

DESCRIPTION

FA3 is a temperature controller for ventilated freezer rooms with deFrost control. It has two temperature sensors for the cabinet and the evaporator, three relays: compressor 30A, fan 5A and deFrost 5A, one alarm buzzer and one digital input for the freezer's door. Both sensors can be either **NTC** scale $-37\pm+110^{\circ}\text{C}$ ($-34\pm+230^{\circ}\text{F}$) or **PTC** scale $-50\pm+110^{\circ}\text{C}$ ($-58\pm+230^{\circ}\text{F}$) by adjusting a parameter. The controller via the serial input can connect to the **KIOUR CAMIN** Modbus network for full monitoring and data logging of the device.

INDICATIONS AND BUTTON OPERATIONS OUTSIDE PARAMETER'S MENU

Indications	
	relay ON
	fan ON
	deFrost ON
	alarm ON
	malfunction ON

button	Operations outside the parameter menu	
	pressed once	pressed more than 3 sec
	enter parameter's menu	-
	temperature scale $^{\circ}\text{C}/^{\circ}\text{F}$ and mute the buzzer	-
	-	indication of the evaporator's temperature
SET 	-	start manual defrost or manual heating with countdown

PROGRAMMING THE PARAMETERS

By pressing [] we **enter or exit** the parameter's menu.

The first parameter "**SPo**" is displayed and with the [, [] we scroll into the parameters based on the parameter's table below.

By pressing [**SET**] the value of the parameter is displayed and with the [, [] we adjust the value.

By pressing [] or [**SET**] we **confirm** the new value and the name of the parameter is displayed.

SWITCHING ON/OFF THE DEVICE

By pressing **at the same time** the [, [] we **switch ON or OFF** the device.

TECHNICAL SPECIFICATIONS

Power supply: 12VAC/DC 50/60Hz / Maximum power consumption: 3W

Power supply safety switch: 0.5A

Cabinet's and evaporator's temperature sensor NTC 10K 1% 25°C IP68 (or PTC 1K 25°C is not included) / Accuracy: 0.5°C

Alarm buzzer / Serial Input

Compressor relay 250VAC 30A resistive load 2HP / Fan and deFrost relays 250VAC 5A

Operating temperature: $-15\pm+55^{\circ}\text{C}$ / Storage temperature: $-20\pm+80^{\circ}\text{C}$

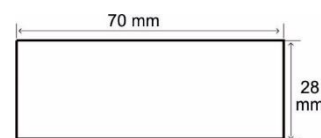
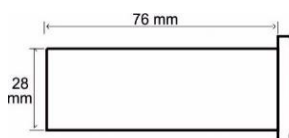
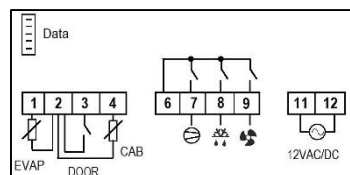
The device is mounted through panel hole 29x71mm and is restrained with two plastic side brackets / Connection with terminal blocks 18A

SERIAL INPUT

FA3 can connect to the **key programmer** or to the data logger **Mini Logger** or to the **KIOUR CAMIN** network or to any **Modbus network**.

- Key programmer:** controller's parameter values can be saved or retrieved from the programming key. Plug in the programming key to the controller and press at the same time [**SET**]+[]. The device connects to the key and the message "Eo" is displayed. By pressing [] the device downloads the parameters from the key and the message "ro" = read O.K. or "rF" = read Fail is displayed. By pressing [] the device uploads the parameters to the key and the message "Yo" = Write O.K. or "YF" = Write Fail is displayed. In case of failure (rF or YF) reenter the key to the serial input and repeat the procedure from the beginning. The key can connect to all **KIOUR** devices. If you try to read the parameters of a different device, message "rF" is displayed. At any time, we can perform the aforesaid operation. After 10sec the key is disconnected.
- Data logger Mini Logger:** the controller is connected to the data logger via cable and by programming the parameter **Add = 1**. Automatically, based on selected minutes, the data logger writes to a microSD memory card the controller's temperatures, status and alarms.
- CAMIN network:** the controller can connect to the **CAMIN** network via an interface **NET-INS-485**. **CAMIN** is an PC software application designed to collect information, watch and fully control a net of **KIOUR** devices while sending SMS and email in case of an alarm. The maximum length of the net can be 1000 meters.
- Modbus network:** the controller can connect to any Modbus RTU RS485 network via an interface **NET-INS-485** for monitoring its operations. Adjust parameter **Cab = 1**.

CONNECTIONS - DIMENSIONS



PARAMETER TABLE

#		description	min	max	FA3	UOM
1	SPo	SET POINT: temperature control of the cabinet	LSP	HSP	-21	$^{\circ}\text{C}/^{\circ}\text{F}$
2	ALo	lower alarm limit temperature of the cabinet	-45	+150	-25	$^{\circ}\text{C}/^{\circ}\text{F}$
3	AHi	higher alarm limit temperature of the cabinet	-45	+150	0	$^{\circ}\text{C}/^{\circ}\text{F}$
4	Cod	code to enter parameter's menu Cod = 22 resetting to FA3 factory settings for Cod = 31	0	255	0	-
5	dFr	time between two successive deFrost	1	100	6	h
6	diF	differential operating temperature of SPo	1	70	3	$^{\circ}\text{C}/^{\circ}\text{F}$
7	dd2	deFrost duration, in which 0 min = no deFrost	0	120	30	min
8	dP3	dripping time, in which the compressor remains OFF after the deFrost ends	0	15	2	min
9	dY4	indication on screen during deFrost, where: dY4 = -2, show the SPo + diF when the cabinet's temperature is greater than SPo + diF. (See dt5) dY4 = -1, if cabinet's temperature is greater than SPo+diF , "dFr" is displayed. (See dt5) dY4 = 0, cabinet temperature is displayed continuously	-01	40	-01	min

		dY4 = 1÷40 min, "dFr" is displayed from the beginning of deFrost and until time "dY4" expires				
10	dE5	temperature in which deFrost stops if the evaporator's sensor malfunctions, "dE5" temperature will not be checked and the deFrost will end after "dd2" time expires	1	70	30	°C/°F
11	dt6	deFrost operating mode: 0 = electrical (compressor OFF, resistance ON), 1 = hot gas (compressor ON, resistance ON)	0	1	0 = electrical	-
12	AF1	alarm's operating mode 0 = auto, when the cause of the alarm disappears, the alarm automatically turns off 1 = manual, the alarm indication remains even after the cause of the alarm disappears In any case, by pressing [] the buzzer stops and [] turns ON indicating that the cause of the alarm still exists. The [] of the alarm is valid until all alarms disappear.	0	1	0 = auto	-
13	At2	buzzer's operating mode for the cabinet's alarm: -01 = not activated, 0 = activates instantly, 1÷120 min = activates after "At2" time expires For sensor's malfunction alarm and open door alarm, this setting does not apply.	-01	120	0	min
14	Fo1	evaporator's temperature in which the fan turns ON during deFrost	-50	+100	-02	°C/°F
15	Ft2	fan's operating mode , where -02 = fan is ON for T2<Fo1, -01 = works continuously, 0 = starts and stops with the compressor and 1÷15 min = operates with the compressor and when the compressor stops, the fan turns off after "Ft2" time expires	-02	15	-01 = continuously ON	min
16	Fd3	fan's operating mode during deFrost , where 0 = does not work and starts when the compressor starts and if the evaporator's temperature is minor than "Fo1" 1 = operates if the evaporator's temperature is minor than "Fo1" 2 = operates continuously with both deFrost operating modes (electrical or hot gas)	0	2	0	-
17	Co1	minimum operating time of the compressor	0	15	0	min
18	CP2	minimum pause time of the compressor	0	15	2	min
19	CF3	compressor's operating mode during sensor's malfunction , where -01 = turns off, 0 = operates continuously and the deFrost starts according to programmed timers, 1÷150 min = operates according to timers "CF3" (ON) and "CF4" (OFF) while deFrost operates based on programmed timers	-01	15	3	min
20	CF4	compressor's operating mode during malfunction , where 1÷150 = pauses the compressor based on the selected minutes	1	150	3	min
21	SE1	zero adjustment of cabinet's sensor	-10.0	+10.0	0.0	°C/°F
22	SE2	zero adjustment of evaporator's sensor	-10.0	+10.0	0.0	°C/°F
23	dLd	activation of the door contact (0=OFF, 1= ON with NC contact). Defrost's relay pauses (timer dd2 keeps counting though) if the door remains open for more than tdo time. It resumes once the door is closed.	0	1	1=ON with NC	-
24	LSP	unterste Temperaturgrenze von SPo	-50	+150	-21	°C/°F
25	HSP	oberste Temperaturgrenze von SPo	-50	+150	-10	°C/°F
26	C_F	temperature scale °C/°F (0=°C, 1=°F) ATTENTION: changes between °C/°F do not apply on SPo	0	1	0=°C	°C/°F
27	oS2	operation of the evaporator's temperature sensor (0= deactivated, 1=activated) If the sensor is deactivated, by pressing T2 button the indication "S--" is displayed. During deFrost, the fan is deactivated and the deFrost ends after the time adjusted by the parameter dd2 has passed. At the end of the deFrost, the fan is activated after the dripping time ends parameter dP3.	0	1	1=activated	-
28	tdO	time delay for the activation of the compressor after the freezer's door opens	1	250	120	sec
29	dEC	temperature indication as integer or decimal, where dEC=0 integer, dEC=1 decimal	0	1	0=integer	-
30	SEn	NTC/PTC sensor selection for Sen = 0 PTC and Sen = 1 NTC	0	1	1=NTC	-
31	dt5	When dY4 = -1 or -2. Screen retention time (after dFrost end), dFrost indication or indication of SET POINT + diF. The display of the dFrost status is also terminated by the condition → Cabinet's temperature < SET POINT + diF.	0	150	0	min
32	Add	address of the device in the network For connecting to data logger model Mini Logger adjust Add = 1.	0	255	0	-
33	trE	time response of the device to the CAMIN network	5	100	30	msec
34	tAd	delay time to trigger the door alarm after opening the door	tdo	99	0	min

ALARM TABLE

1	LF1	cabinet's sensor malfunction
2	LF2	evaporator's sensor malfunction
3	ALo	low temperature alarm in the cabinet
4	AHi	high temperature alarm in the cabinet
5	dor	open door alarm, when the door opens the fan stops immediately. The alarm is activated once timer tdO elapses.

The alarms are automatically deactivated when the cause of the alarm disappears.



Made in Greece.

RoHS



ATTENTION according to safety standards, the device must be properly positioned and protected from any contact with electrical parts. All parts that provide protection must be fastened in such a way that they cannot be removed without the use of tools. **ATTENTION:** disconnect the power supply of the device before proceeding to any kind of maintenance. **ATTENTION:** do not place the device near heat sources, equipment containing strong magnets, in areas affected by direct sunlight or rain. **ATTENTION:** prevent electrostatic discharges at the side slots of the device and sharp objects from being inserted. **ATTENTION:** separate the signal's cables from the power supply's cables to prevent electromagnetic disorders. Signal cables must never be in the same pipe with the power supply cables. Use the device only as described in this document, not to 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. Read and keep these instructions. The device is under two year's guarantee of good operation. 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.