COOLING – HEATING CONTROLLER Model VD1 V4

KIOUR

DESCRIPTION

VD1 is a temperature controller for cooling and heating applications. It has one **relay (30A)** which can operate via an adjustable parameter in: a) cooling mode with automatic deFrost and a digital door input for controlling the cabinet's door, b) heating mode and c) heating mode with countdown. It has also a buzzer alarm. The sensor can be either **NTC** scale -37÷+110°C (-34÷+230°F) or **PTC** scale -50÷+110°C (-58÷+230°F) by adjusting a parameter. The controller has a serial input and can connect to the **KIOUR CAMIN** modbus network for full monitoring and data logging of the device.

INDICATIONS AND BUTTON OPERATIONS OUTSIDE THE PARAMETER'S MENU

Indications	
❄	relay ON
❄	deFrost ON
⚠	alarm ON
🔧	malfunction ON

button	Operations outside the parameter menu	
	pressed once	pressed mode than 3 sec
↵	enter parameter's menu	-
▼	temperature scale °C/°F and mute the buzzer	-
▲	-	-
SET ❄	-	start manual defrost or manual heating with countdown

PROGRAMMING THE PARAMETERS

By pressing [↵] we **enter or exit** the parameter's menu.
The first parameter "**SPo**" is displayed and with the [▲], [▼] we scroll into the parameters based on the parameter's table below.
By pressing [**SET**] the value of the parameter is displayed and with the [▲], [▼] we adjust the value.
By pressing [↵] **or** [**SET**] we **confirm** the new value and the name of the parameter is displayed.

⏻ SWITCHING ON/OFF THE DEVICE

By pressing **at the same time the** [▲] + [▼] we **switch ON or OFF** the device.

TECHNICAL SPECIFICATIONS

Power supply: 230VAC 50/60Hz / Maximum power consumption: 3W
It is recommended to use a power supply safety switch: fuse 0,5A (not included)
Cabinet's temperature sensor NTC 10K 1% 25ºC IP68 (or PTC 1K 25ºC is not included) / Accuracy: 0.5°C
Alarm buzzer / Serial Input
Relay 250VAC 30A resistive load 2HP
Operating temperature: -15÷+55°C / Storage temperature: -20÷+80°C
The device is mounted through panel hole 29x71mm and is restrained with two plastic side brackets / Connection with terminal blocks 18A

SERIAL INPUT

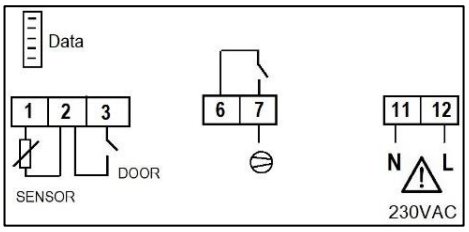
VD1 can connect to the **key programmer** or to the data logger **Mini Logger** or to the **KIOUR CAMIN** network or to any **modbus network**.

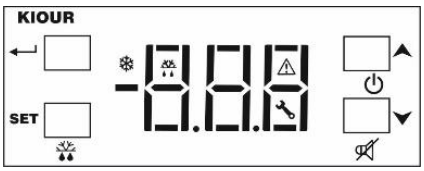
- **Key programmer:** controller's parameter values can be saved or retrieved from the programming key. Plug in the programming key to the controller and press at the same time [**SET**]+[▲]. The device connects to the key and the message "**Eo**" is displayed. By pressing [▲] the device downloads the parameters from the key and the message "**ro**" = read O.K. or "**rF**" = read Fail is displayed. By pressing [▼] the device uploads the parameters to the key and the message "**Yo**" = Write O.K. or "**YF**" = Write Fail is displayed. In case of failure (**rF** or **YF**) reenter the key to the serial input and repeat the procedure from the beginning. The key can connect to all **KIOUR** devices. If you try to read the parameters of a different device, message "**rF**" is displayed. At any time, we can perform the aforesaid operation. After 10sec the key is disconnected.
- **Data logger Mini Logger:** the controller is connected to the data logger via cable and by programming the parameter **Add = 1**. Automatically, based on selected minutes, the data logger writes to a microSD memory card the controller's temperatures, status and alarms.
- **CAMIN network:** the controller can connect to the **CAMIN** network via an interface **NET-INS-485**. **CAMIN** is an PC software application designed to collect information, watch and fully control a net of **KIOUR** devices while sending SMS and email in case of an alarm. The maximum length of the net can be 1000 meters.

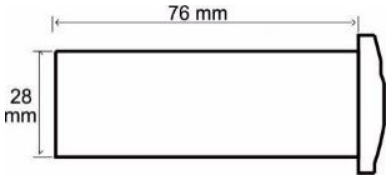
HEATING MODE WITH COUNTDOWN

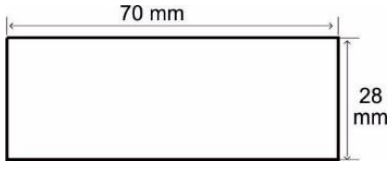
When the parameter **rHC = 2,** the relay operates in heating mode based on the parameter "**Hod**" while "**SET"** is displayed. By pressing [**SET**] the relay is activated and the indication "**rUn**" is displayed. By pressing [▲] the remaining time is displayed. When the time expires, the relay is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

CONNECTIONS - DIMENSIONS









PARAMETER TABLE

#		description	min	max	VD1	UOM
1	**SPo**	SET POINT: temperature control of the cabinet	SLo	SHi	2	°C/°F
2	**LSP**	**minimum** temperature limit of SPo	-50	SHi	-2	°C/°F
3	**HSP**	**maximum** temperature limit of SPo	SLo	+150	8	°C/°F
4	**diF**	**differential relay function**	0.1	25	3	°C/°F
5	**Cod**	code to enter parameter's menu **Cod = 22** resetting to **factory settings VD1** for **Cod = 31**	0	255	0	-
6	**Cr**	minimum **pause time** of the compressor	0	4	0	min
7	**CF**	In case of **sensor's malfunction (LF1)** and in cooling mode, the compressor operates as follows: 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 For **dFr=0** or in **heating mode** the **deFrost** is deactivated.	0	50	6	h
9	**dd2**	**maximum duration of deFrost**	1	90	18	min
10	**dL**	**temperature limit of the deFrost**: above this temperature the automatic deFrost stops. The **manual deFrost** does not stop based on the "**dL**" temperature limit.	0	25	10	°C/°F
11	CAb	(not in use)	-	-	-	-
12	**dr**	**dripping time,** in which the compressor remains OFF after **deFrost** ends	0	10	0	min
13	**td**	during **deFrost** the indication "**dFr**" is displayed, for "0" = cabinet's temperature is displayed during defrost.	0	99	20	min
14	**Se1**	**zero adjustment of temperature sensor**	-9	+15	0	°C/°F
15	nU1	(not in use)	-	-	-	-
16	**tS**	**time delay for refreshing the temperature indication** on screen	0	20	0	sec
17	**C_F**	**switch °C/°F** (0=°C, 1=°F) **ATTENTION**: changes between °C/°F do not apply on SPo	0	1	0=°C	°C/°F
18	**Hod**	timer for countdown during heating mode (adjust parameter rHC = 2)	1	255	1	min
19	**trE**	time response of the device to the **CAMIN network**	5	100	40	msec
20	**dHL**	**time delay in activating alarms "AHi" and "ALo"**	0	99	0	min
21	UF	(not in use)	-	-	-	-
22	**ALo**	**lower alarm limit** temperature of the cabinet	-50	+150	-4	°C/°F
23	**AHi**	**higher alarm limit** temperature of the cabinet	-50	+150	+15	°C/°F
24	**dor**	**door input polarity** for 0=OFF, 1=ON with **NO** contact, 2=ON with **NC** contact. In **heating** mode, the door input is deactivated.	0	2	0=OFF	-
25	**tH**	**time delay** in activating the high temperature alarm **"AHi" after defrost.** During deFrost, the alarm **"AHi"** is not activated.	1	255	1	sec
26	**dE**	**after "dE" timer expires,** the open door **alarm "dor" is activated** and the compressor turns off, 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 dEC=0 integer, dEC=1 decimal	0	1	0=integer	-
29	**Add**	**address of the device** in the network for connecting to **Mini Logger** adjust **Add = 1**.	0	255	1	-
30	**Sen**	**NTC/PTC sensor selection** for Sen = 0 **PTC** and Sen = 1 **NTC**	0	1	1=NTC	-

ALARM TABLE

1	**LF1**	cabinet sensor malfunction
2	**ALo**	alarm low temperature in the cabinet
3	**AHi**	alarm high temperature in the cabinet
4	**dor**	open door alarm
The alarms are automatically deactivated when the cause of the alarm disappears.		

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NO POWER & SIGNAL CABLES TOGETHER

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ATTENTION according to safety standards, the device must be properly positioned and protected from any contact with electrical parts. All parts that provide protection must be fastened in such a way that they cannot be removed without the use of tools. **ATTENTION**: disconnect the power supply of the device before proceeding to any kind of maintenance. **ATTENTION**: do not place the device near heat sources, equipment containing strong magnets, in areas affected by direct sunlight or rain. **ATTENTION:** prevent electrostatic discharges at the side slots of the device and sharp objects from been inserted. **ATTENTION:** separate the signal's cables from the power supply's cables to prevent electromagnetic disorders. Signal cables must never be in the same pipe with the power supply cables. **Use the device only as described in this document, not to 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. Read and keep these instructions.** The device is under two year's guarantee of good operation. 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.