

1. DESCRIPTION

- VNTLCD works with only Leo M-type water heaters.
- adjust speed of the fan steplessly,
- Control room temperature (by opening/closing the valve – MANUAL mode, or automatically adjusting air volume with continuous water flow – AUTO mode)
- ANTIFREEZE mode – prevent freezing the room
- VNTLCD controls up to 10 Leo M-type units (it is recommended to use R10 signal distributor while connecting more than two units)
- Possibility to connect external temperature sensors

2. TECHNICAL DATA

Power supply	230VAC/50Hz
Output signal	0 – 10V
Regulation	Panel buttons / LCD display
Temperature control range	+5 ÷ +50°C
Speed of the fan control range	0 ÷ 100%
Operating temperature range	-10 ÷ +60°C
Temperature sensor	Built-in internal/accessory: external
Control parameters	built-in PI controller
IP	20
Montage	surface
Casing	ABS material
Weekly programmer	Yes: 7d, 5d+2d, 1day, OFF.
Dimensions	70 x 120 x 25mm
Max load of valve connectors	inductive 3A, resistive 8A

3. VNTLCD PROGRAMING

3.0 BUTTOMS DESCRIPTION

	MENU select Parameters change.		MENU entrance Edition of parameter
	MENU select Parameters change.		Weekly programmer Edition Back
	ON OFF		Setting approval Main screen

3.1 MAIN SCREEN

VNTLCD ON

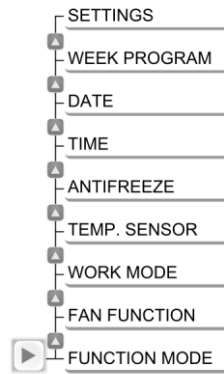
① Tm – room temperature;
 ② MAN | AUT – control mode: AUTO | MANUAL
 ③ HEA | CLM | VEN – operating mode: heating | cooling | vantilation
 ④ Ts – pre-set temperature;
 ⑤ V – actual air volume 0-99%
 ⑥ F – Manual setting of temp. or fan speed beyond programmed calendar.
 ⑦ operating according weekly programmer
 ⑧ signalize valve is open

VNTLCD OFF

① VNTLCD status
 ② date
 ③ time

NOTE!
 While ANTIFREEZE is turned on, after turning off VNTLCD – main display has other view, look ANTIFREEZE menu. Look 3.2.5

3.2 MENU



3.2.1 FUNCTION MODE

NOTE!
 Changing AUTO | MANUAL mode is impossible when Ventilation operating mode is set.

MANUAL – Fan operating with chosen speed V. There are two additional modes: Thermostatic or Continuous (look menu 3.2.2). According to set temperature, valve (valves) is opened/closed.
AUTO – air volume V is regulated automatically depending on differential between pre-set Ts and measured Tm temperature (there is no possibility to change fan speed manually, but is possible to set operating range – max and min speed of fan – look 3.2.9). **In that mode there is possibility to resign with valves, heating source controlling flow and proper temperature of water.**

To change fan speed V (possible only in MANUAL mode) and temperature settings Ts use:

1. Press 2s , Ts value starts blinking.
2. With bottoms or move to proper parameter
3. With bottoms or set expected value.
4. Use to save settings.

3.2.2 FAN FUNCTION

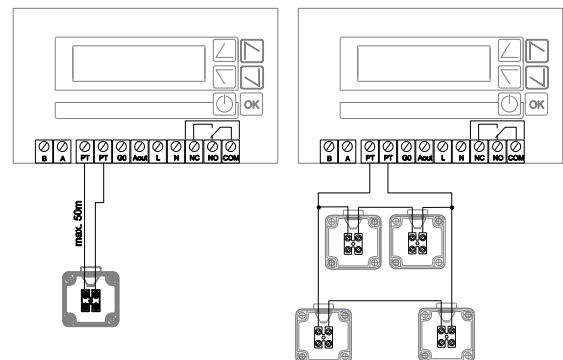
Regards MANUAL mode
Continuous – after reaching pre-set temperature Ts valve (valves) is closed, fan operating with pre-set speed V.
Thermostatic – after reaching pre-set temperature Ts valve (valves) is closed, fan stops operating.

3.2.3 WORK MODE

Heating – valve is open and fan is on when Tm < Ts
Cooling – valve is open and fan is on when Tm > Ts
Ventilation – fan is on and operate with pre-set V.

3.2.4 TEMP. SENSOR

Internal – temp. Tm is measured by built-in sensor.
External – temp. Tm measured by external sensor PT-1000 (accessory).
 To VNTLCD is possible to connect 1, 4 or multiple-4 sensors.



NOTE!
 In case external sensor failure (wrong connected, not connected), on the main display is shown:

!Sensor fault! Tm=!EXT

3.2.5 ANTIFREEZE

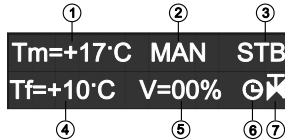
ANTIFREEZE prevent freezing the room. Default mode is $T_f=10^{\circ}\text{C}$. After temperature decrease under T_f , Leo heater is turned on with maximal speed and valve is opened. ANTIFREEZE is deactivated after reaching $T_f + 1^{\circ}\text{C}$. ANTIFREEZE works while

1. ANTIFREEZE is on
2. Program is off (STB – standby operating) or
3. FS=STOP according to calendar program- fan is off

ON | OFF – ANTIFREEZE ON | OFF

T_f – temperature of ANTIFREEZE reaction

While ANTIFREEZE is activate and VNTLCD is off, freezing protection is on standby. On the main screen is show:



- ① **T_m** – measured temperature;
- ② **MAN | AUT** – operating mode MANUAL | AUTO
- ③ **STB | AF** – actual mode.
STB – VNTLCD is on standby,
AF – temperature decrease under pre-set T_f value,
- ④ **T_f** – pre-set temperature for ANTIFREEZE activation
- ⑤ actual fan speed: $V=00\%$ while VNTLCD is in standby mode, $V=99\%$ while ANTIFREEZE protection is active

3.2.6 TIME – to edit use 3.0 description

06:50 – time

Mo | Tu | Wd | Th | Fr | Sa | Su – day setting

Zone4 – unchangeable parameters, it show present Zone in weekly programmer.

3.2.7 DATE – to edit use 3.0 description

01-01-2011 – date

3.2.8 WEEKLY PROGRAMMER – to edit use 3.0 description

Calendar in weekly programmer has four options to choose:

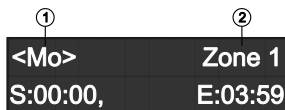
1 day– each day programmed individually;

7 d – whole week has the same settings;

5d+2d – week divided for weekdays (Mo-Fr) and weekend (So-Su)

OFF – w/o any program, VNTLCD control units with chosen settings continuously, till the user will chose new parameters of operating.

Screen 1



- ① chosen day, which will be programmed
<7d> whole week with same settings
<5d> settings for weekdays scheme (Mo-Fr)
<2d> settings for weekend (Su-So)
< Mo | Tu | Wd | Th | Fr | Sa | Su > programming each day separately
- ② **Zone 1**– chosen zone

Each day is divided in 6 separate time zones, each end of time zone is editable except 6th zone. Default settings:

S – start time of zone; **E** – end time of zone

Zone 1: S:00:00 – E:03:59 Zone 4: S:12:00 – E:15:59

Zone 2: S:04:00 – E:07:59 Zone 5: S:16:00 – E:19:59

Zone 3: S:08:00 – E:11:59 Zone 6: S:20:00 – E:23:59

Screen 2



- ③ **FS=RUN | STOP** – Fan is ON or OFF in given zone.
RUN – fan is ON;
STOP – fan is OFF in given zone. In that situation is recommended (Fs=STOP) to turn on ANTIFREEZE option to prevent freeze the room (look 3.2.5).
- ④ **T_s** – expected temperature in given zone
- ⑤ **V** – reg. MANUAL mode: Air flow (fan speed) setting. In AUTO mode air flow is suited depending on needs in range which was set.

3.2.9 SETTINGS CONFIG – to edit use 3.0 description

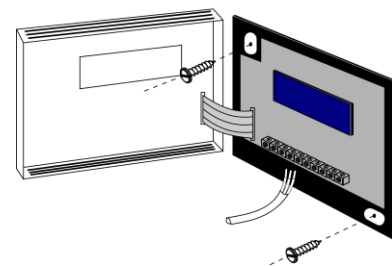
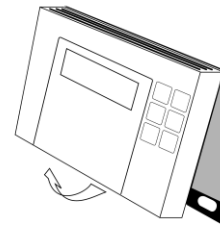
1. **Room PI gain:** – range is 1-5. It regards the speed of reaction for changes conditions in the room. Default setting is 1: the fastest reaction.
2. **Contr:** – contrast of the display (range 1-8)
BackL: – backlight (range 1-8)
3. **Corr T:** – correction of measured temperature (range ± 9) if showed result isn't proper.
4. **VENT correc.** – correction of analog output.
5. **WH** – hysteresis setting (minima 0,1C)
6. **VHI** – reg. AUTO mode: Maximal air flow (fan speed) in modulation range. Default 99%
VLO – reg. AUTO mode: Minimal air flow (fan speed) in modulation range. Default 30%
7. **Lang** – show chosen language, for changes reset panel according to next point.
8. **Rest. deflt.** – reset of settings, startup screen.

4. INSTALLATION

NOTE!

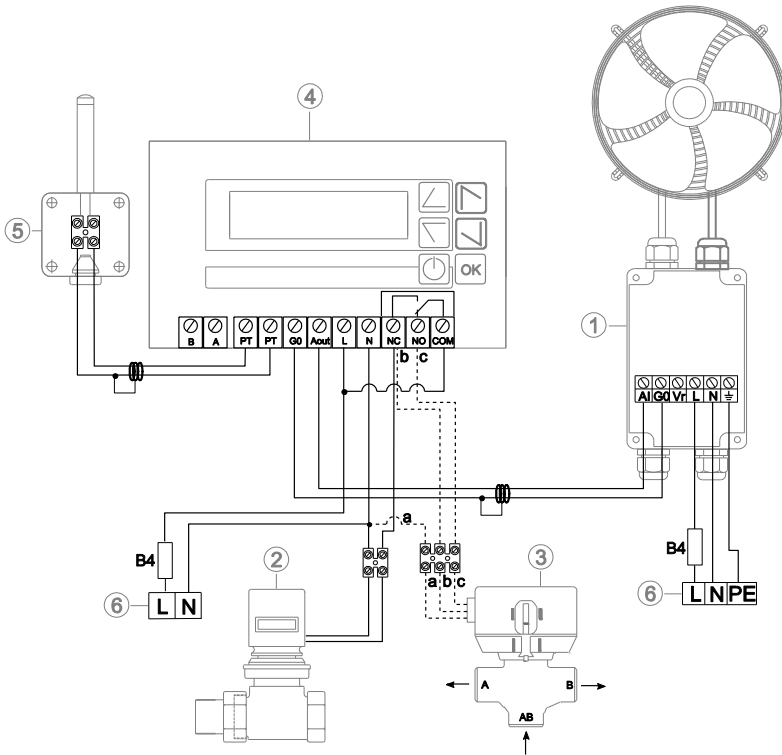
Mind to disconnect VNTLCD before starting work.

- Wires must me finished with cord end terminals;
- Dimension of supplying wire is OMY 2x1mm²
- Analog signal must be distributed with screened wire LIYCY 2x0,5mm² (screen-wire must be connected with G0 connector)
- Close the cover before start-up
- VNTLCD panel should be installed approx 1,5 m over the floor, apart of heat or chill source.

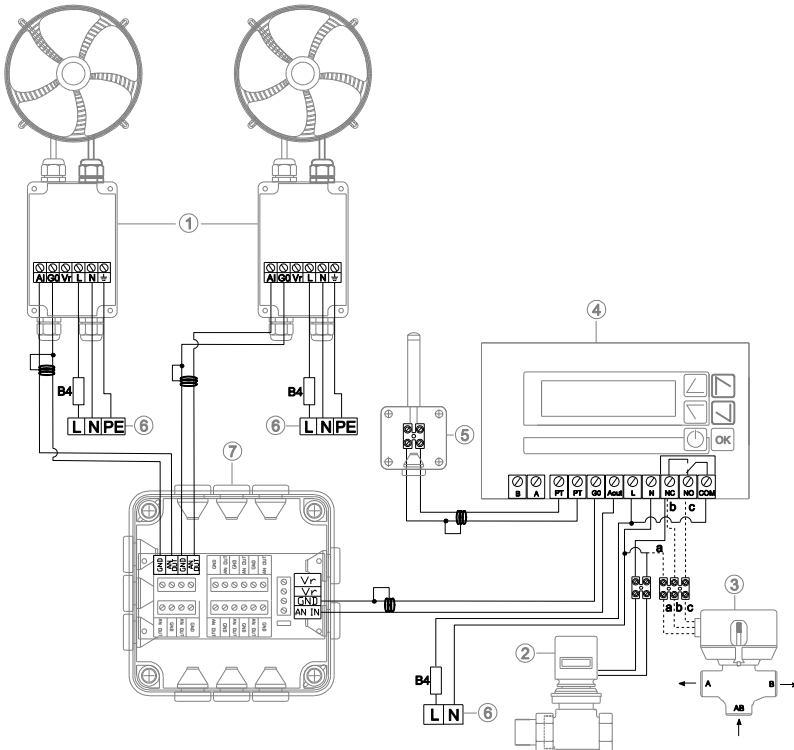


5. WIRING DIAGRAM

VNTLCD panel connected with Leo M-type unit.



VNTLCD connected with several Leo M-type units trough R10 signal distributor.

① Junction box of the fan (supply OMY 3x1mm², analog signal LIYCY 2x0,5mm² screened)② Valve with actuator SRV2d (SRS) (OMY 2x0,5mm²)③ Valve with actuator SRV3d (SRS3d) (OMY 3x0,5mm²)④ VNTLCD panel (supply OMY 2x1mm²)⑤ PT-1000 sensor (LIYCY 2x0,5mm² screened)

⑥ Power supply (switchboard) 230V/50Hz

⑦ signal distributor R10

A – water supply to the unit exchanger

AB – water supply to the valve

B – outlet of water

a – blue

b – black

c – brown