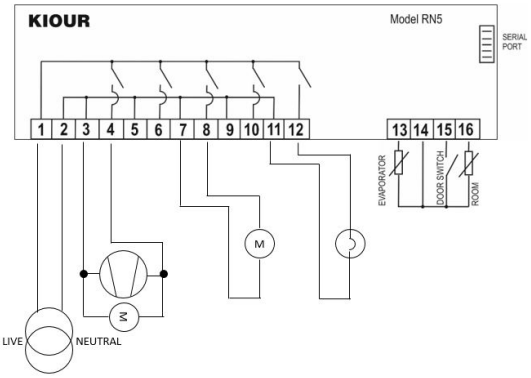
***ATTENTION**: according to safety standards, the device must be properly positioned and protected from any contact with electrical parts. The device must be fastened in such a way that it cannot be removed without the use of tools. Disconnect the main safety switch of the installation before proceeding 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.*



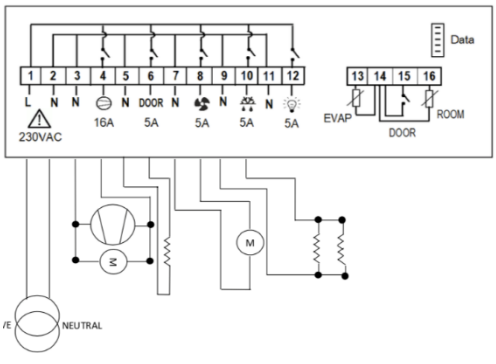
Refrigerated counters



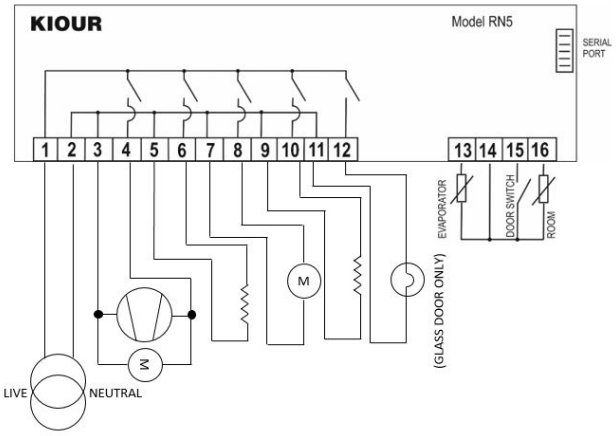
Saladette / Counter with glass door



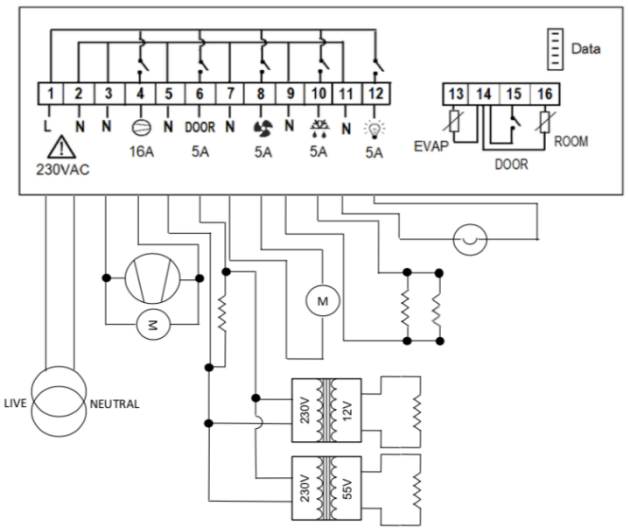
Upright freezer with stainless door



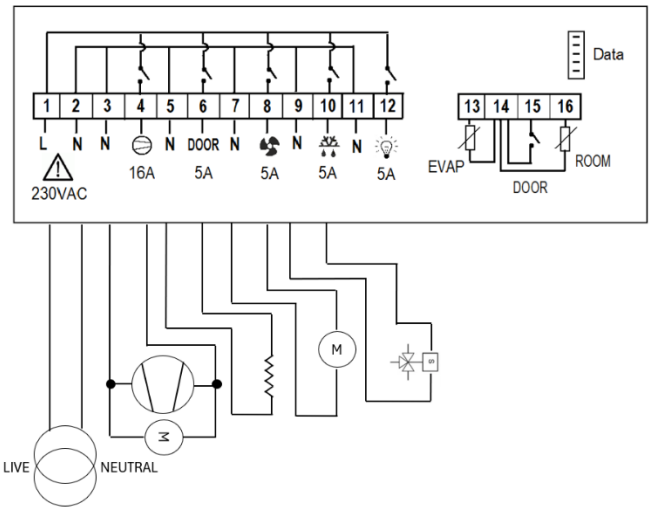
Upright chiller



Upright freezer with glass door



Freezer Counters



PARAMETER'S TABLE

No	code	description	min	max	M.M.	INDUSTRIAL FACTORY SETTINGS OF THE CABINET								
						Upright chiller R134a	Upright chiller R290	Upright freezer with stainless door R404A	Upright freezer with stainless door R290	Upright freezer with glass door R404A	Upright freezer with glass door R290	Freezer counters	Refrigerated counters	Saladette
						Program 33	**Program 38**	**Program 36**	**Program 34**	**Program 37**	**Program 35**	**Program 39**	**Program 31**	**Program 32**
1	**SPo**	SET POINT: room temperature setting	LSP	HSP	°C/°F	0.0	0.0	-20.0	-22.0	-18.0	-18.0	-20.0	0.0	3.0
2	**ALo**	Low alarm room threshold	-50.0	150	°C/°F	-5.0	-5.0	-25.0	-25.0	-22.0	-22.0	-25.0	-5.0	-5.0
3	**AHi**	High alarm room threshold	-50.0	150	°C/°F	15.0	15.0	0.0	0.0	0.0	0.0	0.0	15.0	15.0
4	**dr1**	Time between two successive defrost	1	100	hours	4	4	5	7	5	7	3	4	4
5	**Cod**	**Access code to the following parameters Cod = 22.**	0	255	-	22	22	22	22	22	22	22	22	22
6	**diF**	Differential of room temperature SPo (thermostat delay)	0.1	25.5	°C/°F	3.0	3.0	3.0	4.0	3.0	4.0	2.0	3.0	3.0
7	**dd2**	*Defrost duration* (manual and automatic), where 0 = defrost is deactivated.	0	120	min	20	20	35	35	35	35	30	25	25
8	**dP3**	Dripping timer, where the compressor is OFF after defrost	0	15	min	2	2	5	5	5	5	3	0	0
9	**dY4**	*Display indication during defrost* -02 = indication SPo+diF when room's temperature is greater than SPo+diF -01 = indication dFr when room's temperature is greater than SPo+diF 0 = indication of room's temperature 1 to 40 min = indication dFr from 1 to 40 min counting from the beginning of defrost	-02	40	min	25	25	35	35	35	35	15	25	25
10	**dE5**	*Defrost end temperature* *with the evaporator's temperature sensor activated* Automatic and manual defrost does not start if the evaporator temperature is greater than the defrost end temperature dE5. In case of evaporator's sensor malfunction (LF2), there is no check of defrost end temperature and defrosting is completed after time adjusted in parameter dd2 elapses. *with the evaporator's temperature sensor deactivated* 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's temperature and ends after time adjusted in parameter dd2 elapses.	0.0	100	°C/°F	20.0	20.0	30.0	30.0	30.0	30.0	8.0	20.0	20.0
11	**dt6**	*Type of defrost* 0 = electrical (compressor OFF, resistance ON), if SPo is smaller or equal than -0.1°C defrost occurs using the resistance based on time adjusted from the parameter dd2, if SPo is greater or equal than 0°C defrost occurs using the fan based on time adjusted from the parameter dd2. 1 = hot gas (compressor ON, resistance ON) - - - - - - - - - - - - *Defrost with the evaporator's temperature sensor activated* Automatic or manual defrost ends either with time adjusted from the parameter dd2 or with defrost end temperature dE5, whatever comes first. Automatic or manual defrost does not start if the evaporator temperature is greater than the defrost end temperature dE5. *Defrost with the evaporator's temperature sensor deactivated* Defrost end temperature is the room temperature. Automatic defrost ends either with time adjusted from the parameter dd2, or with defrost end temperature dE5, whatever comes first.	0	1	-	0	0	0	0	0	0	1	0	0

		Manual defrost starts regardless of the room's temperature and ends after time adjusted in parameter dd2 elapses.												
12	**AF1**	*Alarm setting* 0 = automatic deactivation, where the alarm stops once the cause of the alarm disappears. 1 = manual deactivation, where the alarm indication remains even if the cause of the alarm disappears and it's cleared only by pressing . In any case by pressing , the buzzer stops and ⚠ turns on to state that the cause of the alarm still exists. Muting the alarm buzzer by pressing once is valid until all alarms disappear.	0	1	-	0	0	0	0	0	0	0	0	0
13	**At2**	*Time delay in activating "AHi", "ALo" and the buzzer among them. This setting does not apply to sensor failure and door alarm.* -01 = deactivate buzzer 0 = immediate buzzer activation 1 to 120 min = delay in buzzer activation When the cabinet starts for the first time, the buzzer is deactivated until the last alarm disappears.	-01	120	min	25	25	60	60	60	60	60	20	20
14	**Fo1**	Evaporator's temperature controlling the fan operation during defrost and normal operation (parameter oS2 = 1). If the evaporator's sensor is deactivated, the parameter does not operate. For more information check the parameters Ft2 and Fd3.	-50	100	°C/°F	5.0	5.0	-10.0	-10.0	-10.0	-10.0	-5.0	0.0	0.0
15	**Ft2**	*Evaporator's fan operation* -01 = continuous function 0 = parallel with the compressor 1 to 15 min = functions at the same time with the compressor and when the compressor stops, the fan stops after the selected minutes	-01	15	min	0	0	0	0	0	0	-1	-01	-01
16	**Fd3**	*Fan's operation during defrost for SPo smaller or equal than -0.1°C* 0 = OFF and starts with the compressor if the evaporator's temperature is smaller than Fo1. During hot-gas, where the compressor is always ON, the fan starts if the evaporator's temperature is smaller than Fo1. This setting applies only with the evaporator's sensor activated. 1 = ON when the evaporator's temperature is smaller than Fo1 – setting applies only with the evaporator's sensor activated 2 = always ON in both types of defrost (electrical / hot gas) regardless of the evaporator's sensor operation	0	2	-	0	0	0	0	0	0	0	2	2
17	**Co1**	Compressor's minimum time ON	0	15	min	0	0	0	0	0	0	0	0	0
18	**CP2**	Compressor's minimum time OFF	0	15	min	2	2	2	2	2	2	2	2	2
19	**CF3**	*Compressor's operation in case of room's sensor malfunction* -01 = compressor OFF 0 = compressor ON while defrost starts based on timer dr1 and ends based on timer dd2 or temperature dE5, whichever comes first.1 to 150 min = compressor time ON while defrost starts based on timer dr1 and ends based on timer dd2 or temperature dE5, whichever comes first.	-01	150	min	3	3	3	3	3	3	3	3	3
20	**CF4**	Compressor time OFF in case of room's sensor malfunction	1	150	min	3	3	3	3	3	3	3	4	4
21	**SE1**	Room sensor offset	-10.0	15.5	°C/°F	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
22	**SE2**	Evaporator sensor offset	-10.0	15.5	°C/°F	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

23	**oS2**	*Evaporator's sensor operation* 0 = deactivated sensor 1 = activated sensor When the sensor is deactivated, by pressing (T2) it is displayed "- - -". During defrost and when the sensor is deactivated, the defrost end temperature dE5 is the room temperature.	0	1	-	1	1	1	1	1	1	1	0	0
24	**LSP**	Lower setting limit of SPo	-50.0	150	°C/°F	-2.0	-2.0	-21.0	-22.0	-18.0	-18.0	-21.0	0.0	3.0
25	**HSP**	Maximum setting limit of SPo	-50.0	150	°C/°F	10.0	10.0	-10.0	-10.0	-10.0	-10.0	-10.0	10.0	10.0
26	**C_F**	Temperature measurement unit: toggling between °C/°F do not adjust automatically parameters regarding temperature, the user must change them manually 0 = °C 1 = °F	0	1	°C/°F	0	0	0	0	0	0	0	0	0
27	**SEn**	*Sensor type NTC/PTC* 0 = PTC 1 = NTC	0	1	-	1	1	1	1	1	1	1	1	1
28	**trE**	Response time of the device on network	20	100	msec	50	50	50	50	50	50	50	50	50
29	**Add**	Device address on network	0	255	-	1	1	1	1	1	1	1	1	1
30	**diP**	*Display's indication* 0 = room temperature indication 1 = SET POINT (SPo) indication unless an alarm appears. The first time that the cabinet turns on, room's temperature is displayed until the cabinet reaches for the first time SPo. Afterwards SPo is constantly displayed regardless of room temperature.	0	1	-	0	0	1	1	1	1	0	0	0
31	**Odo**	*Door switch operation* 0 = OFF 1 = NC (normally close) 2 = NO (normally open) If the cabinet's door remains open for 2 minutes, the alarm *dor* is activated and the compressor stops.	0	2	-	1	1	1	1	1	1	0	0	0
32	**Pro**	cabinet's program is displayed (industrial factory settings) – *the parameter cannot be programmed*	-	-	-	33	38	36	34	37	35	39	31	32
33	**bAU**	*Baud rate: 0 = 2400 / 1 = 4800 / 2 = 9600 / 3 = 19200*	0	3	-	3	3	3	3	3	3	3	3	3
34	**tPE**	*Product number – not programmable*	-	-	-	200	200	200	200	200	200	200	200	200
35	**UEr**	*Firmware version - no access*	-	-	-	4.2.X	4.2.X	4.2.X	4.2.X	4.2.X	4.2.X	4.2.X	4.2.X	4.2.X

ALARM'S TABLE

1	**LF1**	Room sensor malfunction
2	**LF2**	Evaporator sensor malfunction
3	**ALo**	Low room temperature
4	**AHi**	High room temperature
5	**dor**	Open door (If the cabinet's door remains open for 2 minutes, the alarm *dor* is activated and the compressor stops)
6	**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.

CHIILER 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.

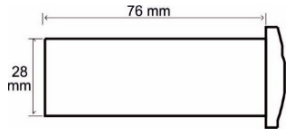
DECRIPTION

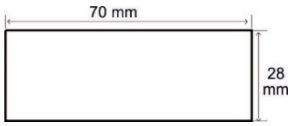
FSD3 is a thermostat for chiller cabinets, suitable for all applications and has the following specifications: one NTC / PTC temperature sensor which controls the room temperature; 3 indication digits with resolution 0.5°C and 4 buttons; one digital input for controlling the cabinet's door; 3 relays: 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
dFr ❄	deFrost ON
fan	fan ON
⚠	alarm ON
🔧	malfunction ON

Keyboard	
↵	enter/exit the parameter's menu confirm new value of a parameter
SET	display the parameter's value manual deFrost
MUTE	down arrow mute buzzer ON/OFF cabinet
T2	up arrow

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

ADJUSTING ROOM'S TEMPERATURE – SET POINT

17. Press ↵ to display the first parameter **SPo**.
18. Press SET to display its value. With T2 or MUTE change its value.
19. Press ↵ to save the new value. The cabinet is working properly with the new adjustment.

INDUSTRIAL FACTORY SETTINGS OF CABINET

25. Choose from the following table the corresponding program of your cabinet.
26. Press ↵ to display the first parameter **SPo**. Press 4 times MUTE and the parameter **Cod** is displayed.
27. Press SET to display its value and press T2 to enter the cabinet's program. Press ↵ to store the cabinet's program to parameter **Cod**.
28. 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

9. Press for 3 seconds MUTE to activate or deactivate the cabinet

MANUAL DEFROST

11. Press for 3 seconds SET 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 5th parameter **Cod** must be adjusted to **22** (see parameter table page 4).*

21. Press ↵ to enter the parameter menu.
22. Choose the parameter you want to adjust by pressing MUTE or T2 and press SET to display its value.
23. Press MUTE or T2 to change its value and then press ↵ to store the new value.
    Press SET if you want to cancel the new value and the parameter's name is displayed.
24. 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 25ºC 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 mm² for all relays / cable cross section from 0.25 to 1.0 mm² for the sensors and door switch
Connections with terminal blocks using cable with cable cross section up to 2.5 mm² / 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

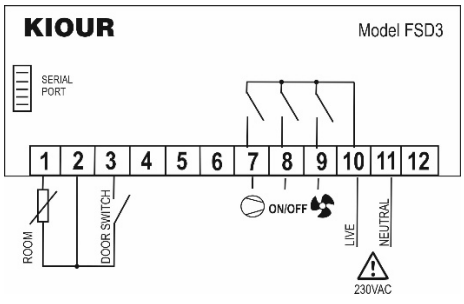
FSD3 can connect to CAMIN network or to data logger model Mini Logger or to any MODBUS network:

- 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.

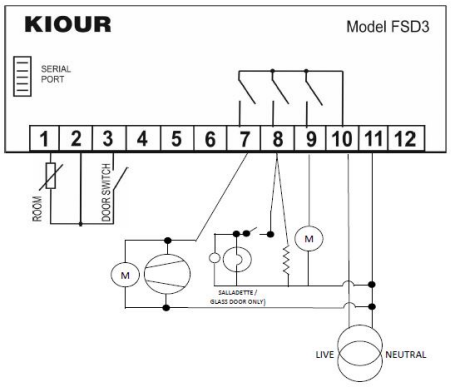
ELECTRICAL DIAGRAMS

***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.