User manual
ALFA(NET) 51 RTDN

Rail-Thermostat with real time clock.
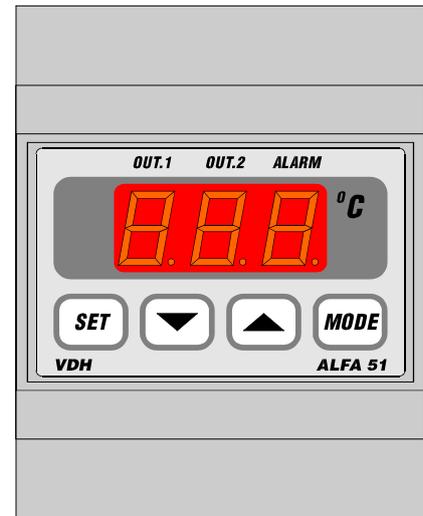
VDH doc. 072243	Version: v1.0	Date: 16-10-2007
Software: ALFANET51 RTDN	File: Do072243.WPD	Range: -50/+50,0˚C

* Installation.
On the connection diagram of the **ALFA(NET) 51 RTDN** is shown how the sensors, power supply and relays should be connected. After connecting the **ALFA(NET) 51 RTDN** to the power supply, a self test function is started. As this test is finished, the measured temperature appears in the display. Normally this is the temperature of sensor-1, unless sensor-2 is active as control sensor (P05=1) in this case the average temperature of both sensors is displayed and used for control. The *ALFANET 51 RTDN* is by use of the **ALFANET PC-INTERFACE** controllable on the PC.

* Control.
The **ALFA(NET) 51 RTDN** thermostat can be controlled by four pushbuttons on the front. These keys are:
SET   - view / change the set point.
UP   - increase the set point.
DOWN   - decrease the set point.
MODE   - relay status key.

* Viewing set point.
By pushing the **SET** key the set point appears in the display. The decimal point of the last display starts blinking. A few seconds after releasing the **SET** key the set point disappears and the measured temperature is shown again in the display.

* Changing set point.
Push the **SET** key and the set point appears in the display. Release the **SET** key. Now push the **SET** key again together with the **UP** or **DOWN** keys to change the set point. A few seconds after releasing the keys the measured temperature shows again in the display.

* Viewing the individual sensors.
By pressing the **UP** and **DOWN** key together, the individual sensors can be shown in the display. After releasing the keys, the measured temperature of sensor-1 can be shown by pushing the **UP** key or the measured temperature of sensor-2 can be shown by pushing the **DOWN** key. A few seconds after releasing the keys the (average) temperature shows again in the display.

* Status of the Relays.
By pushing the **MODE** key the display shows the status of the relays. Each display segment shows the status of the relay output, showing 0=off and 1=on. The code 110 means relay 1 and 2 are on and relay 3 is off.

* <u>Setting internal parameters.</u>

Next to the adjustment of the set point, internal settings can be made like differential, sensor offset, set point range and the functions of the thermostat.

Push the **DOWN** key for more than 10 seconds, to enter the 'Internal Programming Menu'. In the left display the upper- and lower-segment are blinking. With the **UP** and **DOWN** keys the required parameter can be selected (see the parameter table).

If the required parameter is selected, the value can be read-out by pushing the **SET** key. Pushing the **UP** or **DOWN** key to change the value of this parameter.

If after 20 seconds no key is pushed, the **ALFA(NET) 51 RTDN** changes to the normal operation mode.

* <u>Adjustment sensors.</u>

Sensor-1 can be adjusted by using the Sensor Offset parameter 06 and Sensor-2 can be adjusted by using the Sensor Offset parameter 07. Indicates a Sensor e.g. 2˚C to much, the according Sensor Offset has to be decreased by 2˚C.

* <u>Error messages.</u>

In the display of the **ALFA(NET) 51 RTDN** the following error messages can appear:

LO	- Minimum alarm.	<u>Solution E1,E2</u>:
HI	- Maximum alarm.	- Check if the sensor is connected correctly.
E1	- Sensor-1 failure.	- Check sensor (1000Ω at 25˚C).
E2	- Sensor-2 failure.	- Replace sensor.
EEE	- Settings are lost.	<u>Solution EEE</u>:
		- Reprogram the settings.

-L- - In case of sensor short-circuit the display alternates between error-code **E..** and **-L-**, as indication for a short-circuit sensor.

-H- - In case of open-circuit sensor the display alternates between error-code **E..** and **-H-**, as indication for a open circuit sensor.

Reset Alarm. When a error-messages appears it can be resetted by pushing the **SET** key. The function of this key depends on parameter P37.
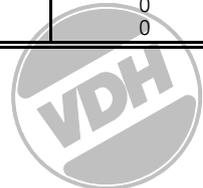

* <u>Technical data.</u>

Type	: ALFA(NET) 51 RTDN rail thermostat
Range	: -50/+50,0˚C, above -10˚C display per 0,1˚C
Supply	: 12Vac 50/60Hz (-5/+10%)
Display	: 3-digit 7-segment display
Relays	: Ry1= SPST(NO)250V/8A (cos φ=1) of 250V/5A (cos φ=0.4)
	Ry2= SPST(NO)250V/8A (cos φ=1) of 250V/5A (cos φ=0.4)
	Ry3= SPDT(NO/NC)250V/8A (cos φ=1) of 250V/5A (cos φ=0.4)
	Relays have one common (C).
Control	: By push buttons on front.
Front	: Polycarbonate IP65
Sensors	: 2x SM 811/2m (PTC 1000Ω/25˚C).
Communication	: RS485-Network (2x twisted pair shielded cable min. 0,75mm^2)
Dimensions	: 90 x 71 x 58mm (HWD)
Panel cut out	: 46 x 71mm (HW) for front mounting
Accuracy	: ± 0,5% of the range.

- Provided with memory protection during power failure.
- Connections with screw terminals on the back side.
- Equipped with sensor failure detection.
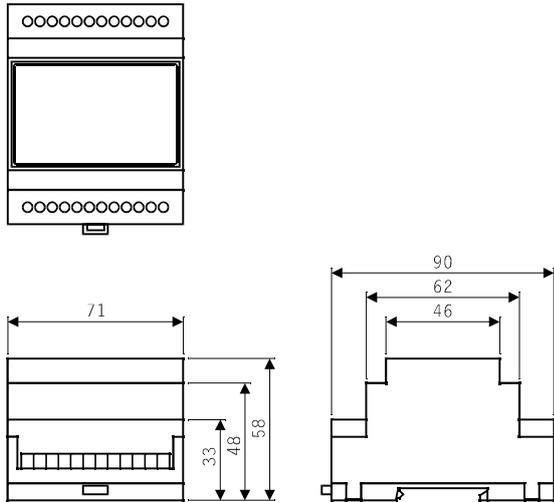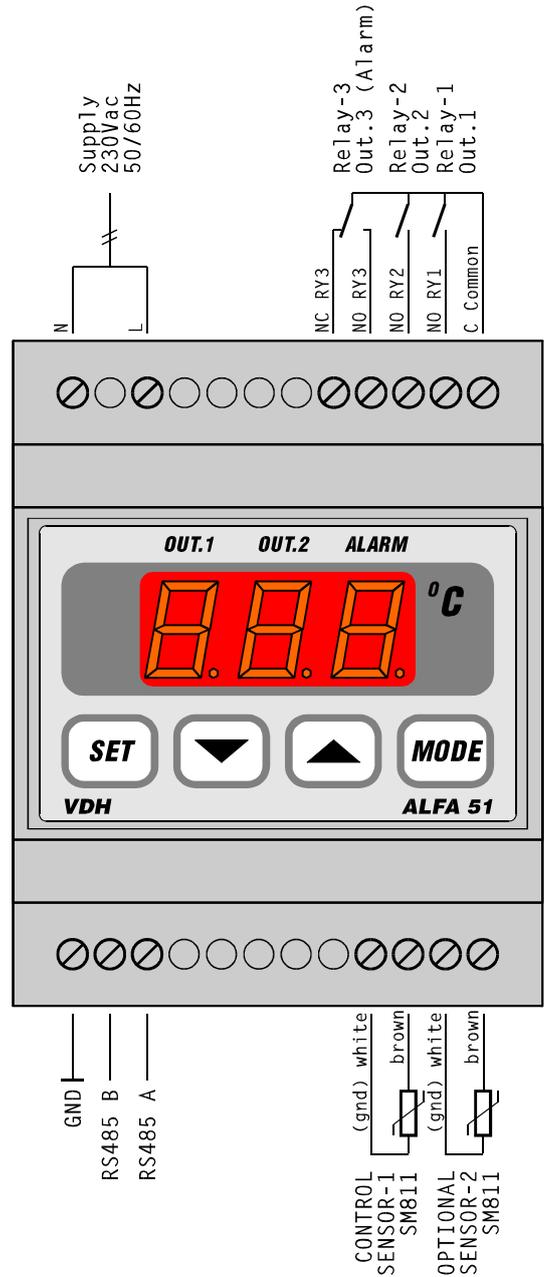- Special versions are on request available.

* Parameters ALFA(NET) 51 RTDN

Para-Meter	Description Parameter	Range	Standard value
01	Function Relay 1 1 = Cool 2 = Heat 3 = Alarm	1..3	1
02	Function Relay 2 (ditto)	1..3	2
03	Function Relay 3 (ditto)	1..3	3
05	Function sensor-2 0 = Not 1 = Control 2 = Alarm	0..2	0
06	Offset temperature sensor-1	-15.0..+15.0˚C	0.0
07	Offset temperature sensor-2	-15.0..+15.0˚C	0.0
10	Switch on relay 2 by 0 = Temperature 1 = Time	0..1	0
11	Switch on relay 3 by (ditto)	0..1	0
12	Switch on delay relay 2	0..99 Minutes	15
13	Switch on delay relay 3	0..99 Minutes	15
14	Switching differential relay 1	0.1..15.0 ˚C	0.5
15	Set point offset relay 1	-15..+15 ˚C	0.0
16	Switching differential relay 2	0.1..15.0 ˚C	0.5
17	Set point offset relay 2	-15..+15 ˚C	0.0
18	Switching differential relay 3	0.1..15.0 ˚C	0.5
19	Set point offset relay 3	-15..+15 ˚C	0.0
20	Switch on delay cooling	0..99	0
21	Switch off delay cooling	0..99	0
22	Parameter 20/21 in Sec. or Min.	0=Seconds,1=Minutes	0
23	Minimum on-time cooling	0..99 Minutes	0
24	Minimum off-time cooling	0..99 Minutes	0
25	Minimum set point	-50.0..+50.0˚C	-50
26	Maximum set point	-50.0..+50.0˚C	+50
27	Read-out above -10˚C per 1˚C	0=No, 1=Yes	0
30	Alarm type (to set point)	0 = None 1 = Absolute 2 = Relative	1
31	Minimum alarm set point	-50.0..+50.0˚C	-50
32	Maximum alarm set point	-50.0..+50.0˚C	+50
33	Time delay minimum alarm	0..99 Minutes	0
34	Time delay maximum alarm	0..99 Minutes	0
35	Relay function alarm relay	0=fail safe, 1=Control	0
36	Reset alarm relay after recovering alarm	0=No, 1=Yes	0
37	Reset alarm relay after manual reset	0=No, 1=Yes	0
40	Start up delay after power failure	0..99 Minutes	0
41	Forced relay function at sensor failure	0 = None 1 = Cool 2 = Heat	0
50	Time hours	0..23 hours	–
51	Time minutes	0..59 minutes	–
52	Time offset	-99..99 min./year	0
53	Day of the week	1..7 (=monday..sunday)	–
60	Night offset weekday	-50.0..+50.0˚C	0
61	Night offset weekend	-50.0..+50.0˚C	0
62	Night offset abs/rel. 0 = absolute 1 = relative	0..1	0
63	Start time weekday day position hours	0..23/OFF hours	OFF
64	Start time weekday day position min.	0..59/OFF min.	OFF
65	Start time weekday night position hours	0..23/OFF hours	OFF
66	Start time weekday night position min.	0..59/OFF min.	OFF
67	Start time weekend day position hours	0..23/OFF hours	OFF
68	Start time weekend day position min.	0..59/OFF min.	OFF
69	Start time weekend night position hours	0..23/OFF hours	OFF
70	Start time weekend night position min.	0..59/OFF min.	OFF
90	Network number	1..255	1
95	Software version	0..255	0
96	Production year	00..99	0
97	Production week	1..52	1
98	Serial number (x1000)	0..255	0
99	Serial number (units)	0..999	0

* **Dimensions.**

90
62
46

71
58
48
33

* **Connections.**

Supply
230Vac
50/60Hz

Relay-3
Out.3 (Alarm)
Relay-2
Out.2
Relay-1
Out.1

N   L

NC RY3   NO RY3   NO RY2   NO RY1   C Common

OUT.1   OUT.2   ALARM

^{0}C

SET   ▼   ▲   MODE

VDH   ALFA 51

GND

RS485 B

RS485 A

CONTROL
SENSOR-1
SM811
(gnd) white
brown

OPTIONAL
SENSOR-2
SM811
(gnd) white
brown

* **Address.**

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