

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

FA3F is a temperature controller for freezer cabinets with defrost control; room and evaporator temperature is controlled with NTC/PTC sensors; 3 indication digits with resolution 0.5°C and 4 buttons; one serial input for controlling the cabinet's door; 3 relays: compressor 30A 250VAC, fan 10A 250VAC, defrost 10A 250VAC; defrosting may be electric or by hot gas; a buzzer in case of an alarm; the device is mounted on a panel hole and it is restrained with plastic side brackets; it can connect to the monitoring and controlling network CAMIN via serial input using an interface with MODBUS protocol.

INDICATIONS AND BUTTONS FUNCTION



Display indications	
	compressor ON
	fan ON
	defrost ON
	alarm ON
	malfunction ON

Keyboard	
	enter/exit the parameter's menu
	display the parameter's value enter parameter's value manual defrost or manual heating with countdown
	up arrow display evaporator temperature T2 OFF device (check below)
	down arrow mute buzzer ON/OFF device (check below)

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

ADJUSTING 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 device is working properly with the new adjustment.

INDUSTRIAL FACTORY SETTINGS

1. Press to display **SPo**. Press 3 times and the parameter **Cod** is displayed.
2. Press to display its value and press to enter the value **31**. Press to store the value to parameter **Cod**.
3. Press again to exit the parameter menu. All appropriate factory settings are now stored in the device.

ON/OFF DEVICE

1. To deactivate the device, press at the same time for more than 3 seconds.
2. To activate the device, press for 3 seconds .

MANUAL DEFROST

Press for 3 seconds to start a manual defrost with duration based on the parameter **dd2**.
For more information regarding the defrost check the description of parameter **dt6** (parameter No 11 - page 2).

PROGRAMMING A PARAMETER

ATTENTION: to gain full access to the parameter's menu, the 4th 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.
4. Press to exit the parameter menu.

TECHNICAL SPECIFICATIONS

Power supply: 230VAC 50/60Hz / Maximum power consumption: 3W / Firmware: V7
It is recommended using a power supply safety fuse: 0.5A (not included)
Room and evaporator temperature sensors NTC 10K 1% 25°C IP68 and temperature range -37÷+110°C (-34÷+230°F) (or PTC 1K 25°C and temperature range -50÷+110°C (-58÷+230°F) not included) / Accuracy: ±0.5°C
Alarm buzzer / Serial input with 5pin connector / Digital input door
Compressor relay 30A res. 250VAC normally open contact / Fan and defrost relays 10A res. 250VAC 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 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
Dimensions 37x79x81mm / The device is mounted on panel hole 29x71mm and restrained with plastic side brackets / Protection IP65 front

SERIAL INPUT

FA3F can connect to the memory key or to data logger model Mini Logger or to CAMIN network:

- Memory key: parameter's values can be downloaded to the memory key or can be uploaded to the thermostat from it.
- 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.

- 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.

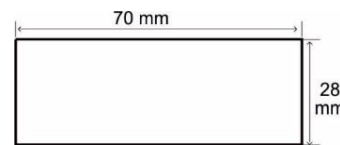
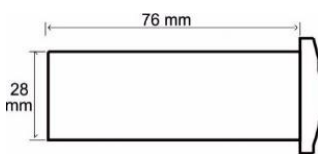
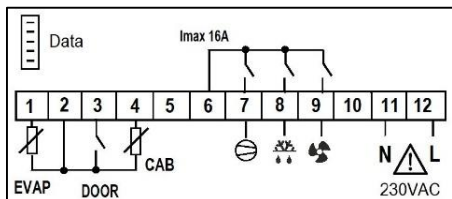
ELECTRICAL DIAGRAM - DIMENSIONS

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.





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 on panel hole with cut 29x71mm and restrained with plastic side brackets.



PARAMETER'S TABLE

No		description	min	max	FA3F	UOM
1	SPo	SET POINT: room temperature setting	LSP	HSP	-21.0	°C/°F
2	ALo	Low alarm room threshold	-50.0	+110	-25.0	°C/°F
3	AHi	High alarm room threshold	-50.0	+110	0.0	°C/°F
4	Cod	Access code to the following parameters Cod = 22.	0	255	0	-
5	dFr	Defrost duration (manual and automatic), where 0 = defrost is deactivated.	0	100	6	hours
6	diF	Differential of room temperature SPo (thermostat delay)	0.1	25.5	3.0	°C/°F
7	dd2	Defrost duration (manual and automatic)	1	120	30	minutes
8	dP3	Dripping time, where the compressor is OFF after defrost. The fan starts based on the parameters Fd3 and Fd4.	0	15	2	minutes
9	dY4	Display indication during defrost -2 = SPo + diF value is displayed when room temperature is greater than SPo + diF -1 = "dFr" is displayed when room temperature is greater than SPo + diF 0 = room temperature is displayed 1 to 40 minutes = "dFr" is displayed from 1 to 40 minutes from the initiation of defrost	-1	40	-1	minutes
10	dE5	Defrost end temperature In case of deactivated evaporator sensor, defrost end temperature is the room temperature. 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.	0.0	100	30.0	°C/°F
11	dt6	Type of defrost 0 = electrical: compressor OFF, resistance ON 1 = hot gas: compressor ON, resistance ON ----- Defrost with the evaporator's temperature sensor ON 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 OFF 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. Manual defrost starts regardless of the room's temperature and ends after time adjusted in parameter dd2 elapses.	0	2	0 = electrical	-
12	AF1	Alarm setting 0 = automatic OFF, where the alarm stops once the cause of the alarm disappears. 1 = manual OFF, 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 = auto	-
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 = OFF buzzer 0 = immediately buzzer is ON 1 to 120 min = delay in buzzer activation	-01	120	0 = instant activation	minutes
14	Fo1	Evaporator's temperature controlling the fan operation during defrost and normal operation. If the evaporator's sensor is OFF, the parameter does not operate. For more information check the parameters Ft2, Fd3 and Fd4.	-50.0	+100	-2.0	°C/°F
15	Ft2	Evaporator's fan operation -2 = continuously ON for evaporator's temperature smaller than Fo1 -1 = continuously ON 0 = parallel operation with the compressor 1=15 min = parallel operation with the compressor and when the compressor is OFF, the fan stops after the selected minutes	-2	15	-1= ON continuously	minutes

16	Fd3	Evaporator's fan operation during defrost the with evaporator's sensor ON (parameter oS2 = 1) 0 = OFF and starts with the compressor if the evaporator's temperature is smaller than Fo1 1 = ON when the evaporator's temperature is smaller than Fo1 2 = always ON in both types of defrost (electrical / hot gas) If the evaporator's sensor is OFF (parameter oS2 = 0), the fan is OFF during defrost and starts after timer Fd4 has elapsed.	0	2	0	-
17	Co1	Compressor's minimum time ON	0	15	0	minutes
18	CP2	Compressor's minimum time OFF	0	15	2	minutes
19	CF3	Compressor's operation in case of room's sensor malfunction -1 = compressor OFF 0 = compressor ON while defrost starts based on timer dFr 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 dFr and ends based on timer dd2 or temperature dE5, whichever comes first.	-1	15	3	minutes
20	CF4	Compressor time OFF in case of room's sensor malfunction	1	150	3	minutes
21	SE1	Room sensor offset	-10.0	+10.0	0.0	°C/°F
22	SE2	Evaporator sensor offset	-10.0	+10.0	0.0	°C/°F
23	dLd	Door switch operation 0=OFF / 1=NC contact. If cabinet's door is open during defrost for more than time tdo, defrost relay turns OFF and resumes once door is closed. Defrost duration based on timer dd2 keeps counting from the beginning of defrost.	0	1	1= NC	-
24	LSP	Lower setting limit of SPo	-50.0	+110	-21.0	°C/°F
25	HSP	Maximum setting limit of SPo	-50.0	+110	-10.0	°C/°F
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	0=°C	°C/°F
27	oS2	Evaporator's sensor operation 0 = OFF sensor 1 = ON sensor When the sensor is OFF, by pressing  it is displayed "S--". For more information regarding the defrost without the evaporator's sensor, check parameters dE5, dt6 and Fd3.	0	1	1= activated	-
28	tdo	Time delay in deactivating the compressor once the door is open	1	250	120	sec
29	dEC	Temperature indication as integer or decimal, where 0 = integer / 1 = decimal	0	1	1= decimal	-
30	SEn	Sensor type NTC/PTC 0 = PTC / 1 = NTC	0	1	1=NTC	-
31	dt5	Time delay in restraining indication "dFr" (parameter dY4=-1) or indication SET POINT + diF (parameter dY4=-2) on screen after defrost ends Indication "dFr" disappears once room's temperature is smaller than SET POINT + diF.	0	150	0	minutes
32	Add	Device address on network. To connect with Mini Logger enter Add=1.	0	255	1	-
33	trE	Response time of the device on network	5	100	40	msec
34	tAd	Time delay in activating door alarm "dor" once the door is open	tdo	99	0	minutes
35	tEd	Time delay in refreshing room temperature on screen once the door is open	0	255	0	minutes
36	Fd4	Time delay in activating the fan after defrost ends and only if evaporator's temperature is smaller than temperature Fo1 (check parameter Fd3).	0	255	0	minutes

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 alarm (when the cabinet's door opens, the fan stop)
6	EEr	Error in memory RAM: re-enter the SPo (see ADJUSTING 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.