ATTENTION　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　*Firmware V2*

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

VD1F is a temperature controller for cooling – heating applications, as well as, food drying applications (e.g. sausages) and has the following specifications: room temperature is controlled with NTC/PTC sensor; 3 indication digits with resolution 0.5°C and 4 buttons; one serial input for controlling the cabinet's door; one relay 16A 250VAC; automatic defrost; 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	
❄	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 ▲T2 or ▼☉ change its 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**. Press 4 times ▼☉ and the parameter **Cod** is displayed.
2. Press SET to display its value and press ▲T2 to enter the value **31**. Press SET 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 ▲T2 ▼☉ for more than 3 seconds.
2. To activate 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 ▲T2 and press SET to display its value.
3. Press ▼☉ or ▲T2 to change its value and then press SET to store the new value.
4. Press ↵ to exit the parameter menu.

TECHNICAL SPECIFICATIONS

Power supply: 230VAC 50/60Hz / Maximum power consumption: 3W / Firmware: V2
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 16A 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

SERIAL INPUT

VD1F can connect to a 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 the memory key.
- 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.

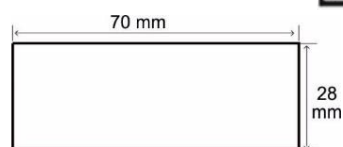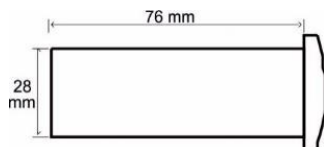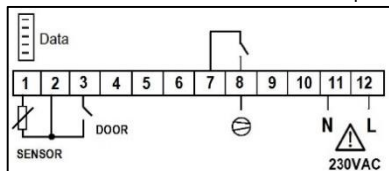## FOOD DRYING APPLICATIONS (e.g. SAUSAGES) - HEATING MODE WITH COUNTDOWN

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	UOM
1	SPo	SET POINT: room temperature setting	LSP	HSP	2.0	°C/°F
2	LSP	Lower setting limit of SPo	-50.0	HSP	-2.0	°C/°F
3	HSP	Maximum setting limit of SPo	LSP	+110	8.0	°C/°F
4	diF	Differential of room temperature SPo (thermostat delay)	0.1	25.0	3.0	°C/°F
5	Cod	**Access code to the following parameters Cod = 22.**	0	255	0	-
6	Co1	Compressor's minimum time OFF	0	4	0	min
7	CF3	*Compressor's operation in case of sensor's malfunction (LF1) and in cooling mode:* 0 = 40% compressor's operation (3min ON, 4min OFF) / 1 = compressor is ON continuously. In heating mode the relay is deactivated.	0	1	0	-
8	dFr	*Time between two successive defrost*: where dFr = 0 or relay in heating mode, the defrost is deactivated.	0	50	6	hours
9	dd2	*Defrost duration* (manual and automatic)	1	90	18	min
10	dE5	*Defrost end temperature is the room temperature* Automatic defrost stops if room temperature is greater than defrost end temperature dE5. Manual defrost starts regardless of the room's temperature and ends after time adjusted in parameter dd2 elapses.	0	25.0	10.0	°C/°F
11	CAb	(not in use)	-	-	-	-
12	dP3	Dripping timer, where the compressor is OFF after defrost	0	10	0	min
13	dY4	*Display indication during defrost* 0 = indication of room's temperature 1 to 40 min = indication of "dFr" from 1 to 40 min counting from the beginning of defrost	0	99	20	min
14	SE1	Sensor offset	-9.9	+15.5	0	°C/°F
15	nU1	(not in use)	-	-	-	-
16	tdS	Time delay for refreshing the temperature indication on screen	0	20	0	sec
17	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
18	Hod	Countdown timer when the relay is in heating mode with countdown, adjust also parameter **rHC = 2**	1	255	1	min
19	trE	Response time of the device on network	5	100	40	msec
20	dHL	*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	0	min
21	UF	(not in use)	-	-	-	-
22	ALo	Low alarm room threshold	-50.0	+110	-4.0	°C/°F
23	AHi	High alarm room threshold	-50.0	+110	+15.0	°C/°F
24	dor	*Door switch operation* 0=OFF / 1 = NC (normally close) / 2 = NO (normally open) In heating mode, the door switch is deactivated.	0	2	0=OFF	-
25	tdH	*Time delay in activating the high temperature alarm "AHi" after defrost.* During deFrost, the alarm "AHi" is deactivated.	1	255	1	sec
26	dEd	*Time delay when the doors open, for the deactivation of the compressor and the activation of open door alarm "dor"* When the door closes, the compressor starts to operate and the alarm disappears.	0	99	0	min
27	rHC	Relay operation, where 0 = cooling / 1 = heating / 2 = heating with countdown based on timer **Hod**	0	2	0=cooling	-
28	dEC	Temperature indication as integer or decimal, where 0 = integer / 1 = decimal	0	1	1=decimal	-
29	Add	Device address on network. To connect with Mini Logger enter **Add=1**.	0	255	1	-
30	Sen	*Sensor type NTC/PTC* 0 = PTC / 1 = NTC	0	1	1=NTC	-

ALARM TABLE

1	LF1	Sensor malfunction
2	ALo	Low room temperature
3	AHi	High room temperature
4	dor	Open door alarm
5	EEr	Error in memory RAM: re-enter the SPo (see ADJUSTING TEMPERATURE – SET POINT back page)

The alarms are automatically deactivated when 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.