Dr.Heron

TEMPERATURE - CONTROLLER

User Guide

VER. 1.04

TABLE OF CONTENT

1.0 Introduction. Important parts of the guide

- Please, at least read paragraph 1.1, 1.2, 1.3 and 3.0 before you take it into service.
- Are you going to use heating or outdoor temperature it is necessary to enable these functions, see how in paragraph 2.2 and 2.3

1.1 Choose menu with the knob

Please, check out the laminated tablet, showing all the measurements and settings available :

Button	TEMPERATURE	SET TEMP	OUTDOOR	HEATING	VENTILATION	MIN VENT	TIMER	TIME	SYSTEM	ALARM
	Temperature	Set Temperature	Outsite temperature	Heating %	Ventilation	Minimum Ventilation	Timer Cycle	Time	Supply Voltage	Alarm Code 0 = OK
NEXT	Temperature offset	Profile, Ventilation Setup	Inlet Cut at Low Temperature	Heating Hour Counter	Inlet I	MV Cutback by lower temperature	Timer Max. Runtime	Date	Station No.	Low Temperature
NEXT 2			Temperature at No Cutback	Forced Minimum Heating	Fan Speed A	Allowed Lower Temperature	Temperature By Zero Runtime	Year	Version No.	High Temperatur
NEXT 3			Temperature at Full Cutback	Heating Band	Exhaust Dampers U		Temperature By Max Runtime		Dip switch	Low Temperature Relative to Set
NEXT 4			Outdoor Temperature Offset		Ventilation Band					High Temperature Relative to Set
NEXT 5										Summer rise by High Relative T.
Read Only	User Settings	Installation	User Setup						**Dr.Heron**	

The laminated table uses 3 different colours to tell the properties of the figure in the display:

Read Only	Measurements and calculated values
User Settings	Settings to be made by user
Installation settings	Settings considering the specific use
User Setup	Settings to be made according to the specific setup

How to read this User Guide

- In this guide the choice of menu and eventually one or more presses on the **NEXT** - key are shown in **BOLD**

- **ALARM + NEXT 4** means the knob turned to point at **ALARM** followed by pressing the **NEXT** - key 4 times

1.2 Settings, Generally

The arrow keys are used to change settings.

▲	Increases the figure
▼	Reduces the figure

Hold the arrow key for rapid changing of the figure. If you press it for more than 3 seconds it will prompt a beep and start running 10 times as fast

- Measurements and calculated values are read only.
- For safety reasons there are limits how high or low you are allowed to go on the specific setting.

1.3 Locking the Changing of the Settings

You may want to avoid that unauthorized people could change the settings:
Set the dip switch # 4 to "ON". The lock function will automatically activate after 10 minutes from the last time you pressed a key or the turn knob.

Default is lock function not activated.

How to unlock:

Turn knob to point at "**SYSTEM** "and then press both arrow keys at once.	There will sound 4 short beeps

1.4 Setting the Time

Data will be logged continuously to be used by the personal computer to show data as graphics. It is essential that the time has been set properly.

- Time should be changed 2 times yearly according to the "daylight saving time"

TIME + NEXT	Time
TIME + NEXT ^{2}	Date
TIME + NEXT ^{3}	Year

Tip! If you have more controllers connected on the RS485 network, they will be updated, if you press the NEXT button for 2 seconds.

2.1 Setting the Set Temperature

SET TEMP	Display shows **Set Temperature**

Use arrow keys to make changes.

2.2 Outside Temperature

Default, the outside temperature is not switched on.
Turn knob to **OUTDOOR**, and press **START/STOP** for 2 seconds to activate. Same procedure to switch it off again. Display shows -

OUTDOOR	Shows the **Outside temperature**

If you have multiple controllers connected through RS485 network, you can do with one sensor. The controller that has the sensor connected, should have dip switch # 1 set to ON.

The outside temperature has influence on two things:

1. When outside air becomes colder, the inlet valves will be limited so that it will go further in the room and be mixed better with the indoor air. Inlet valves should be connected to the **I** -output

2. Overriding the "High temperature Relative to Set", see paragraph 3.4 "Outside Temperature Influence on Alarm Function"

2.3 Heating

Default, the heating function is not switched on.
Turn knob to **HEATING**, and press **START/STOP** for 2 seconds to activate. Same procedure to switch it off again. Display shows -

HEATING	Display shows the **Applied Heat** in %

The PID controlling function will try to keep the Set Temperature as wanted. Therefore you may notice any figure from 0 to 100 % even if the temperature equals the Set Temperature, or beyond.

Activate manual mode by pressing **START/STOP** briefly. The LED flashes and heating stops, display showing "0". Use the arrow keys to set any value between 0-100%. It will stay in this mode until you press **START/STOP** again. Notice the flashing LED which is warning you, that the controller is not in "automatic mode".

2.4 Controlling two sources of heating

(Installation: dip switch 6 ON for two sources of heating)

You may have two sources of heating, like water pipes and additional electric heating. First priority is the analog output, which controls a proportional valve from closed to full open, **HEATING** showing 0-50%. Secondary the heating relay controls the electrical heating digitally - on/off, from 1% to full, **HEATING** showing 50-100%.

2.5 Meter for Counting Hours of Heating

There is a meter for counting hours of heating, converted to full, 100%. It only works properly for one source of heating.

HEATING + NEXT	**Hours** of heating, converted to 100%

The meter is reset by pressing arrow down key until it reaches "0"

2.6 Ventilation

VENTILATION	**Ventilation Rate** in % The dot at the left will flash, when - due to low outside temperature - ventilation rate is reduced

The PID controlling function will try to keep the Set Temperature as wanted. Therefore you may notice any figure from 0 to 100 % even if the temperature equals the Set Temperature, or beyond.

Activate manual mode by pressing **START/STOP** briefly. The LED flashes and Ventilation stops, display showing "0". Use the arrow keys to set any value between 0-100%. It will stay in this mode until you press **START/STOP** again. Notice the flashing LED which is warning you, that the controller is not in "automatic mode".

2.7 Minimum Ventilation

Minimum ventilation rate is default 30%, but it will be reduced gradually if indoor temperature becomes lower than Set Temperature. You may alter this value.

MIN VENT	**Minimum Ventilation Rate** in %

2.8 Air Inlets, Fan Speed, Exhaust

There are three different 0-10 V control signal outputs, **I, A** and **U**, which default is used as described in the table. You may use it different

VENT	Ventilation, in general. Determine where the bends are
VENT + NEXT	**I, Air Inlets** in % percent of full opening
VENT + NEXT^2	**A, Fan Speed** in % percent from minimum to full speed
VENT + NEXT^3	**U, Exhaust, Dampers** in % percent of full opening

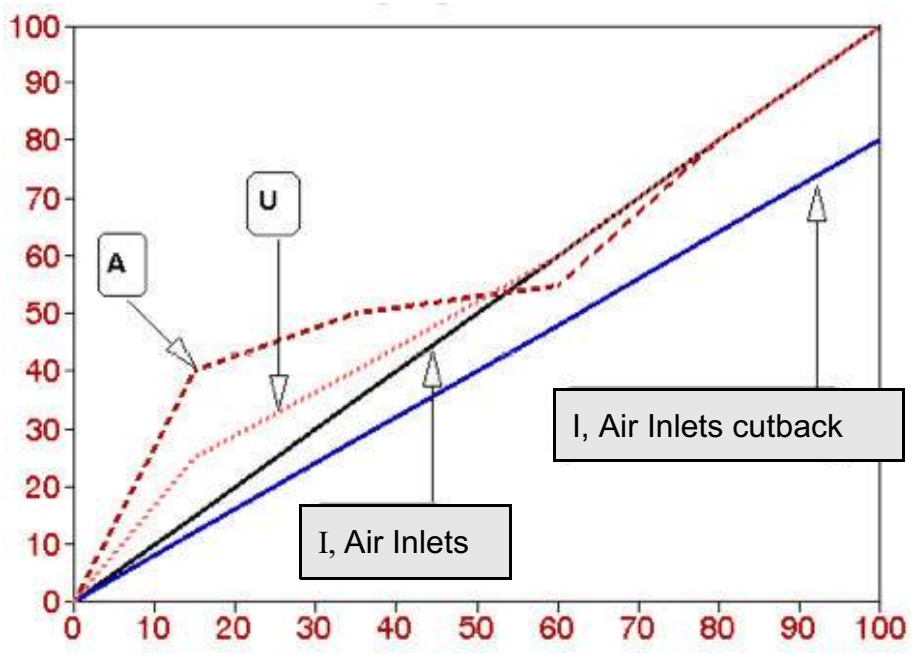
2.9 Type of Ventilation Setup, PROFILE

The relation between **I, A** and **U** may be altered as a package, called PROFILE
Choose one of four PROFILES

SET TEMP + NEXT	PROFILE No., Type of Ventilation Setup

PROFILE	OUTPUT	Bend 1	Bend 2	Bend 3	Bend 4	Bend 5	Bend 6
No. 1	**VENTILATION**	0	15	35	60	80	100
	I -Air Inlets (80%) **I** -Air Inlets (60%)	0	12 9	2821	4836	6448	8060
	A -Fan Speed	1	40	50	55	80	100
	U -Exhaust	20	45	40	60	80	100
No. 2	**U** -Exhaust	0	25	58	100	100	100
No. 3	**U** -Exhaust	0	0	0	0	50	100
No. 4	**U** -Exhaust	0	0	0	10	50	100

- **I** -Air Inlets, Two examples to be set at **OUTDOOR + NEXT**
- At PROFILE 2-4, it is only U that is different from the PROFILE 1.
- The figures concerning I, Air Inlets are the position at full cutback, when it is cold outside, below - 5°C



2.10 Outside Temperature Influence on Air Inlets

By lower outside temperature you may want to reduce the air inlet openings (pull the flap) to get more under-pressure in the room. Thereby increase the speed of the cold air to get it mixed better before it reaches the animal zone.

OUTDOOR + **NEXT**	**Air Inlet opening in cold weather** in % percent of normal opening (default 80%)
OUTDOOR + **NEXT²**	**Outside Temperature at above which the inlets is not cutback** (default 10°C)
OUTDOOR + **NEXT³**	**Outside Temperature at below which the inlets is fully cutback** - e.g. 80% (default -5°C)

3.0 Alarm Function

Turn knob to **ALARM** to see the state of the alarm function.
The **START/STOP** - button toggles the alarm monitoring on and off.

ALARM + START/STOP	Toggles the Alarm State on and off

ALARM LED	STATE
Lights up	OK, Monitoring engaged
Flashes	Alarm Situation has been triggered. Display shows code
Off	Alarm Monitoring off

3.1 Test the Alarm

ALARM + ▲ ▼ Both Arrow Keys Simultaneously	Disply shows **tESt**

Turn the knob or press any key to stop.

3.2 States of Alarm

A flashing ALARM LED indicates that an alarm condition has been triggered.

Turn the knob to **ALARM** to see code No. which is a key to determine the cause.

KODE No.	STATE
-1	OFF - Alarm Monitoring off
0	OK
1	Too Low Temperature
2	Too High Temperature
3	Too Low Temperature, Relative to the Set Temperature
4	Too High Temperature, Relative to the Set Temperature
7	Temperature Sensor Input Short Circuit
8	Broken cable at Temperature Sensor Input
11	Too Low voltage on battery. Power supply running on battery.
12	Main power off. Power supply running on battery.
13	Heatwave - warning. No siren activated
14	Outside Temperature Sensor Input Short Circuit
15	Broken Cable at Outside Temperature Sensor Input or Comm.- error

3.3 Setting the alarm limits

Button + key	Alarm Limit	Default
ALARM + NEXT	Low Temperature Limit	16°C
ALARM + NEXT [2]	High Temperature Limit	32°C
ALARM + NEXT [3]	Low Temperature Limit, Relative to the Set Temperature	- 4°C
ALARM + NEXT [4]	High Temperature Limit, Relative to the Set Temperature	+ 4°C
ALARM + NEXT [5]	Summer Rise (Heatwave function)	3°C

3.4 Outside Temperature Influence on Alarm Function

The High Temperature Limit, Relative to the Set Temperature may be overrided by a calculated figure: Outside Temperature + Summer Rise.
The Summer Rise is default + 3°C

ALARM + NEXT [5]	**SUMMER RISE**

- If = 0.0 Summer Rise function is not active

The High Temperature Limit is always active

3.5 Soft Alarms

The low Temperature alarm limits, code 1 and 3 may be made "soft" meaning that they will not trigger the alarm relay (Siren) but only the flashing LED on the front panel.

How ?

Toggle the function by pressing **START/ STOP**, when displaying these two alarm limits:
ALARM + NEXT or **ALARM + NEXT** [3]

The **START/ STOP** LED is flashing when the alarm limit is soft.

3.6 Beep by Alarm Situation

When an alarm situation is present there will sound a double beep every 10 sec. This is convenient, also by soft alarms. Default, this function is on, but may be switched off by setting the dip switch 5 to "ON". The dip switch is situated behind the shiny cover on the front panel, that you can use a coin to unscrew, see photo at paragraph 5.1.

4.1 Logging data

Every 10 minutes all data will be logged. These data may be transferred to a personal computer through an optional RS485 / RS232 converter.

Use software PROFESSOR PARTYLINE for WINDOWS® to browse the data and show line charts of the temperature measuring on each input. Settings may be entered, controlled and compared with different settings scenarios.

5.1 Reset to Factory Settings

Set the dip switch No.8 to on. When power is switched on, Factory Settings will be reinstalled. Any logged data will also be lost!
Remember to set the dip switch back on "Off" again.
Time, date and year must be set again.

The dip switch is situated behind the shiny cover on the front panel. Use a coin to unscrew.

7.1 Sprinkling and timer

AUX1-output may be controlled by a timer function. The knob should point at **TIMER**

The Knob Position	Function	Default	When Soaking
TIMER	**CYCLE** , minutes	60 minutes (1-1440)	1 minute
TIMER + NEXT	**Runtime** , seconds	20 sec (0-999)	30 sec
TIMER + NEXT [2]	Temperature by Zero Runtime	20 °C (0-36)	20 °C
TIMER + NEXT [3]	Temperature by Max. Runtime	30 °C (0-36)	20 °C

- High and low temperature may be switched. Then the function are reversed.
- The function are disabled if settings are = 0°C or 36°C
- The function are constantly running if the temperature settings are made equal. E.g. 30 sec every minute.

Choose between "thermostate-like"hysteresis or a gradual transition	
ON/OFF Hysteresis **Only Zero or Max. Runtime**	Make the temperature settings 1°C or 2°C from each other.
Gradual Transition of the Runtime	Make the temperature settings more than 2°C from each other.