FREEZER CONTROLLER Model FA3 V6.1

KIOUR

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 10A and deFrost 10A, one alarm buzzer and one digital input for the freezer's door. Both sensors can be either **NTC** scale -37÷+110°C (-34÷+230°F) or **PTC** scale -50÷+110°C (-58÷+230°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 mode than 3 sec
↵	enter parameter's menu	-
▼🔇	temperature scale °C/°F and mute the buzzer	-
▲ T2	-	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

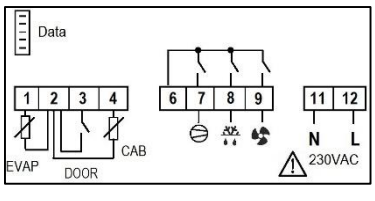
Power supply: 230VAC 50/60Hz / Maximum power consumption: 3W
It is recommended using a power supply safety fuse 0.5A (not included)
Cabinet's and evaporator's temperature sensor NTC 10K 1% 25ºC IP68 (or PTC 1K 25ºC is not included) / Accuracy: 0.5°C
Alarm buzzer / Serial Input
Compressor relay 250VAC 30A resistive load / Fan and deFrost relays 250VAC 10A
Operating temperature: -15÷+55°C / Storage temperature: -20÷+80°C
The device is mounted through panel hole 29x71mm and is restrained with two plastic side brackets / Connection with terminal blocks 18A

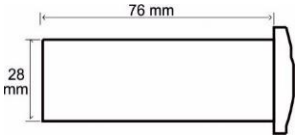
SERIAL INPUT

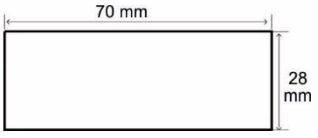
FA3 can connect to the **key programmer** or to the data logger **Mini Logger** or to the **KIOUR CAMIN** network or to any **Modbus network**.

- **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	°C/°F
2	**ALo**	**lower alarm limit** temperature of the cabinet	-45	+150	-25	°C/°F
3	**AHi**	**higher alarm limit** temperature of the cabinet	-45	+150	0	°C/°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	°C/°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 SFo + 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 defrost duration 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.

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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 been 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.