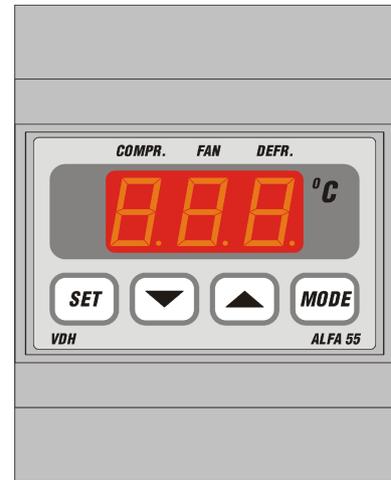


User manual

ALFA 55 RTDF and ALFANET 55 RTDF

Cool/Defrost thermostat with fan-control and realtime defrost.



VDH doc. 030087

Version: v2.1

Date: 10-03-2008

SW: 992649_ALFA(NET) 55/65/75 RTDF

File: Do030087.wpd

Range: -50,0/+50,0°C pro 1°C

* Description.

The **ALFA(NET) 55 RTDF** is a cool/defrost thermostat for rail-mounting, with various defrost-, and fan-control settings. The thermostat has 6 Real-Time DeFrost time settings a day available.

The **ALFANET 55 RTDF** has a RS 485 network connection so it can be read out and adjusted on the Alfanel.

* Installation.

On the connection diagram of the **ALFA(NET) 55 RTDF** is shown how the sensor, power supply and relays has to be connected.

After connecting the **ALFA(NET) 55 RTDF** to the power supply, a self test function is started. As this test is finished, the measured temperature of the control-sensor appears in the display.

* Control.

The **ALFA(NET) 55 RTDF** thermostat can be controlled by four push buttons on the front. These keys are:

SET	- view / change the setpoint.
UP	- increase value.
DOWN	- decrease value.
MODE	- relay status key.

* View setpoint.

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

* 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. After a few seconds after releasing the **SET** key the setpoint disappears and the measured temperature is shown again.

* 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 \square =off, \blacksquare =on and \square on the last segment=natural defrost active. The code $\blacksquare\blacksquare$ means relay 1(compr.) and 2(fan) are on and relay 3(defr.) is off.



* **Manual starting/stopping of defrost.**

The defrost cycle is automatic started and stopped. These defrost settings thru internal parameters.
Stop defrost: If there is a defrost cycle , the defrost can be manually stopped by pushing the **UP** and the **DOWN** key simultaneously.
Start defrost: If there is no defrost cycle , the defrost can be manually started by pushing the **UP** and the **DOWN** key simultaneously.

* **Sensor adjustment.**

The **temperature-sensor** can be adjusted by using the Offset control sensor (parameter 05). The **defrost-sensor** can be adjusted by using the Offset defrost sensor (parameter 07). For read out of the defrost sensor on the display use parameter 06 (Only if parameter 08 = 1).
Indicates a sensor e.g. 2°C too much, the according Sensor-offset parameter has to be decreased with 2°C.

* **Error messages.**

In the display of the **ALFA(NET) 55 RTDF** the following error messages can appear:

- | | | |
|------------|---|---|
| LO | - Minimum alarm | Solution E1/E2: |
| HI | - Maximum alarm | - Check if sensor is connected correctly. |
| E1 | - Control sensor failure | - Check sensor (1000Ω/25°C). |
| E2 | - Defrost sensor failure | - Replace sensor. |
| EEE | - Settings are lost. | Solution EEE: |
| | | - 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 reset by pushing the **SET** key. The function of this key depends on parameter P37.

* **Alarm operation.**

As a failure or alarm occurs an error message is shown in the display. The **ALFA(NET) 55 RTDF** remembers it's error message, although it is already solved. The error message is resettable with the **SET** key.

As if after pressing the **SET** key (=reset alarm) the alarm still is not solved than the **ALFA(NET) 55 RTDF** displays the temperature and the error message alternated, is the alarm solved, then the error message disappears and the temperature is displayed normally.

* **Setting internal parameters.**

Next to the adjustment of the setpoint, some internal settings are possible like differentials, sensor-adjustments, setpoint-range, compressor-, fan-, defrost- and alarm-settings.

By pushing the **DOWN** key for more than 10 seconds, you enter the 'internal programming menu'. In the left display the upper and the lower segments 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** and **DOWN** keys allows you to change the value of this parameter.

If after 20 seconds no key is pushed, the **ALFA(NET) 55 RTDF** changes to it's normal operation mode.



* **Parameters ALFA(NET) 55 RTDF.**

Parameter	Description Parameter	Range	Default Value
01	Switching differential	1..15°C	0,5
02	Minimum setpoint	-50..+50°C	-50
03	Maximum setpoint	-50..+50°C	+50
04	Read out above -10°C per 1°C	0=No, 1=Yes	0
05	Offset Control-sensor	-15..+15°C	0,0
06	Read out Defrost-sensor	-	-
07	Offset Defrost-sensor	-15..+15°C	0,0
08	Defrost sensor present	0=No, 1=Yes	0
10	Start-up delay Cooling	0..99	0
11	Switch-off delay Cooling	0..99	0
12	Parameter 10/11 in Seconds or Minutes	0=Sec. 1=Min.	0
13	Minimum on-time Cooling	0..99 Minutes	0
14	Minimum off-time Cooling	0..99 Minutes	0
20	Switching differential Fan active	0=No, 1=Yes	0
21	Switching differential Fan	0..+50°C	2,0
22	Fan off as Compressor is off	0=No, 1=Yes	0
23	Switch-off delay Fan	0..99 Minutes	0
24	Defrost mode 0=only fan-relay, 1=only defrost-relay	0 = Natural 1 = Hotgas / Elec.	0
25	Switch-on delay-temp. fan after defrost	-50..+50°C	2,0
26	Switch-on delay-time fan after defrost	0..99 Minutes	0
27	Dripoff-time	0..99 Minutes	0
30	Defrost-interval-time	1..99 Hours	12
31	Maximum defrost-time	0..99 Minutes	15
32	End of defrost temperature	-50..+50°C	2,0
33	Compressor on while defrosting	0=No, 1=Yes	0
34	Defrosting on compressor-time	0=No, 1=Yes	0
35	Temperature display locked during defrost cycle	0=No, 1=Yes	0
36	defrost cycle	0=No, 1=Yes	0
37	Start with defrost after power-up Defrost on-delay after power-up	0..99 Minutes	0
40	Alarm mode 0 = No alarm 1 = Absolute alarm 2 = Relative alarm	0..2	1
41	Minimum alarm setpoint	-50..+50°C	-50
42	Maximum alarm setpoint	-50..+50°C	+50
43	Time-delay maximum alarm	0..99 Minutes	0
44	Time-delay minimum alarm	0..99 Minutes	0
45	Control-delay after power failure	0..99 Minutes	0
46	Compressor on at control-sensor failure	0=No, 1=Yes	0
47	Compressor off at minimum alarm	0=No, 1=Yes	1
50	Actual realtime (hours)	0..23 Hours	-
51	Actual realtime (minutes)	0..59 Minutes	-
52	Time correction (at realtime clock)	-99..+99	0



Parameter	Description Parameter	Range	Default Value
60	Real-time defrost active	0=No, 1=Yes	0
61	Defrost-time 1 (Hours)	0..23 / off Hours	off
62	Defrost-time 1 (Minutes) steps 10 Min.	0..50 / off Min.	off
63	Defrost-time 2 (Hours)	0..23 / off Hours	off
64	Defrost-time 2 (Minutes) steps 10 Min.	0..50 / off Min.	off
65	Defrost-time 3 (Hours)	0..23 / off Hours	off
66	Defrost-time 3 (Minutes) steps 10 Min.	0..50 / off Min.	off
67	Defrost-time 4 (Hours)	0..23 / off Hours	off
68	Defrost-time 4 (Minutes) steps 10 Min.	0..50 / off Min.	off
69	Defrost-time 5 (Hours)	0..23 / off Hours	off
70	Defrost-time 5 (Minutes) steps 10 Min.	0..50 / off Min.	off
71	Defrost-time 6 (Hours)	0..23 / off Hours	off
72	Defrost-time 6 (Minutes) steps 10 Min.	0..50 / off Min.	off
80	Night-shift (offset) of Setpoint	-10.0...10.0°C	0
81	Start day (Hours)	0..23 / off Hours	off
82	Start day (Minutes) step 10 Min.	0..50 / off Min.	off
83	Start night (Hours)	0..23 / off Hours	off
84	Start night (Minutes) step 10 Min.	0..50 / off Min.	off
90	Network number	0..255	1
95	Software version	0..255	-
96	Production Year	00..99	-
97	Production Week	1..52	-
98	Serial number (x1000)	0..255	-
99	Serial number (units)	0..999	-

* **Fan control.**

The **ALFA(NET) 55 RTDF** has several parameters for fan control. Normally the fan is always active, except for one of the following parameters is set to 1, the fan can be stopped:

Parameter 20 = 1 Fan switch differential active:

The fan is only active when the defrost temperature is "parameter 21" lower than the measured product temperature. $Fan\ on : T_{defr} < (T_{control} - T_{fandiff} \cdot (P21))$ As there are no further conditions to switch the fan off.

Parameter 25,26 Fan on-delay after defrost:

The fan is switched off during defrost and to prevent blowing in hot air in the cabin after defrost and the dripping-off time (parameter 27), there are two conditions which can be set;

- a: The fan is blocked until the defrost sensor measures a temperature lower than the temperature setting of parameter 25.
- b: The fan is blocked until the defrost-delay-time of parameter 26 has stopped. Unless the defrost sensor has reached the temperature setting of parameter 25.

Parameter 22 = 1 Compressor off than Fan off:

The fan deactivates as the compressor deactivates, with a delay of "parameter 23" minutes. Provided that there are no other conditions to deactivate the fan.



* **Defrost control.**

The automatic defrost is started by the defrost cycle time (P30) and stopped by the maximum defrost time (P31) or sooner by reaching the maximum defrost temperature (P32).

Further has the **ALFA(NET) 55 RTDF** additional parameters to control defrost;

Parameter 24 Defrost mode:

The **ALFA(NET)-55 RTDF** has two defrost modes;

P24 = 0 While defrosting only the Fan activates. (Natural defrost).

P24 = 1 While defrosting the relay DEFR. activates. (Hotgas / Electrical defrost).

Parameter 34 = 0 : Defrost at fixed interval time (P60=0).

In this case parameter 30 is the chosen interval time.

Parameter 34 = 1 : Defrost based on total Compressor-time (P60=0).

In this case the Defrost is started as the Compressor has been activated for "parameter 30" hours.

Parameter 60 = 1: Defrost based on Real-time Clock.

In this case the Defrost is started at fixed times, set with parameters P61 until P71.

Parameter 36 = 1 : The **ALFA(NET) 55 RTDF** starts with Defrost on Power-up.

After Power-up the **ALFA(NET) 55 RTDF** first starts with a delay of "parameter 37" minutes before starting Defrost, while in delay the **ALFA(NET) 55 RTDF** works normally.

Parameter 33 = 1 : Compressor active at Defrost. (P24=1)

For hot-gas Defrost-systems the Compressor needs to be activated while defrosting. After Defrost the Drip-off -time (parameter 27) starts. During this time the defrost-relay and the compressor are not active so the Cool-unit can drip off.

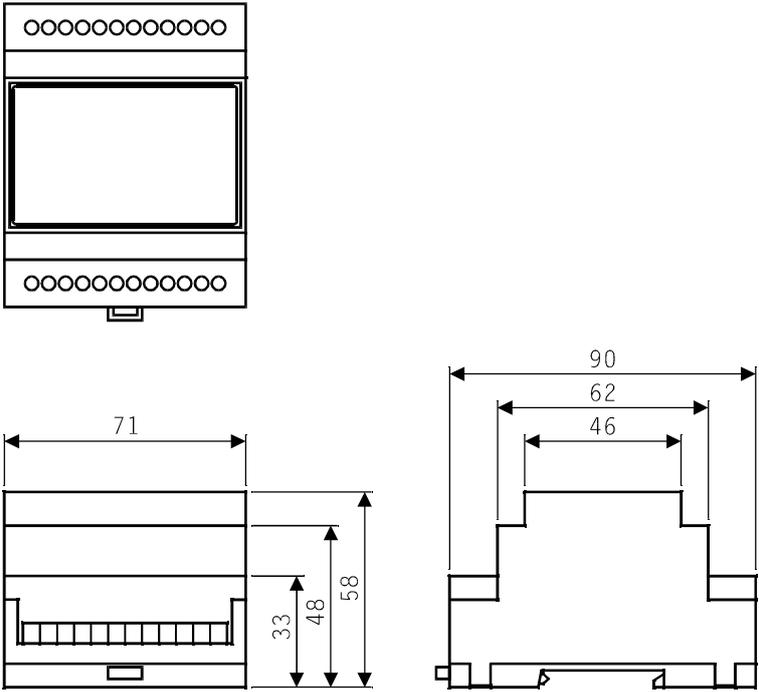
* **Technical details.**

Type	: ALFA 55 RTDF	Cool/Defrost Thermostat or
	ALFANET 55 RTDF	Cool/Defrost Thermostat with network
Range	: -50/+50°C	Readout pro 1°C
Supply	: 230 Vac / 2,5VA 50/60Hz	(or else see product sticker)
Relays	: The three relays have one common;	
	Ry-1 Compr.	SPST (NO) 250V/8A (cos φ=1)
	Ry-2 Fan	SPST (NO) 250V/8A (cos φ=1)
	Ry-3 Defrost	SPDT (NO,NC) 250V/8A (cos φ=1)
Control	: Thru pushbuttons on front.	
Front	: Polycarbonate IP65	
Sensors	: Control sensor-1	SM 811/2m(PTC 1000Ω/25°C)
	Defrost sensor-2	SM 811/2m(PTC 1000Ω/25°C)
Communication	: RS485 network (2xTwisted-pair shielded cable min. 0,5mm ²) only at ALFANET	
	Attention both networkcable ends must be terminated with a 250 Ohm resistor between Line-A and Line-B.	
Dimensions	: 90 x 71 x 58mm	(hwd)
Panel cutout	: 46 x 71mm	(hw) at front mounting
Accuracy	: ± 0,5% of range.	

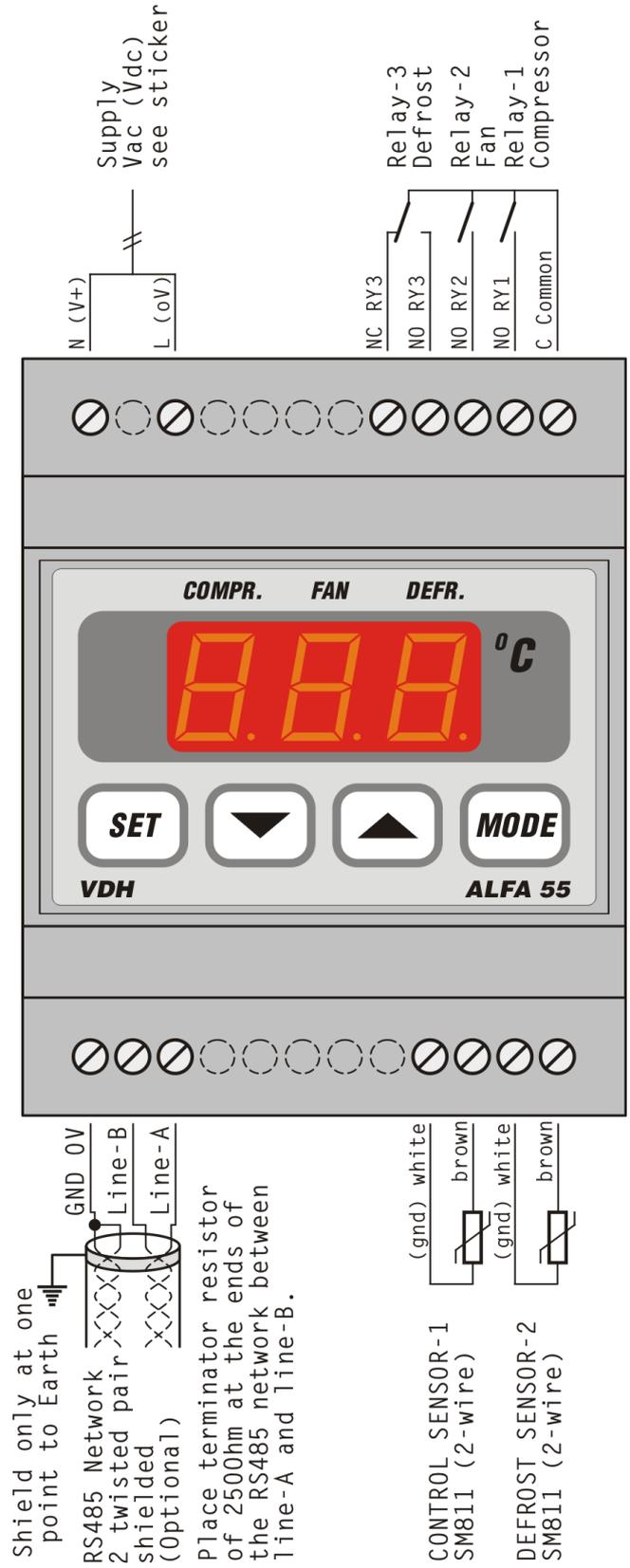
- Provided with memory protection during power failure.
- Equipped with self-test function and sensor-failure detection.
- Connection with screw-terminals.
- Special versions on request available.



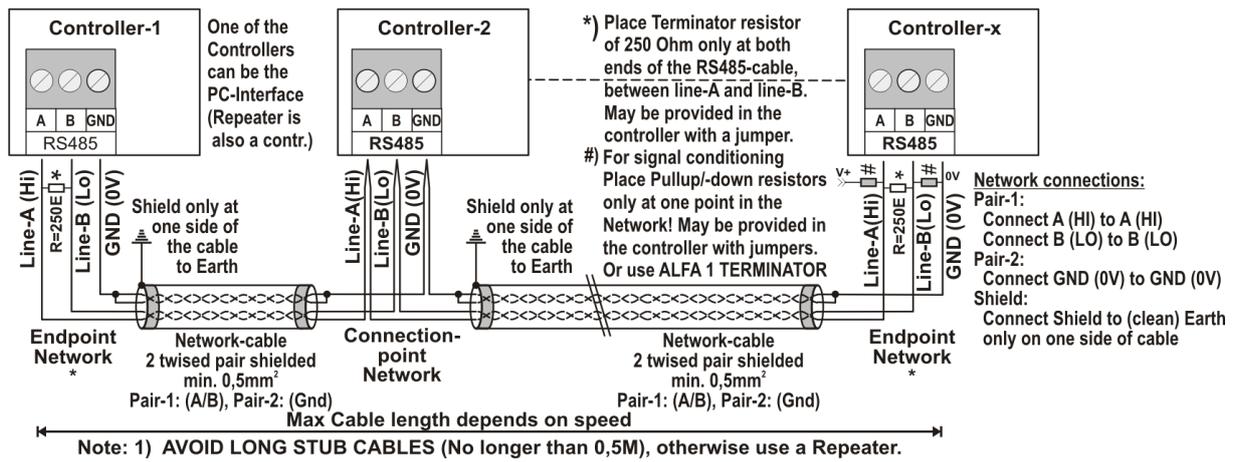
* Dimensions.



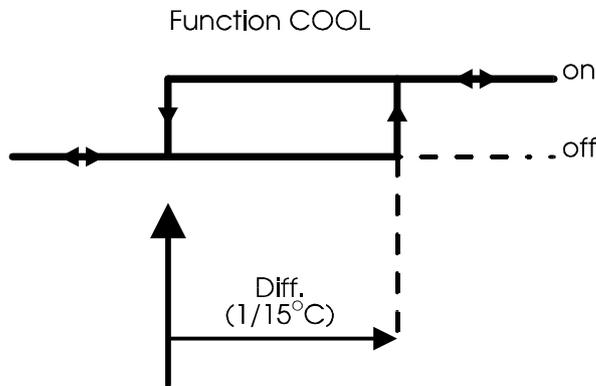
* Connections.



RS 485 NETWORK CONNECTIONS 2-twisted pair shielded cable:



*** Function diagram.**



*** Address.**

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