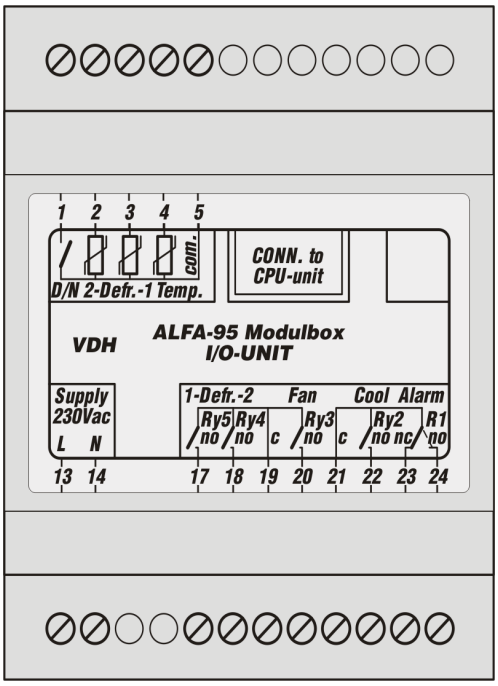
User manual
ALFANET 95



Cool/Freeze thermostat with a temperature sensor, two defrost sensors, a day/night digital input, relays for defrost-1, defrost-2, fan, cool and alarm.

VDH doc. 041617 **Version: v1.6** **Date: 10-04-2012**
Software: 050182_ALFANET 95 RTDF File: Do041617.wpd Range: -50,0/+50,0˚C

* Description.

The **ALFANET 95** is a cooling/heating thermostat with various automatic defrost and fan control. It can be programmed through the **ALFANET PC-INTERFACE** on the PC.

* Installation.

On the connection diagram of the **ALFANET 95** is show how the sensor, the digital input, the RS485 network, the power supply and the relays should be connected. After the **ALFANET 95** has been connected to the power supply a self-test function will take place, after which the measured temperature will appear in the display.

* Operation.

The **ALFANET 95** thermostat can be operated by means of four pushbuttons on the front. These pushbuttons are:

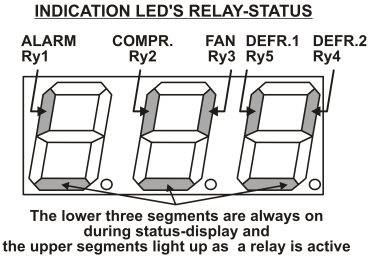
SET - view / change the setpoint.
UP - raise the setpoint.
DOWN - lower the setpoint.
˚C - hidden key under the ˚C text.

* Normal operation status.

During normal operation the temperature of the control sensor (Temp.) is shown in the display.

* Status of the Relays.

Press the **˚C** key. The three lower segments light up and the upper vertical segments show the status of the five relays (see diagram). Relay is active when the segment lights up.



* Viewing the setpoint.

By pressing the **SET** key the setpoint becomes visible. At the same time the decimal point of the right-hand display will blink, as an indication that the setpoint is being read.
A few seconds after the **SET** key has been released, the setpoint will disappear and the measured value will again become visible.

* Changing the setpoint.

Press the **SET** key so that the setpoint appears on the screen. Release the **SET** key. By now pressing the **SET** key and at the same time the **UP** or **DOWN** keys, the setpoint can be adjusted.
A few seconds after the keys have been released, the measured value will again appear in the display.

* Day/night function.

The **ALFANET 95** has also the possibility to work with night shift (parameter P80) of the setpoint, to do so the external contact must be opened.

Day: Contact day/night closed = day mode.
Controller works on setpoint.
Night: Contact day/night opened = night mode.
Controller works on setpoint + P80 (night-shift)
F.i. Setpoint = +10,0^{O}C and P80 = -3,0^{O}C than the control-setpoint becomes;
+10,0 + (-3,0) = +7,0^{O}C

Remark: The day/night function does not work on the real-time clock of the ALFANET 95.

* Start/stop defrost cycle.

The defrost cycle is stopped and started automatically by internal parameters. Defrosting can also be done manually;

Stop: If defrosting is taking place, defrosting can be stopped manually by pressing the **DOWN** and **UP** keys simultaneously.
Start: If defrosting is not taking place, then defrosting can be started manually by pressing the **DOWN** and **UP** keys simultaneously.

* Technical data.

Type	: ALFANET 95 Cool/Defrosting Thermostat		
CONTROL-UNIT;			
Range	: -50,0/+50,0˚C		
Read-out	: 3-digit 7-segments display		
Accuracy	: ± 0,5 % of the range.		
Status LEDs	: ALARM, COMPR., FAN, DEFR.1 and DEFR.2		(On display via **˚C** key)
Operation	: via pushbuttons on the front.		
Front	: Polycarbonate IP65		
Network	: RS485-network (2x twisted-pair shielded) at the back		(A, B, Gnd)
Dimensions	: 35 x 77 x 71,5mm (hbd)		
Panel cutout	: 29 x 70mm (hb)		
I/O-UNIT;			
Supply	: 230 Vac 50/60Hz		(-5/+10%) Max. 3VA
Relays	: These two relays have one common;		
	Ry-1 Alarm	SPDT (NO,NC)	250V/8A (cos φ=1)
	Ry-2 Cool	SPST (NO)	250V/8A (cos φ=1)
	And these three relays have one common;		
	Ry-3 Fan	SPST (NO)	250V/8A (cos φ=1)
	Ry-4 Defrost-2	SPST (NO)	250V/8A (cos φ=1)
	Ry-5 Defrost-1	SPST (NO)	250V/8A (cos φ=1)
Sensors	: 3x SM 811 2-wire	(Temp. / Defr.-1 / Defr.-2)	(PTC 1000Ω/25˚C).
Contact input	: 1x Day/night contact input		(open = night-shift active)
Dimensions	: 90x71x58mm (hbd) for rail mounting		

- Equipped with memory protection in case of power failure.
- Equipped with a self-testing function.
- Equipped with sensor failure detection.
- Connection via screw terminals on supply/relay module.
- Special models available on request.

* Fan control settings

The **ALFANET 95** has various adjustment possibilities for the Fan. Normally, the fan is always running unless one of the parameters below is set at 1:

Parameter 20 = 1: Fan switch differential active.

The fan runs only if the temperature of the defrost sensor is lower than the control sensor temperature minus the temperature of the switch differential fan (P21)
{Fan on if $T_{defrost} < (T_{control} - T_{fandiff.})$}.

Parameter 25,26: Fan switching on delay after defrosting.

To prevent the fan from running immediately after defrosting and draining of the evaporator and thus blowing warm air into the cell, the following two conditions can be set;

a. The fan is blocked until the defrost-sensor measures a temperature that is lower than the set switch-on temperature of the fan (P25).
b. The fan is blocked until the switch-on delay of the fan (P26) is passed. When the defrost-sensor reaches the switch-on temperature (P25) within the switch-on delay, then the fan is released again.

Parameter 22 = 1: Fan is off, when the compressor is off.

The fan is turned off if the compressor is off. This happens with a delay of parameter 23.

* Defrost control possibilities.

The automatic defrost is started on a real-time (P60) clock basis and stops after the maximal defrost time (P30), or earlier if the defrost sensor has reached the set defrost-end-temperature (P31). The **ALFANET 95** has a number of automatic defrost possibilities that can be set with the following parameters;

Parameter 24 Type of defrost:

The **ALFANET 95** has three possibilities for defrosting;

P24 = 0 At defrost only the relay FAN is switched on (natural defrosting).
P24 = 1 At defrost only the relay DEFR. is switched on (hot gas / electrical defrosting).
P24 = 2 At defrost the DEFR. and the FAN relays are both switched on (hot gas/electrical+fan defrosting).

Parameter 60 = 1 Defrosting on the real-time clock

Here, the defrosting is started at fixed times (P61 up to and including P72).

* Adjusting the sensor.

The **control sensor** can be adjusted by means of the Offset control sensor parameter 05.
The **defrost sensors** can be adjusted by means of the Offset defrost sensor parameters 08 and 11.

For readout the temperature of the defrost sensors choose parameters 07 and 10.

Should a sensor of the **ALFANET 95** indicates 2˚C too much, for example. Then the according Sensor Offset must be lowered by 2˚C.

* Operation of the Alarm.

When there is an error or an alarm, a error code message appears in the display. The **ALFANET 95** remembers this error message, even if the problem has already been solved.

The error message can be reset with the **SET** key.

If, after pressing the **SET** key (=reset alarm) the alarm is not yet resolved, then the **ALFANET 95** shows the temperature and error code alternately, if the alarm has been resolved then the error code disappears and the temperature is shown again.

* Error messages.

The following error messages may appear in the display of the **ALFANET 95**;

LO	-	Minimum alarm.	Solution E1/E2/E3:
HI	-	Maximum alarm.	- Check if sensor is properly connected.
E1	-	Control sensor defect.	- Check sensor (1000Ω/25˚C).
E2	-	Defrost sensor-1 defect.	- Replace sensor.
E3	-	Defrost sensor-2 defect.	Solution EEE:
EEE	-	Settings have been lost.	- Program the settings again.

-L- - In case of a short-circuited sensor the error codes **E..** and **-L-** will alternate in the display, indicating a short-circuited sensor.

-H- - In case of a disconnected sensor the error codes **E..** and **-H-** will alternate in the display, indicating a disconnected sensor.

NOTE: Parameters 12 and 13 can be used to prevent or delay occasionally occurring E1 messages.

* Setting internal parameters.

In addition to adjusting the setpoint a number of internal adjustments can be made, including the differentials, sensor-offsets, setpoint range, compressor settings, fan settings and the defrosting settings.

By pressing the **DOWN** key for longer than 10 seconds it is possible to enter the 'internal programming menu'. In the left-hand display the upper and lower segment will blink to indicate this mode.

Using the **UP** and **DOWN** keys the desired parameter can now be selected (see the parameter table).

When the desired parameter has been selected, the value of the parameter can be read out by pressing the **SET** key. The parameter value can now be changed by pressing the **SET** key together with the **UP** or **DOWN** key.

If, after 20 seconds, no key has been pressed, the **ALFANET 95** will revert to the normal operation mode.

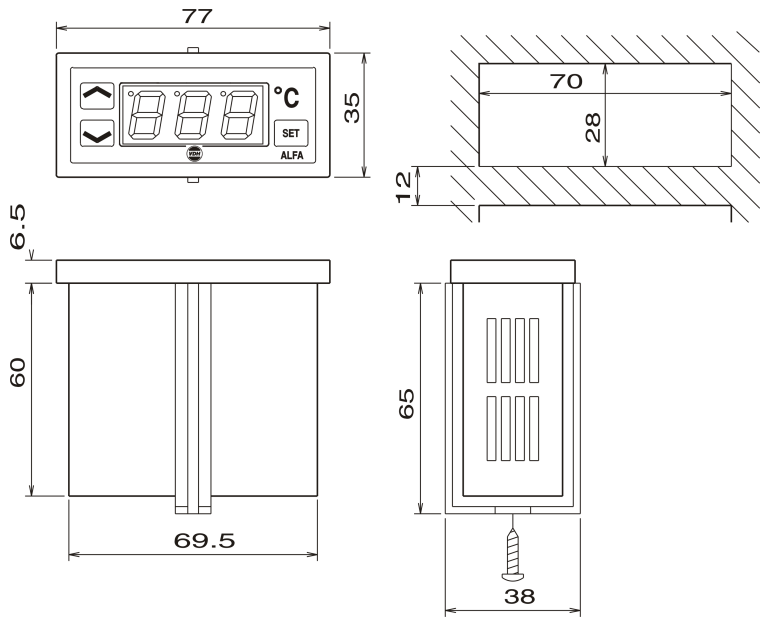
* Parameters ALFANET 95.

Para-meter	Description of Parameter	Range	Standard value
01	Switching differential	0,1..15,0°C	0,5
02	Minimum adjustable setpoint	-50..+50°C	-50
03	Maximum adjustable setpoint	-50..+50°C	+50
04	Readout above -10˚C in whole degrees	0 = No, 1 = Yes	0
05	Offset control sensor	-15,0..+15,°C	0,0
06	Defrost sensor-1 present	0 = No, 1 = Yes	0
07	Readout defrost sensor-1	-	-
08	Offset defrost sensor-1	-15,0..+15,°C	0,0
09	Defrost sensor-2 present	0 = No, 1 = Yes	0
10	Readout defrost sensor-2	-	-
11	Offset defrost sensor-2	-15,0..+15,°C	0,0
12	Extra damping on control sensor *	0 = No, 1 = Yes	0
13	E1 (control sensor defect) delay *	0..99 Seconds	0
	*) Readout/change only at control-unit, not on ALFANET		
15	Compressor anti-shuttle time belonging to parameter 16	0...99 Minutes	10
16	Compressor shuttle protection 0 = start-up delay in seconds 1 = start-up delay in minutes 2 = delay between switch off and switch on minutes 3 = delay between switch on and switch on min.	0...3	0

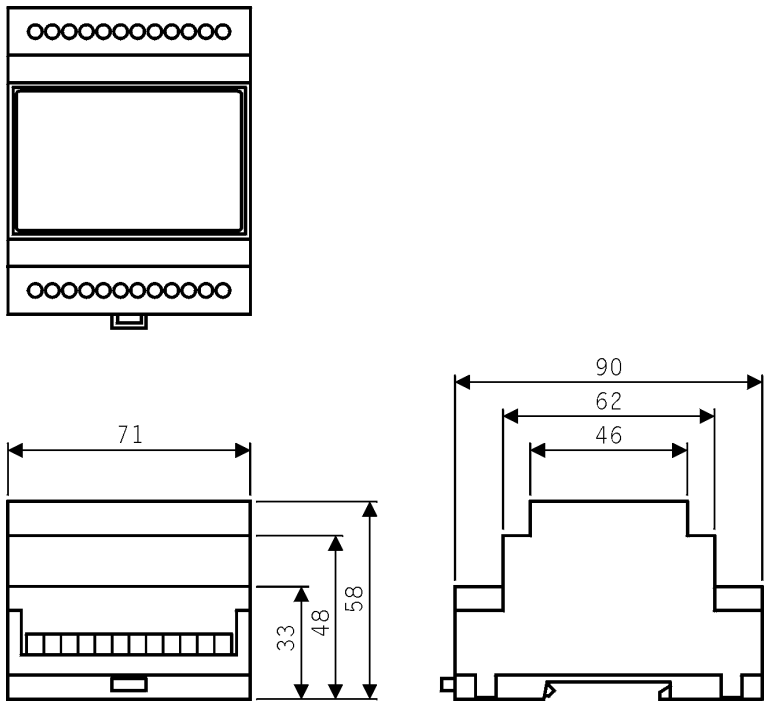
Para-meter	Description of Parameter	Range	Standard value
20	Fan switch-differential active	0 = No, 1 = Yes	0
21	Fan switch-differential	0,5..+50,0°C	2,0
22	Fan off if compressor is off	0 = No, 1 = Yes	0
23	Fan switch-off delay	0..90 Minutes	0
24	Type of defrost 0=only fan-relay 1=only defrost-relay 2=defrost-relay + fan-relay	0 = Natural 1 = Hot gas/Elec. 2 = Hot gas/Elec. + Fan	0
25	Fan switch-on temperature after defrost	-50..+50°C	2,0
26	Fan switch-on delay time after defrost	0..90 Minutes	0
27	Drip off time	0..90 Minutes	0
30	Maximum defrost time	0..99 Minutes	15
31	Defrost-ending temperature	-50..+50°C	2,0
32	Display fixed during defrost	0 = No, 1 = Yes	0
33	Defrost cycle time	1..99 hours	12
34	Defrost cycle time based on compressor on time	0 = No, 1 = Yes	0
35	After power failure starting with defrost cycle	0 = No, 1 = Yes	0
36	Defrost delay after power failure	0..99 minutes	0
40	Type of alarm	0 = None, 1 = Absolute 2 = Relative	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	Compressor on at control sensor failure	0 = No, 1 = Yes	0
46	Alarm off after manual reset	0 = No, 1 = Yes	0
47	Alarm off after alarm is solved	0 = No, 1 = Yes	0
48	Function alarm relay	0 = Watch alarm, 1 = Control alarm	0
50	Current time (hours)	0..23 Hours	-
51	Current time (minutes)	0..59 Minutes	-
60	Real-time defrost active	0 = No, 1 = Yes	0
61	Defrost time-1 (hours)	0..23/off Hrs.	off
62	Defrost time-1 (minutes) per 10 min.	0..50/off Min.	0
63	Defrost time-2 (hours)	0..23/off Hrs.	off
64	Defrost time-2 (minutes) per 10 min.	0..50/off Min.	0
65	Defrost time-3 (hours)	0..23/off Hrs.	off
66	Defrost time-3 (minutes) per 10 min.	0..50/off Min.	0
67	Defrost time-4 (hours)	0..23/off Hrs.	off
68	Defrost time-4 (minutes) per 10 min.	0..50/off Min.	0
69	Defrost time-5 (hours)	0..23/off Hrs.	off
70	Defrost time-5 (minutes) per 10 min.	0..50/off Min.	0
71	Defrost time-6 (hours)	0..23/off Hrs.	off
72	Defrost time-6 (minutes) per 10 min.	0..50/off Min.	0
80	Night-shift (offset)	-10.0..+10.0	0,0
90	Network number	1..250	1
95	Software version	0..255	-
96	Production year	00..99	-
97	Production week	1..52	-
98	Series number (x1000)	0..255	-
99	Series number (units)	0..999	-

* Dimensions of ALFANET 95.

Control-unit

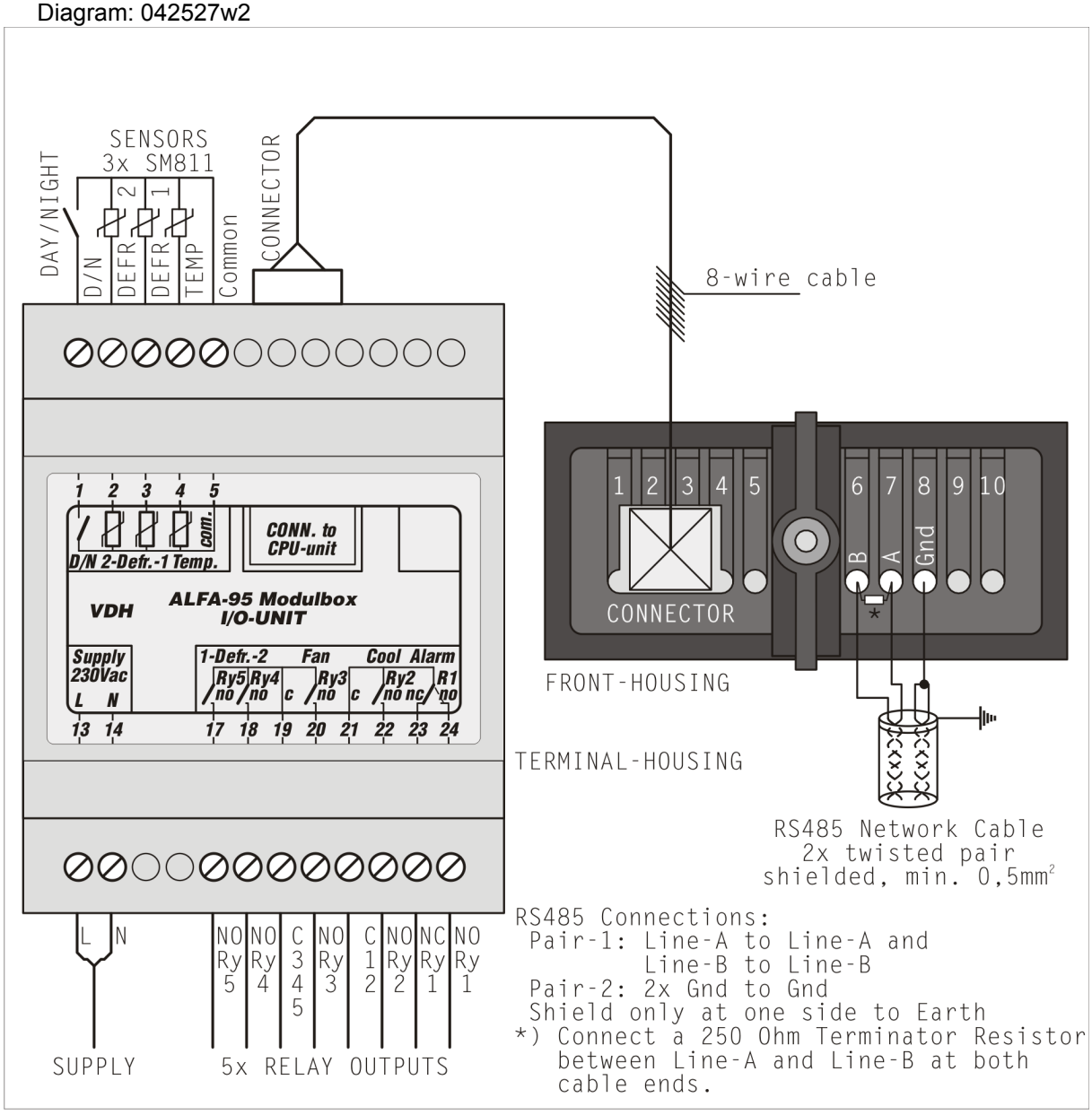


I/O-unit

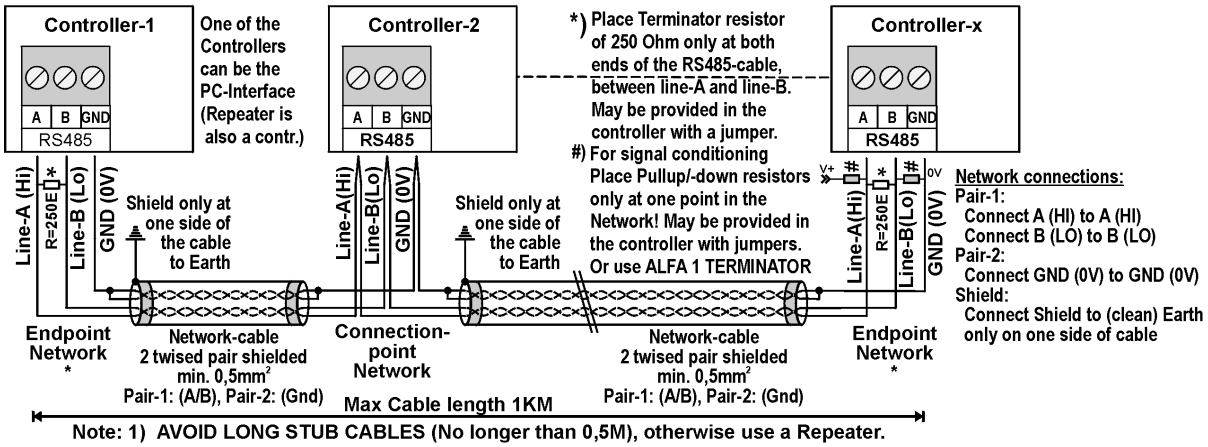


* Connection data.

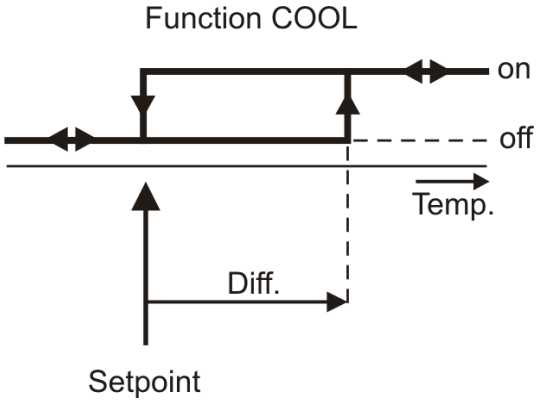
Diagram: 042527w2



RS 485 NETWORK CONNECTIONS 2-twisted pair shielded cable:



* Function diagram.



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