

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

VD1T 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 that is parametrically adjusted in operation: cooling or heating or heating with countdown; automatic defrost; 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 KIOUR 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 |
| | 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 OFF device (check below) |
| | down arrow mute buzzer ON/OFF device (check below) |

For more indications regarding the alarms please see the alarm’s table at page below.

ADJUSTING TEMPERATURE – SET POINT

1. Press to display the first parameter **SPo**.
2. Press to display its value. With or change its 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**. Press 4 times and 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. All appropriate factory settings are now stored in the device.

ON/OFF DEVICE

1. To deactivate the device, press at the same time for more than 3 seconds.
2. To activate 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 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 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: 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
 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

VD1T can connect to a memory key or to data logger model Mini Logger or to CAMIN network:

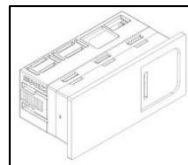
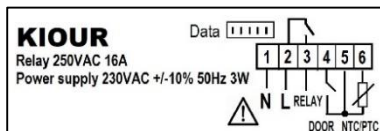
- Memory key: parameter’s values can be downloaded to the memory key or can be uploaded to the thermostat from the memory key.
- Mini Logger: the thermostat can connect to a data logger and store temperatures, relay status and alarms to a microSD. A cable is used to connect the data logger with the thermostat 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  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.



PARAMETER TABLE

| # | description | min | max | VD1T | 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.