

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

VD1T is a temperature controller for cooling – heating applications as well as food drying applications (e.g. sausages). The room and evaporator temperatures are controlled with NTC / PTC sensors. Via a parameter, the evaporator’s input can be adjusted as a door switch to control the room door. It has an automatic defrost function or smart defrost function for energy saving and better control of the defrost process. It has 3 indication digits of temperature display with accuracy of 0.5°C and 4 buttons. It has a relay 16A with adjusted operation mode: cooling or heating or heating with countdown. 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 data logging, controlling and monitoring the device.

INDICATIONS AND BUTTONS FUNCTION



Display indications	
	relay ON in cooling mode
	relay ON in heating mode
	defrost ON
	alarm ON
	malfuction ON

Keyboard	
	enter/exit the parameter’s menu
	display the parameter’s value enter parameter’s value manual defrost or manual heating with countdown
	up arrow
	down arrow mute buzzer 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.

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.

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**. This function also applies in case we have activated the smart defrost.

PROGRAMMING A PARAMETER

ATTENTION: to gain full access to the parameter’s menu, the 2nd 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

Power supply: 230VAC 50/60Hz / Maximum power consumption: 3W / Firmware: V4.0.1

It is recommended using a power supply safety fuse: 0.5A (not included)

Room temperature sensor, terminals 5-6, NTC 10K 1% 25° C temperature range -37 ÷ + 110°C (-34 ÷ + 230°F) IP68 (or PTC 1K 25°C temperature range -50 ÷ + 110°C (-58 ÷ + 230°F) not included) / Accuracy: 0.5 ° C

Digital door input or input for evaporator temperature sensor, terminals 4-5, NTC 10K 1% 25°C temperature range -37 ÷ + 110°C (-34 ÷ + 230°F) IP68 (or PTC 1K 25°C temperature range -50 ÷ + 110°C (-58 ÷ + 230°F) not included) / Accuracy: 0.5°C

Serial input 5pin connector

Relay 16A res. 250VAC normally open contact / Max current load 16A

Connections: cable cross section 2.5 mm² for relay / 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 70x35x28mm / The device is mounted on a panel hole 29x71mm and it is restrained with plastic side brackets / Protection IP65 front

SERIAL INPUT

VD1T 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.

- 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.

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  we see successively the temperature of the second sensor, if it is activated, as well as the remaining time. 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.

SMART DEFROST

Smart defrost operates in parallel and independently from the conventional defrost. Both defrost modes can operate at the same time based on the respective settings. By enabling smart defrost, it is recommended to adjust conventional defrost to operate in safe mode - for example once every 48 hours: parameter No 22, dFr = 48. If smart defrost is not executed, then the conventional defrost will start after 48 hours from the last successful defrost. Each time a smart defrost is executed, the timer of the conventional defrost is renewed.

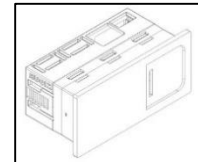
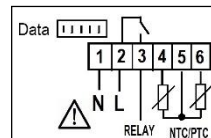
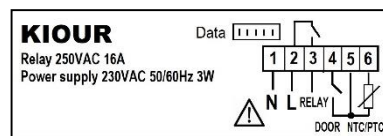
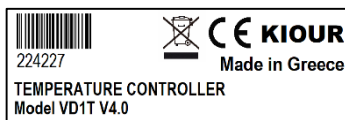
Smart defrost is activated from parameter No 24, dSE = 1.

It is recommended during the start-up of the temperature controller, to execute a smart defrost cycle, parameter No 25, dSb = 1.

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 **SOI = 1**: door switch or **SOI = 0**: evaporator sensor terminals 4-5

PARAMETER TABLE

#	SPo	description	min	max	VD1T	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	SOI	Set 2 nd input as NTC / PTC evaporator sensor or door switch: 0 = evaporator sensor / 1 = door switch Selecting one setting automatically turns off the alarms and features of the other setting.	0	1	1=door	-
9	SE1	Room sensor offset	-9.9	+15.5	0.0	°C/°F
10	SE2	Evaporator sensor offset	-9.9	+15.5	0.0	°C/°F
11	tdS	Delay in displaying the actual room temperature on the screen when the door is opened	0	60	0	min
12	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						
13	ALo	lower alarm limit temperature of the cabinet	-50.0	+110	-4.0	°C/°F
14	AHi	higher alarm limit temperature of the cabinet	-50.0	+110	+15.0	°C/°F
15	At2	Time delay in activating "AHi", "ALo" and the buzzer among them. This setting does not apply to sensor failure "LF1", "LF2" and door alarm "dor".	0	99	20	min
DIGITAL INPUT - DOOR SWITCH						
16	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	-
17	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						
18	dFr	Time between two successive defrost, 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 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
21	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
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. The "AHi" alarm is not activated during defrost.	1	99	0	min
SMART DEFROST (more details page 2)						
24	dSE	Smart defrost function 0 = NO 1 = YES	0	1	0	-
25	dSb	Starts a defrost cycle at the start of the device 0 = NO 1 = YES	0	1	1	-
26	dS2	Minimum time between two successive smart defrosts	1	255	60	min
27	dS1	Time constant: a steady increase in the constant, delays more the start of the smart defrost and increases the ice on the evaporator	1	20	3	min
28	dSt	Temperature constant: a steady increase in the constant, delays more the start of the smart defrost and increases the ice on the evaporator	0.5	3.0	1.0	°C/°F
COMPRESSOR						
29	CP2	Compressor's minimum time OFF	0	4	3	min
30	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						
31	rHC	Relay operation mode, where 0 = cooling / 1 = heating / 2 = heating with countdown based on timer Hod	0	2	0=cooling	-
32	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						
33	Add	Device address on network	0	255	1	-
34	trE	Response time of the device on network	5	100	40	msec
35	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	-
36	Pro	Cabinet's program (factory settings) is displayed – no access	-	-	1	-
37	tPE	Unique product number – no access	-	-	45	-
38	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. -01 = 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 new number	-01	150	-01	weeks
39	UEr	Firmware version – no access	-	-	4.X.X	-

ALARM TABLE

1	LF1	Room sensor malfunction
2	LF2	Evaporator sensor malfunction
3	ALo	Low room temperature
4	AHi	High room temperature
5	dor	Open door alarm
6	SrU	room service notification: timer has elapsed and the cabinet needs a service (see parameter 38, SrU)
7	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.



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