User manual
ALFA 71 PI Spec.
Thermostat.

With solid state output

VDH doc. 080348	Version: v1.1	Date: 08-10-2010
Software: 042779 ALFA71WA	File: Do080348.wpd	Range: -50/+50,0˚C

* Installation.

On the top side of the **ALFA 71 PI SPEC** is shown how the sensors, power supply, relays and 0..10Vdc Solid-State output has to be connected. After connecting the **ALFA 71 PI SPEC** to the power supply, a self test function is started. As this test is finished the measured temperature appears in the display.

* Control.

The **ALFA 71 PI SPEC** thermostat can be controlled by four pushbuttons on the front.
These keys are:

SET	- view / change the setpoint.
UP	- increase the setpoint.
DOWN	- decrease the setpoint.
˚C	- hidden push button above the **SET** key and behind **˚C** symbol.

* Viewing setpoint.

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

* Changing setpoint.

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

* Status of the Relays.

By pushing the hidden **˚C** 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.

* Setting internal parameters.

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

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

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 71 PI SPEC** changes to the normal operation mode.

* Adjustment sensors.

The temperature sensor can be adjusted by using the Sensor Offset parameter 06.
Indicates the Sensor e.g. 2°C to much, the Sensor Offset has to be decreased with 2°C.

* Error messages.

In the display of the **ALFA 71 PI SPEC** the following error messages can appear:

LO   - Minimum alarm.   <u>Solution E1</u>:
HI   - Maximum alarm.   - Check if the sensor is connected correctly.
E1   - Sensor-1 failure.   - Check sensor (1000Ω at 25°C).
                                - 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.

* Technical details.

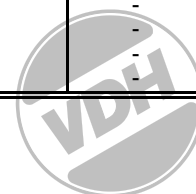|	
Type	: ALFA 71 PI SPEC Thermostat with Solid State output
Range	: -50/+50,0°C, above -10°C display per 0,1°C
Supply	: 12Vac 50/60Hz (-5/+10%) or else see product sticker
Display	: 3-digit 7-segment display
Relays	: Ry1= SPST(NO) 250V/8A (cosφ=1) of 250V/5A (cos φ=0.4)
	Ry2= SPST(NO) 250V/8A (cosφ=1) of 250V/5A (cos φ=0.4)
	Ry3= SPDT(NO/NC) 250V/8A (cosφ=1) of 250V/5A (cos φ=0.4)
	Relays have one common (C).
Control	: By push buttons on front.
Front	: Polycarbonate IP65
Sensor	: SM 811/2m (PTC 1000Ω/25°C).
Analog output	: 0/10 Vdc Solid State output (Imax. 10mA)
Dimensions	: 35 x 77 x 71,5mm (HWD)
Panel cutout	: 28 x 70mm (HW)
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.
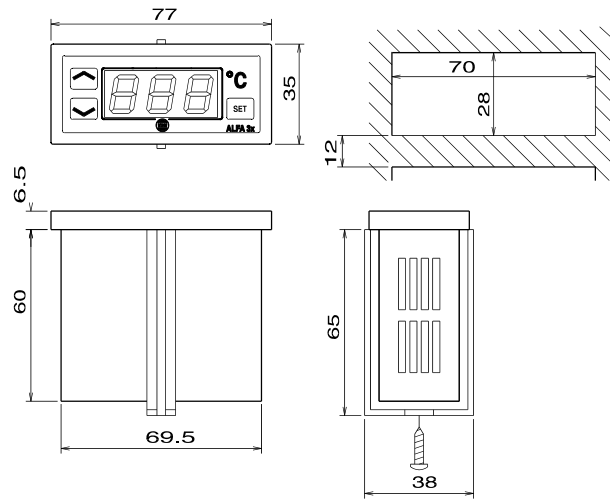- Special versions on request available.

* Function diagram.
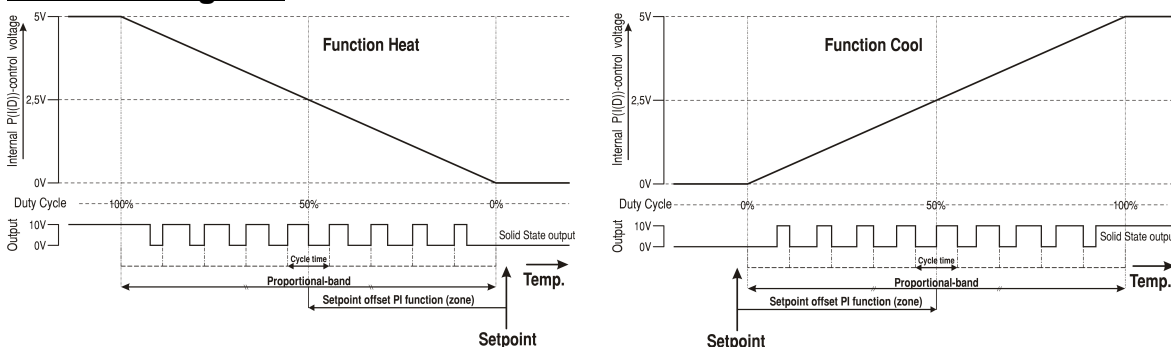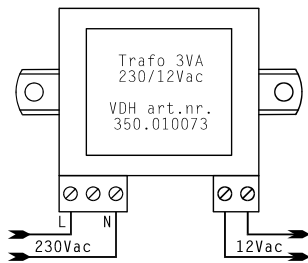
*   **Parameters ALFA 71 PI SPEC**

Para-meter	Description Parameter		Range		Default
01	Function Relay 1	1 = Cool 2 = Heat 3 = Alarm	1..3		1
02	Function Relay 2	(same as relay 1)	1..3		2
03	Function Relay 3	(same as relay 1)	1..3		3
04	Function Solid-State PI-output 0-10V	1 = Cool (on/off) 2 = Cool (PI-mod) 3 = Heat (on/off) 4 = Heat (PI-mod)	1..4		1
05	Function sensor 2	0 = non 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	0 = Temperature 1 = Time	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	Switching differential solid-state	(P04=1,3)	0.1..15.0	°C	0.5
21	Set point offset solid-state	(P04=1,3)	-15..+15	°C	0.0
22	Switch on delay cooling		0..99		0
23	Switch off delay cooling		0..99		0
24	Parameter 22/23 in Sec. or Min.	0 = Seconds 1 = Minutes	0..1		0
25	Minimum on-time cooling		0..99	Minutes	0
26	Minimum off-time cooling		0..99	Minutes	0
27	Minimum set point		-50.0..+50.0	°C	-50
28	Maximum set point		-50.0..+50.0	°C	+50
29	Read-out above -10°C per 1°C		0 = No, 1 = Yes		0
30	Alarm type	0= None 1= Absolute 2= Relative	0..2		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	Function alarm relay	0 = Fail safe alarm 1 = Control alarm	0..1		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..2		0
50	Setpoint offset PI function (zone)		-30.0..+30.0	°C	0.0
51	P-band setting		0.0..+30.0	°C	5.0
52	I-time setting	(999 means off)	1..999	Seconds	999
53	Duty Cycle time adjustment		1..999	Seconds	20
54	PI off: Above set point at heating and below set point at cooling		0= No, 1= Yes		0
95	Software version		-		-
96	Production year		-		-
97	Production week		-		-
98	Serial number (x1000)		-		-
99	Serial number (units)		-		-

VDH

* <u>Dimensions.</u>

```
            77
        ┌─────────┐
        │ ^  ┌──┐ │ °C
        │    │  │ │           ┌──── 70 ────┐
        │ v  └──┘ │SET    28  │            │
        └─────────┘           └────────────┘
                               12
   6.5
        ┌─────────┐           ┌──────────┐
        │         │           │  ║║║     │
    60  │    ║    │        65 │          │
        │         │           │  ║║║     │
        └─────────┘           └──────────┘
           69.5                    38
```

* **<u>Connections.</u>**

```
   ┌─────────────┐
   │ Trafo 3VA   │
   │ 230/12Vac   │
   │             │
   │ VDH art.nr. │
   │ 350.010073  │
   │             │
   │ ⊘ ⊘ ⊘   ⊘ ⊘ │
   └─────────────┘
      L   N   12Vac
      230Vac
```

ALFA 71 spec

| | 1 | 2 | 3 | 4 | 5 | | 6 | 7 | 8 | 9 | 10 |

Common
Ry1-no
Ry2-no
Ry3-no
Ry3-nc

12Vac inp.
12Vac inp.
Common 0V(-)
Temp.sens. br. wi.
Out 0/10V=(+)

Temp.sens.
SM811

RELAY   SUPPLY   OUTPUT
OUTPUTS   12Vac   0-10Vdc

VDH