ATTENTION *Firmware V5.0.6*

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

VD2FX is a thermostat for cooling cabinets -with defrost control- or heating cabinets (bain-marie); Model **VD2FX** is suitable for all applications including the ones with anti-explosive standards; Room temperature is controlled with NTC or PTC sensor; NTC temperature range is -50÷+110°C and PTC temperature range is -50÷+150°C; Possibility to select a 2nd sensor - through a parameter - to control the evaporator. It has: 3 indication digits with resolution 0.5°C and 4 buttons; one digital input for controlling the cabinet's door; 2 relays: a main relay 30A 250VAC that is configured via parameter in operation: cooling or heating mode; The 2nd relay a is auxiliary SPDT contacts 10A 250VAC for controlling defrost or fan or lamp or alarm. It also, has a buzzer in case of an 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 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
	auxiliary relay ON
	defrost ON
	ECO mode
⚠	alarm ON
	malfunction ON

Keyboard	
↵	enter/exit the parameter's menu
SET	display the parameter's value enter parameter's value manual defrost
▲	ON/OFF lamp display second temperature T2
▼	mute buzzer ON/OFF **ECO function**

For more indications regarding the alarms please see the alarm's table at page 4.

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 with the new adjustment.

INDUSTRIAL FACTORY SETTINGS

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

ON/OFF LAMP

To activate or deactivate the lamp, press ▲.

ON/OFF ECO FUNCTION

To activate or deactivate the ECO function, press ▼. During ECO start-up and for parameter OAU = 4, lamps turns OFF. To turn it back on, press ▲.

MANUAL DEFROST

Press 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 2nd parameter* ***Cod*** *must be adjusted to* ***22*** *(see parameter table page 2).*

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

Models **VD2FX** power supply: 230VAC 50/60Hz / Maximum power consumption: 3W. Model **VD2FXW** switching power supply 100-264VAC 50/60Hz 5W.
It is recommended using a power supply safety fuse: 0.5A (not included)
Room and evaporator temperature sensors NTC 10K 1% 25°C IP68 and temperature range -50÷+110°C (-58÷+230°F) **or** PTC 1K 25°C and temperature range -50÷+150°C (-58÷+302°F) - not included - / Accuracy: ±0.5°C
Alarm buzzer / Serial input with 5pin connector / Digital input door
1st Relay cool/heating 30A res. 250VAC normally open contact / 2nd Relay auxiliary 10A res. 250VAC SPDT contacts / Max current load on terminal blocks 18A
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 panel hole 29x71mm and restrained with plastic side brackets / Protection IP65 front
Firmware: *V5.0.6*

SERIAL INPUT

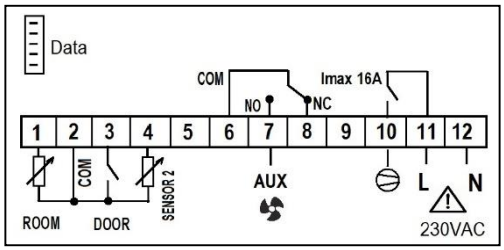
VD2FX connects via serial input to the following options:

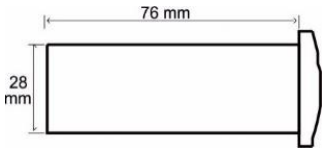
- Cloud and CORTEX platform via mobile app: connection to the cloud and the CORTEX platform for monitoring - recording and managing the thermostat from your mobile, tablet or any computer, notifications via email and to the Cortex application in case of alarm.
- CAMIN program: local connection and monitoring - recording and management of the thermostat through the CAMIN program installed on a local computer.

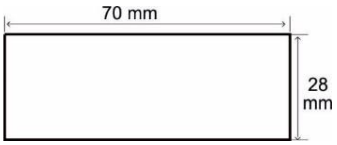
ELECTRICAL DIAGRAM - DIMENSIONS

***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'S TABLE

No		Description	min	max	UOM
1	**SPo**	SET POINT: room temperature setting	LSP	HSP	°C/°F
2	**Cod**	Enter password Cod = 22 and press SET to access all parameters menu	0	255	units
ANALOG INPUTS - TEMPERATURE					
3	**diF**	Differential of room temperature SPo (thermostat delay)	0.1	25.5	°C/°F
4	**LSP**	Lower setting limit of SPo	-50.0	+150	°C/°F
5	**HSP**	Maximum setting limit of SPo	-50.0	+150	°C/°F
6	**dEC**	Temperature indication as integer or decimal, where **0 =** integer , **1 =** decimal	0	1	units
7	**SEn**	*Sensor type NTC/PTC* **0 =** PTC / **1 =** NTC	0	1	-
8	**SE1**	Room sensor offset	-9.9	+15.5	°C/°F
9	**SE2**	Evaporator sensor offset	-9.9	+15.5	°C/°F
10	**tdS**	Delay in displaying the actual room temperature on the screen when the door opens	0	255	min
11	**oS2**	*Evaporator's sensor operation* **0 =** Sensor is **OFF** and by pressing ▲ it is displayed " - - - " **1 =** Sensor is **ON** and by pressing ▲ it is displayed evaporator's temperature T2. **2 =** Evaporator's sensor is activated, its temperature is displayed on the screen and by pressing T2 room temperature is displayed. Does not affect the operation of the device.	0	2	units
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	°C/°F
ALARMS					
13	**ALo**	Low room temperature	-50.0	+150	°C/°F
14	**AHi**	High room temperature	-50.0	+110	°C/°F
15	**At2**	*Time delay in activating "AHi", "ALo" and the buzzer among them.* *This setting does not apply to sensor failure and door alarm.* **-1 =** OFF buzzer **0 =** ON buzzer in case of an alarm **1 to 120 min =** delay in buzzer activation in case of an alarm	-01	120	min

DIGITAL INPUT – DOOR SWITCH					
16	**dLd**	*Door switch operation* **0 =** OFF door switch and Virtual door switch **1 =** NC (normally close) **2 =** NO (normally open) **3 =** Virtual door switch. Detects the change in room temperature. The operation of the virtual switch: controls the **Eco**, controls the lamp (**OAU = 3**), does not activate door's ALARM and does not stop the compressor. The duration of defrost **dd2** continues and counts normally. If the 1st relay (30A) is in heating operation, then the door control is deactivated.	0	3	units
17	**tdo**	*Door ALARM delay time of the real switch* Compressor is deactivated - OFF - when there is door ALARM.	1	250	sec
18	**Vdt**	Retention time of the Virtual switch open door signal	10	250	sec
19	**VdS**	Virtual switch door opening detection sensitivity. The units increases, the sensitivity increases.	2	30	units
ECO FUNCTION					
20	**Edi**	Differential of ECO mode	0.5	25.0	°C/°F
21	**EtF**	Duration timer of the ECO mode	1	24	hours
22	**Edo**	In economy mode, how many times must the door be opened (1,2, etc. times) to stop the economy mode and return to the original set point.	1	10	units
23	**ECt**	Value **= 0** → **ECO** mode is deactivated Value **from 1-240** → is the time that if elapses without door's opening then the SET POINT of economy mode (**Eco**) is activated.	0	240	min
24	**ECo**	SET POINT of economy mode SET POINT of economy mode is activated when the door is closed for a time longer than the value of the **ECt** parameter. When the thermostat is in **Eco** mode, then the LED lights up	-50	30	°C/°F
DEFROST					
25	**dFr**	Time between two successive defrost, where if: **- 1 =** only manual defrost. Automatic defrost is disabled. **0 =** defrost is completely disabled or if the 30A relay is in heating mode. **1 till 100 hours =** time between two successive defrost	-1	100	hours
26	**dd2**	Defrost duration (manual and automatic)	1	120	min
27	**dE5**	*Defrost end temperature, room temperature.*	0.0	100	°C/°F
28	**dP3**	Dripping time, where the compressor is OFF after defrost	0	15	min
29	**dY4**	*Display indication during defrost* **-2 =** SPo + diF value is displayed when room temperature is greater than SPo + diF **-1 =** "dFr" is displayed when room temperature is greater than SPo + diF **0 =** room temperature is displayed **1 to 40 minutes =** "dFr" is displayed from 1 to 40 minutes from the initiation of defrost	-2	40	min
COMPRESSOR					
30	**CP2**	Compressor's minimum time OFF	0	15	min
31	**CF3**	*Compressor's operation in case of room's sensor malfunction LF1* **-1** = compressor OFF **0 =** compressor ON while defrost starts based on timer dFr and ends based on timer dd2 or temperature dE5, whichever comes first. **1 to 150 min =** constant compressor operating time. The minimum compressor pause is determined by the **CP2** parameter. Defrosting starts at **dFr** time and lasts **dd2** time. In heating mode and during sensor malfunction, the main relay 30A is deactivated.	-1	15	min
AUXIALIARY RELAY					
32	**rHC**	First relay 30A operation mode, where **0 =** cooling **/ 1 =** heating	0	1	units
33	**OAU**	*Second Auxiliary relay operation* **0 =** OFF **1 =** parallel relay operation to the ON / OFF operation of the thermostat **2 =** fan operation based on the door switch, where the door switch must be activated. If the first relay (30A) is in heating mode, the door control is deactivated. **3 =** lamp function based on the door switch, where the door switch must be activated. If the first relay (30A) is in heating mode, the door control is deactivated **4 =** lamp's ON-OFF by pressing for 1sec the button of the device. At the end of **Eco** mode, the lamp turns ON. During device start-up, lamp turns ON. **5 =** parallel operation with 1st relay (30A) **6 =** Electrical Defrost. (Compressor OFF, *auxiliary relay ON)* **7 =** HOT GAS Defrost. (Compressor ON, *auxiliary relay ON)* **8 =** ON in case of alarm, when the cause of activation of the alarms is gone, then the relay is deactivated. In heating mode, the door control is deactivated	0	8	units
NETWORK - GENERAL SETTINGS					
34	**tPE**	*Unique product number – no access -*	-	-	-
35	**Add**	Device address on network	0	255	units
36	**trE**	Response time of the device on network	5	100	msec
37	**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	units
38	**Pro**	*Cabinet's program (factory settings) is displayed – no access*	-	-	-
39	**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	-1	150	weeks

		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.			
40	**UEr**	*Firmware version – no access -*	-	-	-

ALARM'S 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 (when the cabinet's door opens, the fan stop)
6	**SrU**	room service notification: timer has elapsed and the cabinet needs a service (see parameter 39, 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.		

REVISION HISTORY

PDF Version	Date	Comments
4.2.0	27/9/2023	parameter **bAU** changes and new pcb with switch tact buttons
5.0.5	7/10/2024	ATEX relay
5.0.6	29/1/2025	The option -01 was added to the dFr parameter, manual defrost only.

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.