

Description

REF-VD1 is a temperature controller for cooling and heating cabinets. Through a PTC temperature sensor the device controls temperatures from -50++150°C (-58++302°F). It has one relay (30A) for cooling – heating – heating with countdown mode, deFrost control, buzzer alarm and one digital input for cabinet's open door. A data logger Mini Logger can connect via the serial input to the controller for HACCP applications.



Indications and buttons

indication	function
	compressor ON
	deFrost ON

button	function
	enter
	down arrow ON/OFF device mute buzzer
	up arrow ON/OFF device
SET dF	set manual deFrost manual heating

Functions of the buttons

button	function		
	pressed once	pressed more than 3 sec	pressed together
	enter parameter's menu confirm new parameter value	-	
	temperature scale indication °C/°F mute buzzer	-	ON/OFF controller
	-	-	
SET dF	confirm new parameter value	manual deFrost manual heating in countdown mode	

Technical specifications

Power supply: 12VAC/DC 50/60Hz
 Maximum power consumption: 3W
 Power supply safety switch: 0.5A
 PTC temperature sensor
 Accuracy: 0.1°C / 1°F
 Alarm buzzer
 Serial Input
 Relay 250VAC 30A resistive load 2HP
 Operating temperature: -15++55°C
 Storage temperature: -20++80°C
 The device is mounted through panel hole 29x71mm
 Connection with terminal blocks

Managing the parameters

By pressing [←] we access the parameter's menu.
 The first parameter **SPo** is displayed and with the [▲], [▼] we scroll into the parameters with the order they appear to the parameters table below.
 By pressing [**SET**] the value of the parameter is displayed and with the [▲], [▼] we change it value.
 By pressing [←] or [**SET**] we confirm the new value and the name of the parameter is displayed.
 By pressing [←] we exit the parameters menu.

Serial input

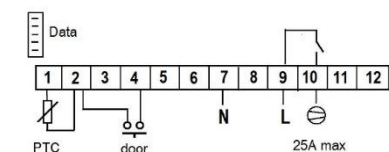
REF-VD1 can connect to the key programmer or the data logger Mini Logger or the CAMIN network or to an external device for exporting alarms. From the parameters **UF** and **Add** we can adjust the serial input.

- Key programmer:** controller's parameter values can be saved or retrieved from the programming key. Connect the programming key to the controller and by pressing [**SET**] and [▲] the device connects with the key and the message **Eo** is displayed.
 By pressing [▲] the device reads the parameters from the key and the message **ro = read O.K.** or **rF = read Fail** is displayed.
 By pressing [▼] the device writes 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 10 sec the key is disconnected.
- Data logger Mini Logger:** the controller can connect to the data logger and save its temperatures based on selected minutes, its status and alarms to a microSD memory card. It connects to the controller via a cable and the parameter **Add = 1** must be adjusted.
- CAMIN PC network:** the controller can connect to CAMIN network (RS485, modbus protocol) through an interface **NET-INS-485**. CAMIN is an application designed to collect information, watch and fully control a net of devices. The maximum length of the net can be 1000 meters.

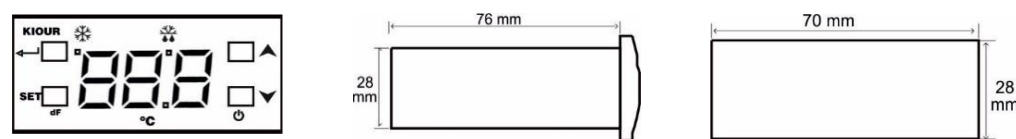
Heating mode with countdown (parameter rHC = 2)

For **rHC = 2** the relay operates in heating mode based on the timer "Hod" and **SET** is displayed. By pressing **SET** the relay is activated and the indication "rUn" is displayed. By pressing [▲] the remaining time is displayed. When the time expires the relay is deactivated and "End" is displayed on screen. By pressing **SET** again the procedure starts over. The thermostat constantly controls the relay based on the Set Point. If the SPo changes during "rUn", automatically the control of the relay is adjusted. Though it's not the same for the timer "Hod". If the timer is adjusted during "rUn" mode it will not change until the next running mode.

Connections



Dimensions



Parameters table

		parameter	min	max	def	UOM
1	SPo	SET POINT: temperature control room	SLo	SHi	2	°C/°F
2	SLo	minimum temperature limit of SPo	-50	SHi	-2	°C/°F
3	SHi	maximum temperature limit of SPo	SLo	150	8	°C/°F
4	diF	differential operating temperature of SPo	0	25	3	°C/°F
5	Cod	code to enter parameter's menu = "22"	0	255	0	-
6	Cr	minimum pause time of the compressor	0	4	0	min
7	CF	In case of sensor's malfunction (LF1) and in cooling mode, the compressor operates as follows: 0 = 40% compressor's operation (3min ON, 4min OFF), 1 = 100% compressor's operation (ON continuously). In heating mode the relay is deactivated.	0	1	0	-
8	dF	Number of deFrost circles every 24h, where 0 = no deFrost and for example dF = 4 → 24h/4 = 6h, which means every 6h a deFrost starts. In heating mode deFrost is deactivated.	0	12	4	-
9	dt	maximum duration of deFrost	1	90	18	min
10	dL	temperature limit of deFrost: above this temperature the automatic deFrost stops and it is not possible to start the procedure again manually. Manual deFrost lasts 20 min and does not stop based on "dL" temperature limit.	0	25	10	°C/°F
11	do	type of deFrost: compressor OFF (not programmable)	-	-	-	-
12	dr	dripping time, in which the compressor remains OFF after deFrost ends	0	10	0	min
13	td	during deFrost the indication "dF" is displayed, where "0" = the room's temperature is displayed during defrost.	0	99	20	min
14	AJ1	zero adjustment of temperature sensor	-9	15	0	°C/°F
15	AJ2	out of order	-	-	-	-
16	tS	time delay for refreshing the temperature indication on screen	0	20	0	sec
17	FC	switch °C/°F (0=°C, 1=°F) ATTENTION: changes between °C/°F do not apply on SPo	0	1	0	°C/°F
18	Hod	timer for countdown during heating mode (rHC = 2)	1	255	1	min
19	tr	time response of the device to the CAMIN network	5	100	20	msec
20	dHL	time delay in activating alarms "AHi" and "ALo"	0	99	0	min
21	UF	serial input operating mode, where 0 = operates with the network and the serial key, 1 = connects with an external device for exporting alarms. ATTENTION: if the value in "Add" parameter is ≠ 0, then the "UF" is programmed automatically to 0.	0	1	0	-
22	ALo	lower alarm limit temperature of the room	-50	150	-4	°C/°F
23	AHi	higher alarm limit temperature of the room	-50	150	15	°C/°F
24	Od	door input polarity (0=OFF, 1=ON with NO contact, 2=ON with NC contact). In heating mode, the door input is deactivated.	0	2	0	-
25	tH	time delay in activating the alarm "AHi" after defrost. During deFrost, the alarm "AHi" is not activated.	0	255	1	sec
26	dE	time delay in activating the open door alarm "dor"	0	99	0	min
27	rHC	relay operation, where rHC=0 cooling, rHC=1 heating, rHC=2 heating with countdown	0	2	0	-
28	dEC	temperature indication as integer or decimal, where dEC=0 integer, dEC=1 decimal	0	1	0	-
29	Add	address of the device in the CAMIN network For connecting to Mini Logger adjust Add = 1 .	0	255	0	-

alarm						
1	LF1	sensor's malfunction				
2	ALo	low temperature in the room				
3	AHi	high temperature in the room				
4	dor	open door, when the door opens the compressor stops automatically				

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

ATTENTION to 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.

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.