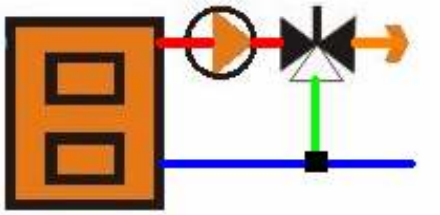
TEMPERATURE CONTROLLER FOR 3 WAY VALVE
WITH OR WITHOUT EXTERNAL TEMPERATURE COMPENSATION
(IZOTHERMAL REGULATOR) 3WM+A

DESCRIPTION

The unit is applicable for controlling the output temperature of electrically actuated 3 way mixing valve:
- Mode 1“Setp C =ExtTemp” – compensation of regulated temperature according to external temperature (isothermal regulation)
- Mode 2“ Setp C =Local T” – fixed temperature preset by user



Characteristics:
1. Control commands for „Open” and „Close” for directions of motor driven 3-way mixing valve.
2. Reads 1 or 2 temperatures
3. Parameters 16
4. User selectable mode of operation – fixed temperature or isothermal regulator
5. Push button Start/Stop
6. Power supply – 230 V AC, consumption <2VA
7. Outputs: 2 x – separate relays for commutation of :
- R1 n.o. – for “open” command
- R2 n.o. – for “close” command
8. LCD display – alphanumeric 8x2
9. Buttons for navigation – 3pcs. 1 Button for On/Off

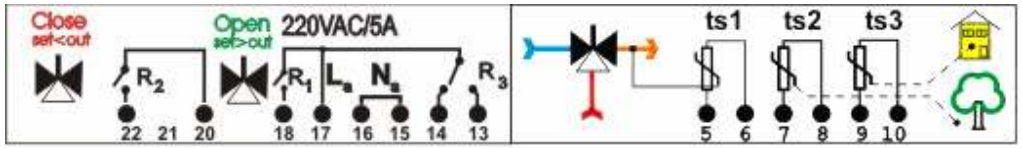
TECHNICAL DATA

Power Supply: 230V±10% /50Hz. ≤ 2VA
Operating temperature: -5T40, RH80%
Transport -20/+60 ° C
Sensor types: PTC 1k
Reading range : -40ºC÷150 ºC;
Accuracy ±1ºC if (-5ºC ÷ +100 ºC); else±4ºC.

Installation on DIN rail 35mm; for incorporation
Overall dimensions: 68x85x58 mm.
Case IP20
Outputs:
-Relay R1- 230V - 5A и 180W/AC3 (motor)
-Relay R2- 230V - 5A и 1500W/AC3(motor)
-Relay R3- 230V - 5A option

- Power supply 230V AC – (internal and R1) – #17 (Live “La”); #16 („N”);
- R1: valve – “open” – #18 (switches Live); #15 („N”); – 5A max.
- R2: valve – “close” – #20 (separate Live ”Lb”); #22 output – 5A max.
- R3: Option

WIRING DIAGRAM



Instalation and commusioning

Attention!
Danger of electric shock!
All activities involving installation and commissioning should be done while electric power is off

This device is dedicated to be incorporated in apartment electrical box with size of 4 or more poles or a cabinet and can be attached on 35mm DIN rail.

Attention!
3WMreg is not a safety device as by means of *EN60730-1-Annex H*

Attention!
Power supply should be applied via fuses Phase-La / Lb 6A max.

Sensors and outputs wiring:

1. Scheme 1 “Local Setp” (Regulates output temperature to a fixed set point)		
TS1: Regulated temperature	**TS2**:not used	**TS3**: Room temperature
R1: “Open” direction		**R2**: “Close” direction
2. Scheme 2 “TSyphReC” (Regulates output temperature to a variable set point, ambient temperature dependant)		
TS1: Regulated temperature	**TS2**: Ambient temperature	**TS3**: Room temperature
R1: отваряне		**R2**: затваряне

PARAMETERS:
„ROOM T.” – Set point of room temperature. *[range = 10º C ÷ 45º C]. Factory= 25 º C;*
1. „Set T.” – Set point of water temperature. *[range = -10º C ÷ 90º C]. Factory = 40 º C;*
2. „±Hist I” – Hysteresis 1 (fine regulation) *[range 2º C ÷ 10º C] Factory= +5º C*
3. „±Hist II” – Hysteresis 2 (coarse regulation) *[range Hist I +2º C ÷ Hist I+ 15º C] Factory = +15 º C*
4. „PulseDur” – Duration of signal pulses for “moving” the valve - either direction.
[range 0. 5sec ÷5.0 sec] Factory = + 1.0 sec;
5. „ON<>OFF” – Time constant of valve to change from fully open to fully close state.
[range 15 sec ÷ 250 sec] Factory . = 60 sec;
6. „Period+” – Period of applying signal pulse for direction “open”
[range 5 sec ÷ 60 sec] Factory = 15 sec”
7. „Period-” – Period of applying signal pulse for direction “close”
[range 5 sec ÷ 60 sec] Factory = 15 sec”
8. „Setp=” – Mode of operation : at fixed set point (local) or with temperature compensation based on ambient temperature
9. “dTAlarm” – Alarm temperature ,a ± margin from current set point. If temperature reading is “outside” this margin device starts emergency “open” or “close” procedure *[-35º C ÷ 35º C]. Factory = 35*

10.„EXT.T.L” – Lower point of ambient temperature
11.„EXT.T.M” – Middle point of ambient temperature
12.„EXT.T.H” – Highest point of ambient temperature
13.„Fluid Lo” – Lower possible temperature of fluid
14.„Fluid Hi” – Highest possible temperature of fluid
15.„FluidCorr” – General correction of fluid temperature setting

Others:

Fixed hysteresis 2 ºC	Fault notification - entire screen blinking
Visualization of R1 and R2 operation	Manual open / close
Important parameter change is password protected	

USAGE

Front pannel
Description
- two lines display
- 3x push buttons: for Up **„Up↑”**, for Down **„Dn↓”,** to select „**Set**”
- Push button for selection of operation mode (stop/ automatic)
- Indicaton of alarm event – blinking of backlight (if a sensor is defective)

Usage of buttons:

1. button **„Up- ↑”/„Dn-↓”**, navigates among list of parameter screens previous/next; activation with holding button "Set" increase / decrease selected value with 1
2. button „**Set**” change value of selected parameter
3. button „**AUTO/STOP-**” – selects the operational mode of the unit „AUTO”/ „STOP”

Available windows and usage

Window #1 - Main window
Displays temperature reading of sensors and operational mode of outputs.

```
B:XX  ZZ
= YY°C WW
```

Row 1: Outgoing water temperature "**XX", "ZZ**" relative valve status in percent. If there is no sensor - „**no**” is displayed, if sensor is shor circuit or resistance - “**sc**” is displayed.
Row 2: temperature set point "**YY**", "**WW**" ambient temperature when operating in ambient temperature correction mode

Meaning of symbols:
” + ” - When submitting the “opening” command, the sign "=" is changed to "+"
” **-** ” - When submitting the "close" command, the sign "=" is changed with "-"
„ ***** ” - If the maximum movement is exceeded in the respective direction, the output effects are discontinued (to save the life of the switching element) and the "sign" = "changes with " * "
„ **R** ” – While the room temperature displayed differs from the set point by more than -2÷ +1°C, the controller switches for 4 minutes in forced “opening” or “closing” mode to reach the set room temperature more quickly. Visualized by blinking the "°c" sign alternatively with "R

When "STOP" mode is enabled, row 2 alternately outputs "-STOP--"

Manual activation of outputs:
Press and hold **„SET”** button.
Press **„Up- ↑”** button to manual activation in the "open" mode
Press the "Dn- ↓" button to manually activate in the "close" mode

Using the Buttons for Parameters Adjustment:
Navigates among screens: buttons **„Up- ↑”** and **„Dn-↓”**.
To change required parameter – push the **„Set**” button.
Adjust the value using the buttons **„Up- ↑”** and **„Dn-↓” .** Confirm with the button **„Set**

Note: Adjustment of all parameters is possible only after pressing the "Set" button indicated by placing the value in "[" and "]". Confirm the value again with the "Set" button.

Window/Screen #1 - Room temperature
Display - set and readed room temperature.

```
ROOM T.25
[ 45°C] 1
```

Row 1: Displays the selected parameter "ROOM T." and the room temperature measured at 25°C
Row 2: The value of the parameter. Range 10ºC ÷ 45ºC. Screen [1]

Window/Screen #2 - temperature set point
Display - set the operating temperature

```
Set T.
[ 45°C] 2
```

Row 1: Displays the selected parameter "Set T."
Row 2: The value of the parameter. Range -10ºC ÷ 90ºC. Screen [2]
** If operation mode is based on ambient temperature this value is automatically selected and can not be adjusted manually*

Window/Screen #3 – Hysteresis fine adjustment

```
±Hist I
[ 2°C] 3
```

Row 1: Displays the selected parameter "± Hist I",
Row 2: The value of the parameter. Range 2ºC ÷ 10ºC. ". Screen [3]
If there is a difference between the set point and reading below the selected value, the adjustment is made only by an integral factor.
At a difference above the set value - adjustment is done with a fine step.
** to change this parameter a password is required*

Window/Screen #4 – Hysteresis of coarse adjustment

```
±Hist II
[ 10°C] 4
```

Row 1: Displays the selected parameter “±Hist II
Row 2: The value of the parameter. Range “±Hist I” + 2ºC ÷ 15ºC. ”Screen [4] .
If the difference between the set and the achieved between Hist I and Hist II regulation is done fine.
If the difference is outside the range, the adjustment is done with a coarse (fast) step.
** to change this parameter a password is required*

Window/Screen #5 –Emergency closing / opening temperature

```
dTAlarm
[ 65°C] 5
```

Row 1: Displays the selected parameter “dTAlarm”.
Row 2: The value of the parameter. Range “Set.T”±35ºC.Screen [5] .
** to change this parameter a password is required*

-at "dTAlarm"> "Set T." to an emergency closing is reached if the measured value exceeds the "dT alarm”
-in "dTAlarm" <"Set T." until emergency closing is reached when the measured value reduces below "dT Alarm"

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Window/Screen #6 –Duration of output pulse for fine adjustment

```
PulseDur
[3.5sec]6
```

Row 1: Displays the selected parameter "PulseDur"
Row 2: The value of the parameter. Range 0.5 ÷ 5.0sek. Screen [6] .
** to change this parameter a password is required*

Window/Screen #7 - Total Time to fully open / close the actuator.

```
ON<>OFF
[ 60sec]7
```

Row 1: Displays the selected parameter "ON<>OFF"
Row 2: The value of the parameter. Range 15÷250sec. Screen [7] .
** to change this parameter a password is required*

*16.***Window/Screen #8 -** Period of applying signal pulse for direction "open"

```
Period+
[10sec] 8
```

Row 1: Displays the selected parameter "Period+"
Ред 2: The value of the parameter. Range 10 ÷ 60sec. Screen [8] .
** to change this parameter a password is required*

*17.***Window/Screen #9 -** Period of applying signal pulse for direction "close"

```
Period-
[10sec] 9
```

Row 1: Displays the selected parameter "Period-"
Row 2: The value of the parameter. Range 10 ÷ 60sec. Screen [9] .
** to change this parameter a password is required*

Window/Screen #10 - Password field to access protected parameters.

```
Passwrd
[00]   10
```

Row 1: Displays the selected parameter "Passwrd". Screen [10]
Row 2: Set password.
Enter the required password to access the protected parameters.

Window/Screen #11 - Lower point of ambient temperature to describe the temperature curve (corresponds to "FluidHi")

```
Ext T L
[-25°C]11
```

Row 1: Displays the selected parameter "Ext T L"
Row 2: The value of the parameter. Range -35ºC ÷ "Ext T M-1" ºC. Screen [11]
** to change this parameter a password is required*
*** the parameter is only visible only if operation mode is ambient temperature correction*

Window/Screen #12 - Middle point of ambient temperature to describe the temperature curve (corresponds to average of "FluidLo and FluidHi")

```
Ext T M
[ 0 °C]12
```

Row 1: Displays the selected parameter "Ext T M"
Row 2: The value of the parameter. Range "Ext T L+1" ºC ÷ "Ext T H-1" ºC. Screen [12] .
** to change this parameter a password is required*
*** the parameter is only visible only if operation mode is ambient temperature correction*

Window/Screen #13 – Middle point of ambient temperature to describe the temperature curve (corresponds to of *"FluidLo")*

```
Ext T H
[ 25°C]13
```

Row 1: Displays the selected parameter "Ext T H"
Row 2: The value of the parameter. Range "Ext T M-1" ºC ÷ 60 ºC. Screen [13]
** to change this parameter a password is required*
*** the parameter is only visible only if operation mode is ambient temperature correction*

Window/Screen #14 – Minimum temperature of the fluid to describe the temperature curve. (corresponds to "ExtT H")

```
FluidLo
[ 40°C]14
```

Row 1: Displays the selected parameter "Fluid Lo"
Row 2: The value of the parameter. Range -10ºC÷"Fluid Lo"+3 ºC. Screen [14]
** to change this parameter a password is required*
*** the parameter is only visible only if operation mode is ambient temperature correction*

Window/Screen #15 – Maximum temperature of the fluid to describe the temperature curve. (corresponds to "Ext T L")

```
FluidHi
[ 85°C]15
```

Row 1: Displays the selected parameter "Fluid Ho"
Row 2: The value of the parameter. Range "Fluid Lo"+3÷90ºC. Screen [15]
** to change this parameter a password is required*
*** the parameter is only visible only if operation mode is ambient temperature correction*

Window/Screen #16 – Temperature correction FluidLo and FluidHi "total. (fast and simultaneous increase / decrease together of temperatures

```
CorrFlu
[  0°C]16
```

Row 1: Displays the selected parameter "CorrFlu"
Row 2: The value of the parameter. Range -5ºC ÷ + 5ºC. Screen [16]
** to change this parameter a password is required*
*** the parameter is only visible only if operation mode is ambient temperature correction*

Window/Screen #17 - Selection of the working circuit (with or without compensation for ambient temperature).

```
[Setp°C]
:ExtTemp
```

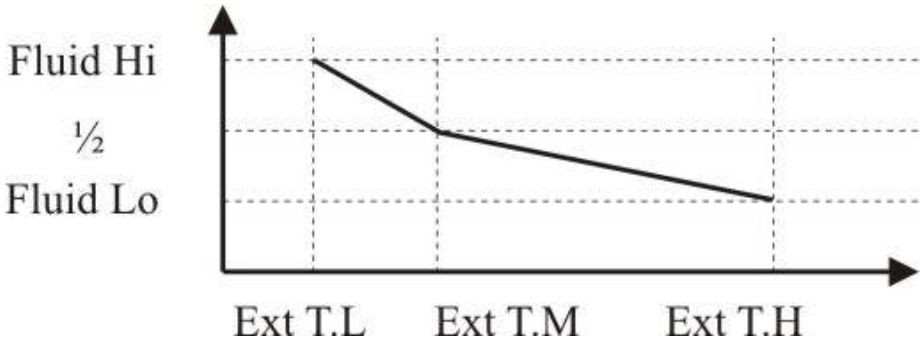
```
[Setp°C]
:Local T
```

Set the operational mode
Row 1: Displays the selected parameter "Setp°C".
Row 2: The selected scheme of work –Sch.1=":ExtTemp", Sch.2=":Local T",
Attention! For the correct operation of the device, observe the correct setting of the controller operating diagram
** to change this parameter a password is required*

```
02f90278
03ff
```

Window/Screen #18 - Calibration of temperature inputs (service mode).

Temperature curve



WARRANTY THERMS AND CONDITIONS:

The warranty period of the product is 24 months from the day of sale or installation by the installer but no more than 30 months from the date of manufacture. The warranty covers defects attributable to the manufacturer (manufacturing defects or defective materials). They are not subject to warranty defects in the product or damage to other equipment as a result of improper or unskilled installation, improper workflow selection and / or adjustment, unauthorized change of the product, natural disasters, non-standard power supply, improper storage or transportation

Warranty card

Please completely fill this card for valid guarantee

Manufacturer: Proxel Engineering Ltd **Type: Temperature controller 3WM+A**

Plovdiv, Bulgaria, office@proxel-bg.com

Serial number: **Data of manufacture:**

..... **.....**

Seller/Installer:.....

Address: .....

Date of (sale) Instalation: .....

Installer/ seller :.....

(name and signature)

Instalation is made by ☐ **Installer** ☐ **Client**

(please mark the true one)

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2006/95/EC