COOLING – HEATING CONTROLLER Model VD1F (GB) KIOUR

ATTENTION

Firmware V3

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. <u>The device must be disposed of in accordance with local standards for the collection of electrical and electronic equipment.</u>

DESCRIPTION

VD1F is a temperature controller for cooling – heating applications as well as food drying applications (eg sausages). The room temperature is controlled with an NTC / PTC sensor. It has 3 indication digits of temperature display with an accuracy of 0.5 ° C and 4 buttons. It has a digital input for controlling the cabinet's door and automatic defrost function. It has a relay 30A 250VAC that through parameters adjusted in operation: cooling or heating or heating with countdown. It has a buzzer that activates in case of alarm. The device is mounted on a panel hole 29x71mm and it is restrained with plastic side brackets. Through the serial input it can be connected to a network either through Cloud IoT on the CORTEX platform, or through a local computer in the CAMIN program for complete local recording and monitoring of the device.

INDICATIONS AND BUTTONS FUNCTION

Display indications	
❄	relay ON in cooling mode
〰	relay ON in heating mode
❄❄	defrost ON
⚠	alarm ON
🔧	malfunction ON

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

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

ADJUSTING TEMPERATURE – SET POINT

1. Press ↵ to display the first parameter **SPo**.
2. Press SET to display its value. With ▲ or ▼ change **SPo** value.
3. Press SET to save the new value. The device is working properly with the new adjustment.

INDUSTRIAL FACTORY SETTINGS

1. Press ↵ to display **SPo**. By pressing ▼ the parameter **Cod** is displayed.
2. Press SET to display its value and press ▲ to enter the value **31**. <u>Press SET to store the value to parameter **Cod.**</u>
3. <u>Press ↵ again to exit the parameter menu, 'YES' is displayed on the screen. All appropriate factory settings are now stored in the device.</u>

⏻ ON/OFF DEVICE

To activate or deactivate the device, press for 3 seconds ▼ .

MANUAL DEFROST

Press for 3 seconds SET to start a manual defrost with duration based on the parameter **dd2.**

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 next page)*

1. Press ↵ to enter the parameter menu.
2. Choose the parameter you want to adjust by pressing ▼ or ▲ and press SET to display its value.
3. Press ▼ or ▲ to change its value and then press SET to store the new value.
4. Press ↵ to exit the parameter menu.

TECHNICAL SPECIFICATIONS

Model **VD1F** power supply: 24VAC 50/60Hz / Maximum power consumption: 3W. Model **VD1FW** switching power supply 100-264VAC 50/60Hz 5W.
It is recommended using a power supply safety fuse: 0.5A (not included)
Room temperature sensor NTC 10K 1% 25°C IP68 with temperature range -37÷+110°C (-34÷+230°F) (or PTC 1K 25°C with temperature range -50÷+110°C (-58÷+230°F) not included) / Accuracy: ±0.5°C
Alarm buzzer / Serial input with 5pin connector / Digital input door
Relay 30A 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 a panel hole 29x71mm and it is restrained with plastic side brackets / Protection IP65 front
Firmware: V3

SERIAL INPUT

VD1F connects via serial input to the cloud and the online CORTEX platform or to a local computer with the CAMIN program or to the memory key or to the Mini Logger 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.
- Mini Logger recorder: The thermostat can be connected to the recorder and record based on selected minutes on a microSD memory card, its temperatures and the state of the relays and alarms. It is connected via a cable to the serial input and we program the parameter Add = 1.
- Memory key: the parameter values are stored in the memory key or recorded by it in the thermostat.

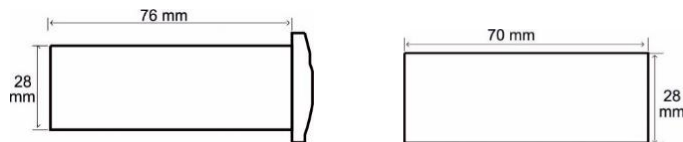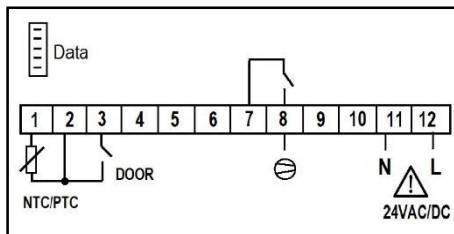## FOOD DRYING APPLICATIONS (e.g. SAUSAGES) - HEATING MODE WITH COUNTDOWN

When the parameter **rHC = 2,** the relay operates in heating mode based on the parameter **Hod** while "**SET**" is displayed. By pressing [SET] the relay is activated and the indication "**rUn**" is displayed. By pressing [T2] the remaining time is displayed. When timeρ elapses, 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 adjusted Set Point (SPo). If **SPo** changes during "**rUn**", automatically the control of the relay is adjusted. If timer "**Hod**" changes during "**rUn**" mode, it will not change until the next running cycle.

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 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.
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 TABLE

#		description	min	max	VD1F	M.M
1	SPo	SET POINT: room temperature setting	LSP	HSP	2.0	°C/°F
2	Cod	Enter password code Cod = 22 and press ⊡ to enter the other parameters	0	255	0	-
ANALOG INPUTS - TEMPERATURE						
3	diF	Differential of room temperature SPo (thermostat delay)	0.1	25.0	3.0	°C/°F
4	LSP	Lower setting limit of SPo	-50.0	HSP	-2.0	°C/°F
5	HSP	Maximum setting limit of SPo	LSP	+110	8.0	°C/°F
6	dEC	Temperature indication as integer or decimal, where 0 = integer / 1 = decimal	0	1	1=decimal	-
7	Sen	*Sensor type NTC/PTC* 0 = PTC / 1 = NTC	0	1	1=NTC	-
8	SE1	Room sensor offset	-9.9	+15.5	0.0	°C/°F
9	tdS	Delay in displaying the actual room temperature on the screen when the door is opened	0	60	0	min
10	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
ALARMS						
11	ALo	**lower alarm limit** temperature of the cabinet	-50.0	+110	-4.0	°C/°F
12	AHi	**higher alarm limit** temperature of the cabinet	-50.0	+110	+15.0	°C/°F
13	At2	*Time delay in activating "AHi", "ALo" and the buzzer among them.* *This setting does not apply to sensor failure "LF1" and door alarm "dor".*	0	99	20	min
DIGITAL INPUT – DOOR SWITCH						
14	dLd	*Door switch operation* *0 = OFF / 1 = NC (normally close contact) / 2 = NO (normally open contact)* In heating mode the door control is deactivated	0	2	0=OFF	-
15	tdo	*Time delay in deactivating the compressor once the door opens and activate the door alarm. Once the door closes, the compressor is activated and the alarm turns off.*	0	99	0	min
DEFROST						
16	dFr	*Time between two successive defrost, where if dFr = 0 or the relay is in heating mode, defrost is deactivated.*	0	50	6	hours
17	dd2	Defrost duration (manual and automatic)	1	90	18	min
18	dE5	*Defrost end temperature* *The automatic defrost terminates based on the selected room temperature.* *Manual defrost starts regardless the room temperature and its duration is based on timer **dd2**.*	0	25.0	10.0	°C/°F
19	dY4	*Display indication during defrost* *0 = room temperature is displayed* *1 to 40 minutes = "dFr" is displayed from 1 to 40 minutes from the initiation of defrost*	0	99	20	min
20	dP3	*Dripping time, where the compressor is OFF after defrost*	0	10	0	min
21	tdH	*Time delay in activating high temperature alarm "AHi" after defrost.*	1	99	1	min

		The "AHi" alarm is not activated during defrost.					

COMPRESSOR

22	CP2	Compressor's minimum time OFF	0	4	3	min
23	CF3	*Compressor's operation in case of room's sensor malfunction LF1 and in cooling mode, the compressor operates as follows:* 0 = 40% ON compressor (3 minutes ON, 4 minutes OFF) / 1 = ON constantly the compressor. In heating mode with parallel sensor malfunction (LF1), the relay switches off.	0	1	0	-

RELAY

24	rHC	Relay operation mode, where 0 = cooling / 1 = heating / 2 = heating with countdown based on timer **Hod**	0	2	0=cooling	-
25	Hod	Countdown timer when the relay is in heating mode with countdown, adjust also parameter **rHC = 2** (see page 2 – Food drying applications - Heating mode with countdown)	1	255	1	min

NETWORK - GENERAL SETTINGS

26	Add	Device address on network	0	255	1	-
27	trE	Response time of the device on network	5	100	40	msec
28	bAU	*Baud rate: 0 = 2400 / 1 = 4800 / 2 = 9600 / 3 = 19200* Enter the new value, exit the parameter menu by pressing ⏎ and toggle the power supply of the device	0	3	3	-
29	Pro	*Cabinet's program (factory settings) is displayed – no access*	-	-	31	-
30	tPE	*Unique product number – no access*	-	-	227	-
31	SrU	*Room service*: after the end of the selected time, 'SrU' is displayed and informs that the room needs service. The thermostat continues to operate normally and its functions are not suspended. -1 = disabled function 0 to 150 weeks = remaining time to activate the 'SrU' room service notification. The countdown starts once a new value is stored. Whenever we enter the parameter, the remaining time until the activation of 'SrU' notification is displayed. To deactivate the notification, insert SrU = -1.	-01	150	-01	weeks
32	UEr	*Firmware version - no access*	-	-	3.X.X	-

ALARM TABLE

1	LF1	Room sensor malfunction
2	ALo	Low room temperature
3	AHi	High room temperature
4	dor	Open door alarm (when the cabinet's door opens, the fan stops)
5	SrU	room service notification: timer has elapsed and the cabinet needs a service (see parameter 31, SrU)
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.

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