

**ATTENTION**

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 (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   |
|          | display the parameter's value<br>enter parameter's value<br>manual defrost or manual heating with countdown |
|          | up arrow<br>OFF device (check below)  |
|          | down arrow<br>mute buzzer<br>ON/OFF device (check below)  |

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

**ADJUSTING TEMPERATURE – SET POINT**

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

**ADJUSTING THERMOSTAT IN HEATING MODE**

To toggle thermostat in heating mode, adjust the following parameters: **rHC = 1, AH1, At2, HSP, diF, SPo**.

**INDUSTRIAL FACTORY SETTINGS**

1. Press to display **SPo**. By pressing the parameter **Cod** is displayed.
2. Press to display its value and press to enter the value **31**. Press to store the value to parameter **Cod**.
3. Press again to exit the parameter menu, 'YES' is displayed on the screen. All appropriate factory settings are now stored in the device.
- 4.

**ON/OFF DEVICE**

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

**MANUAL DEFROST**

Press for 3 seconds 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 2<sup>nd</sup> 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 to display its value.
3. Press or to change its value and then press to store the new value.
4. Press to exit the parameter menu.

**TECHNICAL SPECIFICATIONS**




Model **VD1F** power supply: 115VAC 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 -50÷+112°C (-58÷+230°F) (or PTC 1K 25°C with temperature range -50÷+150°C (-58÷+302°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 mm<sup>2</sup> for all relays / cable cross section from 0.25 to 1.0 mm<sup>2</sup> for the sensors and door switch  
 Connections with terminal blocks 18A using cable with cable cross section up to 2.5 mm<sup>2</sup> / 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: V4.0.0

## 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 any Modbus network:

- Mobile application for android and iOS, Cloud service 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, email and mobile notifications in case of an alarm.
- CAMIN program: local connection and monitoring - recording and management of the thermostat through the CAMIN program installed on a local computer.

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

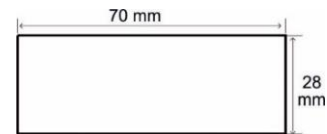
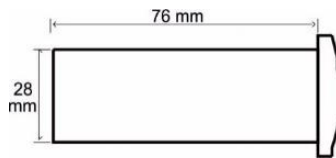
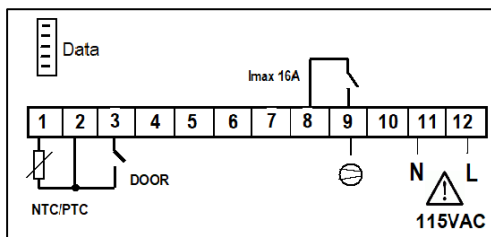
When the parameter **rHC = 2**, the relay operates in heating mode based on the parameter **Hod** while "SET" is displayed. By pressing  the relay is activated and the indication "rUn" is displayed. By pressing  the remaining time is displayed. When time elapses, the relay is deactivated and "End" is displayed on screen. By pressing  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 being 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                                  | Cod | Enter password code Cod = 22 and press  to enter the other parameters  | 0     | 255   | 0         | -     |
| <b>ANALOG INPUTS - TEMPERATURE</b> |     |   |       |       |           |       |
| 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 | +150  | -2.0      | °C/°F |
| 5                                  | HSP | Maximum setting limit of SPo  | -50.0 | +150  | 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<br>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 |
| <b>ALARMS</b>                      |     |   |       |       |           |       |
| 11                                 | ALo | lower alarm limit temperature of the cabinet  | -50.0 | +150  | -4.0      | °C/°F |
| 12                                 | AHi | higher alarm limit temperature of the cabinet   | -50.0 | +150  | +15.0     | °C/°F |
| 13                                 | At2 | Time delay in activating "AHi", "ALo" and the buzzer among them.<br>This setting does not apply to sensor failure "LF1" and door alarm "dor".   | 0     | 99    | 20        | min   |
| 14                                 | bOF | Buzzer operation<br>0 = OFF / 1 = ON  | 0     | 1     | 1=ON      | -     |
| <b>DIGITAL INPUT - DOOR SWITCH</b> |     |   |       |       |           |       |
| 15                                 | dLd | Door switch operation<br>0 = OFF / 1 = NC (normally close contact) / 2 = NO (normally open contact)<br>In heating mode the door control is deactivated  | 0     | 2     | 0=OFF     | -     |
| 16                                 | 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   |
| 17                                 | tor | Override timer of the open door while the compressor is ON<br>0 = deactivated<br>Once open door alarm is activated, timer tor starts counting, where the door is overridden and the compressor continues to operate. Door alarm is still activated as long as the door is open. | 0     | 255   | 0         | min   |
| <b>DEFROST</b>                     |     |   |       |       |           |       |
| 18                                 | dFr | Time between two successive defrosts, where if dFr = 0 or the relay is in heating mode, defrost is deactivated.   | 0     | 50    | 6         | hours |
| 19                                 | dd2 | Defrost duration (manual and automatic)   | 1     | 90    | 18        | min   |
| 20                                 | dE5 | Defrost end temperature<br>The automatic defrost terminates based on the selected room temperature.<br>Manual defrost starts regardless the room temperature and its duration is based on timer dd2.  | 0     | 25.0  | 10.0      | °C/°F |

|                                   |     |  |     |     |           |       |
|-----------------------------------|-----|--|-----|-----|-----------|-------|
| 21                                | dY4 | Display indication during defrost<br>0 = room temperature is displayed<br>1 to 40 minutes = "dFr" is displayed from 1 to 40 minutes from the initiation of defrost   | 0   | 99  | 20        | min   |
| 22                                | dP3 | Dripping time, where the compressor is OFF after defrost   | 0   | 10  | 0         | min   |
| 23                                | tdH | Time delay in activating high temperature alarm "AHi" after defrost.<br>The "AHi" alarm is not activated during defrost.   | 1   | 99  | 1         | min   |
| <b>COMPRESSOR</b>                 |     |  |     |     |           |       |
| 24                                | CP2 | Compressor's minimum time OFF  | 0   | 4   | 3         | min   |
| 25                                | CF3 | Compressor's operation in case of room's sensor malfunction LF1 and in cooling mode, the compressor operates as follows:<br>0 = 40% ON compressor (3 minutes ON, 4 minutes OFF) / 1 = ON constantly the compressor.<br>In heating mode with parallel sensor malfunction (LF1), the relay switches off.   | 0   | 1   | 0         | -     |
| <b>RELAY</b>                      |     |  |     |     |           |       |
| 26                                | rHC | Relay operation mode, where 0 = cooling / 1 = heating / 2 = heating with countdown based on timer Hod  | 0   | 2   | 0=cooling | -     |
| 27                                | Hod | Countdown timer when the relay is in heating mode with countdown, adjust also parameter rHC = 2<br>(see page 2 – Food drying applications - Heating mode with countdown)   | 1   | 255 | 1         | min   |
| <b>NETWORK - GENERAL SETTINGS</b> |     |  |     |     |           |       |
| 28                                | Add | Device address on network  | 0   | 255 | 1         | -     |
| 29                                | trE | Response time of the device on network   | 5   | 100 | 40        | msec  |
| 30                                | bAU | Baud rate: 0 = 2400 / 1 = 4800 / 2 = 9600 / 3 = 19200  | 0   | 3   | 3         | -     |
| 31                                | Pro | Cabinet's program (factory settings) is displayed – no access  | -   | -   | 31        | -     |
| 32                                | tPE | Unique product number – no access  | -   | -   | 227       | -     |
| 33                                | 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.<br>-1 = disabled function<br>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 |
| 34                                | UEr | Firmware version - no access   | -   | -   | 4.0.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 33, SrU) |
| 6   | EEr | Error in memory RAM: re-enter the SPo (see ADJUSTING TEMPERATURE – SET POINT page 1)                 |
| <b>The alarms are automatically deactivated once the cause of the alarm disappears.</b> |     |  |

#### REVISION HISTORY

| PDF Version | Date      | Comments   |
|-------------|-----------|--|
| 4.0.0       | 27/6/2023 | added new parameters tor No.16 and boF No.14, parameter bAU changes and new pcb with switch tact buttons |

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 PC implements a Quality Management System according to EN ISO 9001:2015 Standard with registration number 01013192. KIOUR preserves the right to adjust its products without further notice