

Installation and Operating instructions

**Digital room temperature dependent
controller DRT**

for gas fired boilers



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Safety instructions

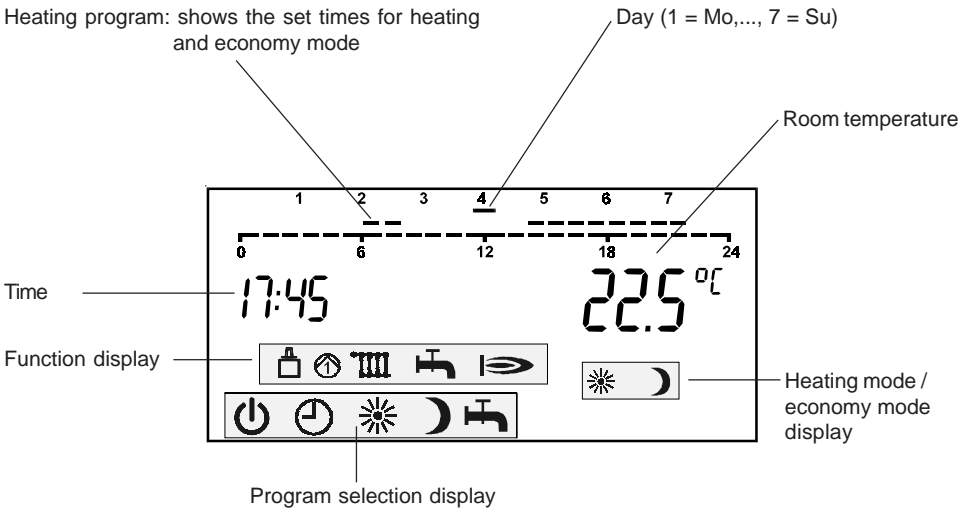
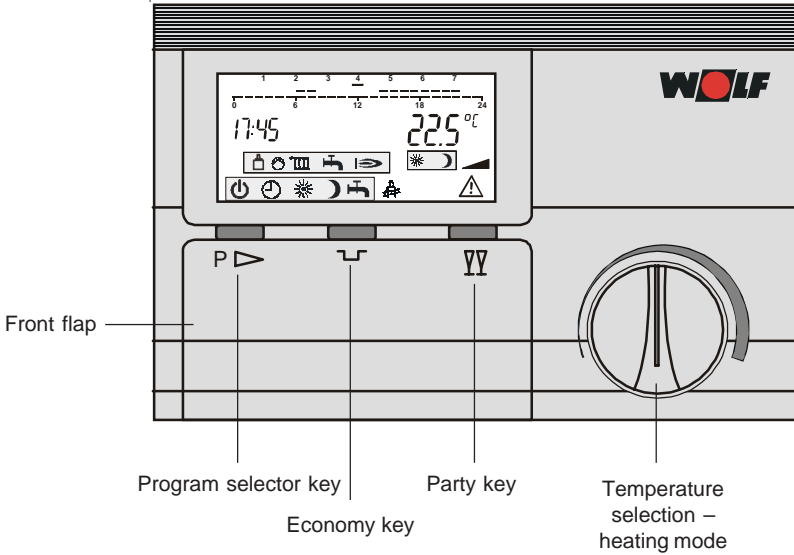
The following symbols are used in conjunction with these important instructions concerning personal safety as well as operational reliability.



"Safety instructions" are instructions with which you must comply exactly, to prevent injury and material losses.



This indicates technical instructions which you must observe to prevent material losses and boiler malfunctions.



Terminology**Heating water temperature**

The heating water temperature is the radiator flow temperature. The higher the heating water temperature, the higher the heat transfer to radiators.

Boiler

Gas fired boiler, which can be combined with a DHW cylinder.

Combi boiler

Gas fired boiler with an instantaneous water heater and DHW QuickStart.

Cylinder heating

Heating up the DHW cylinder.

DHW QuickStart

The heating water in the boiler will be held at a certain temperature during summer mode, to be able to supply hot water as rapidly as possible from the instantaneous water heater of the combi boiler. The DHW time program switches this function ON and OFF during summer mode.

Heating program

Subject to program selection, the heating time program switches the gas fired boiler from heating to economy mode or from heating mode to heating OFF and vice versa.

Domestic hot water program

In a combi boiler, the DHW time program controls the DHW QuickStart, and for a boiler with a DHW cylinder, the cylinder heating ON and OFF.

Winter mode

Central heating and DHW according to the heating and DHW time program.

Summer mode

Central heating OFF, DHW according to the DHW time program.

Heating mode/economy mode

In winter mode, two room temperatures can be selected. One for central heating and one for economy mode, when the room temperature will be setback to the economy temperature.

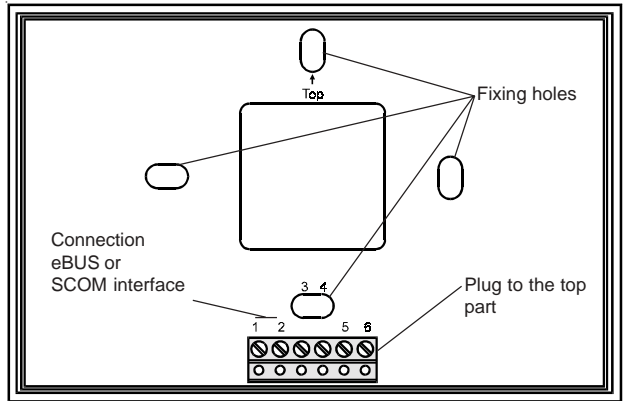
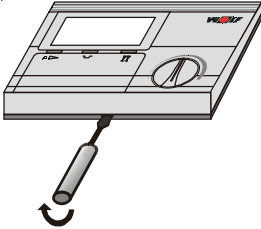
The heating program changes over between heating and economy mode.

Standards and regulations In gas fired combi boilers, the DRT digital room temperature dependent controller complies with the following Directives:

- Gas Equipment Directive
- Low Voltage Directive
- EMC Directive

Assembly

- Install the DRT on an internal wall at a height of approx. 1.5 m.
- Install the DRT in a living room, which is representative of the entire living space.
- The DRT must not be subject to draughts or radiated heat.
- The DRT must not be obstructed by furniture or curtains.
- In this room, all radiator valves must be fully opened.
- Remove the base from the DRT.



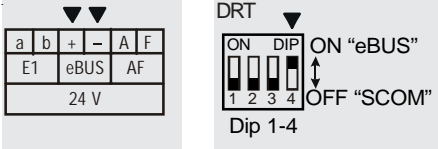
- Secure the thermostat base on the flush-mounting box (Ø55 mm) or with the rawl plugs supplied directly to the wall.

BUS interface setting (eBUS or SCOM)

Wolf boilers are equipped either with an eBUS or a SCOM interface for control accessories. The interface can be selected with DIP switch 4 at the back of the DRT.

Connection to Wolf boilers with eBUS interface

(CGB, CGS, TGC)

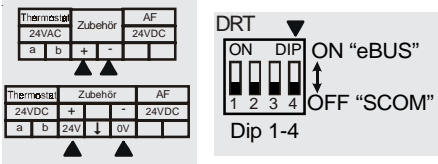


For boilers with **eBUS** interface, the BUS terminals "+" and "-" are marked with "eBUS".

Push the DIP switch 4 into the ON position. Switches 1 to 3 remain OFF, if only one accessory controller is connected.

Connection to Wolf boilers with SCOM interface

(TGU, TGG, GU-2, GG-2, TGB-11/20/40/60, GB-20-S)

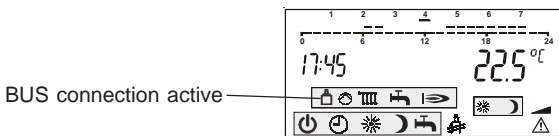


For boilers with **SCOM** interface, the BUS terminals "+" and "-" are marked in accordance with connection diagrams with "(Wolf) accessories".

Push switches 1 to 4 into the OFF position.

NB All accessory controllers (BUS users) must be set to the same boiler interface.

A correctly adjusted BUS address, and with that the communication between all users, is indicated at every controllers approx. 1 minute later.

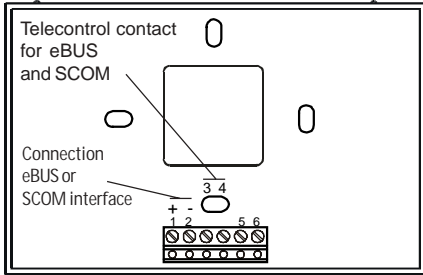


NB The electrical connection must only be carried out by a qualified electrician.

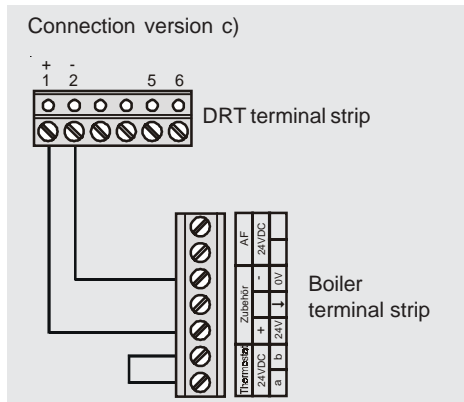
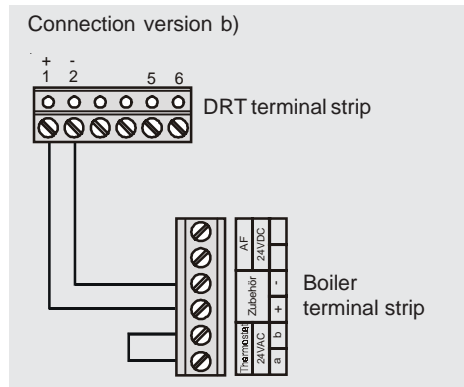
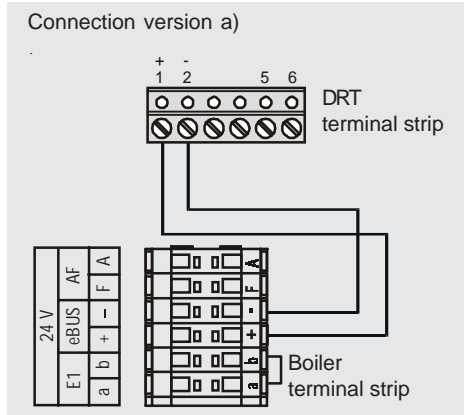
NB Do not route these cables alongside mains power cables.

Wire the DRT with a 2-core cable (minimum cross-section 0.5 mm²) to the gas fired boiler. Subject to boiler terminal strip, select one of the adjacent wiring diagrams.

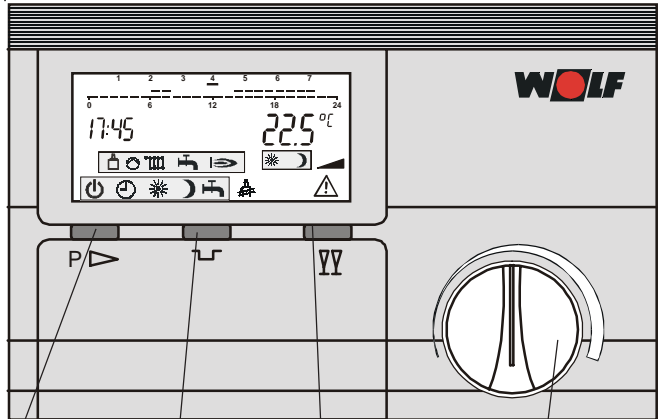
DRT base:



Reposition the DRT onto its base and click into place. When refitting the housing ensure, that the contact pins on the thermostat are not bent.



Program selection



Program selector key Economy key Party key Temperature selection – heating mode

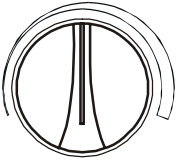
Important: This must be set to for gas fired boilers with program selector.

Operating mode	Display - prog. select.	Central heating	DHW boiler	DHW combi boiler
Standby		Central heating OFF / Frost protection	Cylinder heating OFF	DHW QuickStart OFF
Summer mode		Central heating OFF / Frost protection	Cylinder heating according to DHW program	DHW QuickStart acc. to DHW program 1)
Winter mode		Economy mode	Cylinder heating according to DHW program	
		Heating mode	Cylinder heating according to DHW program	
		Heating or economy mode according to heating program	Cylinder heating according to DHW program	
		Heating mode or central heating OFF according to heating program	Cylinder heating according to DHW program	

1) Only for equipment with DHW QuickStart

Function display

- Connection to the gas fired boiler OK
- Heating circuit pump ON
- Heating mode
- Cylinder heating or DHW draw-off ON
- Burner ON

Temperature selection – heating mode

Setting the required room temperature for heating mode. This setting only applies to heating mode, not to economy mode.

Turning the selector changes the display from current room temperature to set room temperature.

Then you can change the desired room temperature for heating mode. If no change is made within 2 s, the display will again show the current room temperature.

Economy key

If you press \square , four zeros will appear in the display; further pressing will set the control unit for one hour to economy mode, irrespective of the heating program selected. If the boiler is already operating in economy mode, this mode will be extended by a further hour. Pressing \square again will extend the economy mode by a further hour, pressing \square will reduce the current operation by one hour. The indicator will return to 0 if more than 24 hours are entered. The room temperature will again be displayed 5 s after the last input. The previously selected economy mode can be cancelled again by pressing \square .

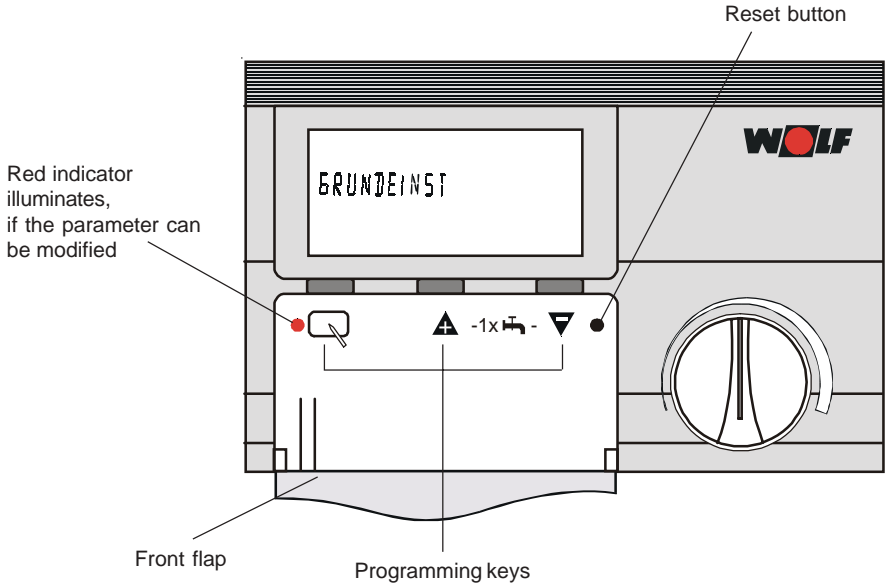
Party key

The display will show four zeros after pressing \square . The control unit will select one hour heating mode, if this key is pressed again, independent of the heating program selection. If the boiler is already operating in heating mode, this mode will be extended by a further hour. Pressing \square again will extend the heating mode by a further hour, pressing \square will reduce the current operation by an hour. The indicator will return to 0 if more than 24 hours are entered. The room temperature will again be displayed 5 s after the last input. The previously selected heating mode can be cancelled again by pressing \square .

Note: The economy and party keys have no effect on DHW heating.


DRT controls

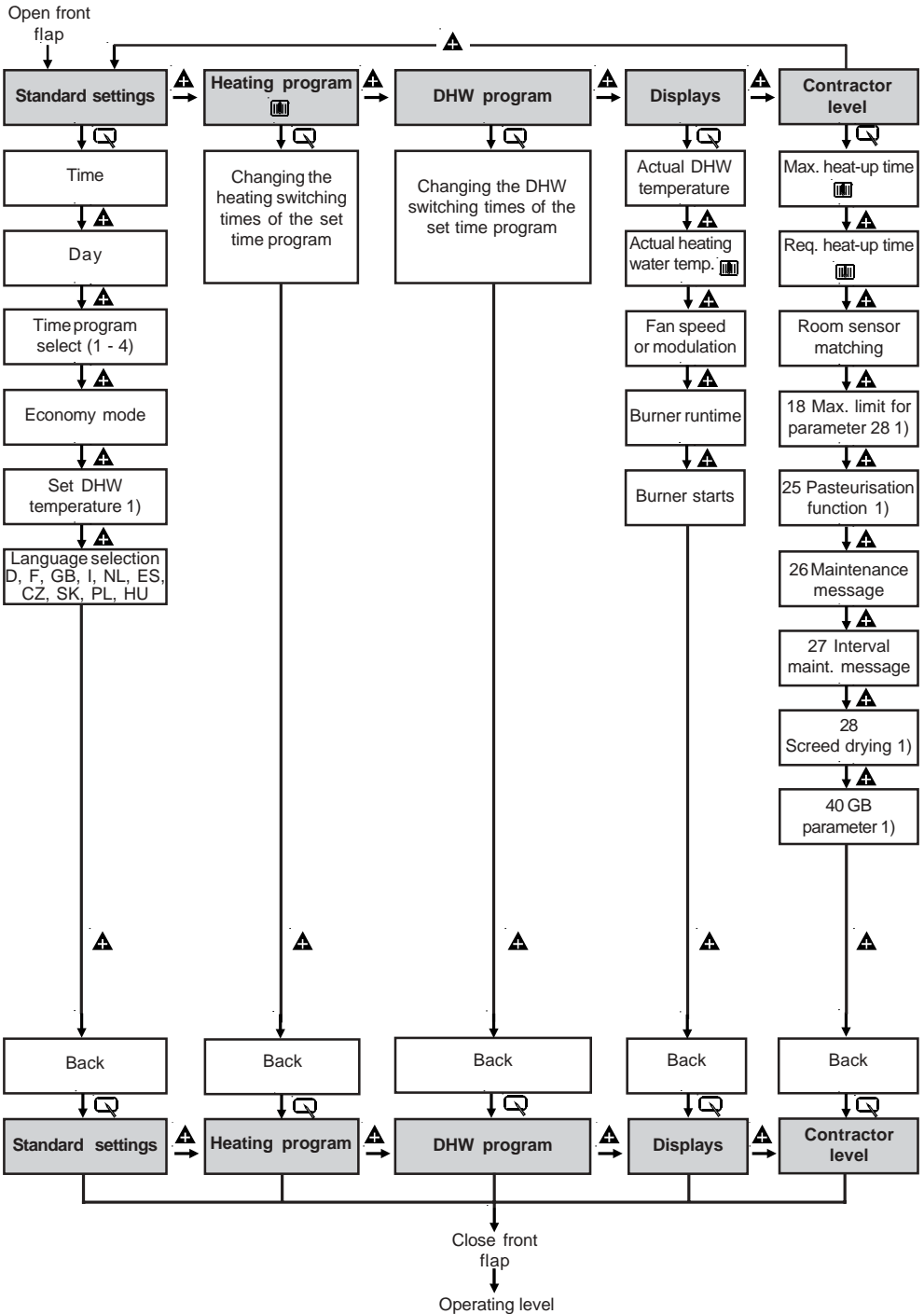
After opening the front flap, the control unit changes to programming mode and the display shows STANDARD SETTINGS. With the open flap, the following settings can be displayed or modified:



Legend for the adjacent table:

1) Only with eBUS interface

 Symbol for direct heating circuit (only for eBUS)



Standard settings

All adjustable parameters as well as four time switch programs are set at the factory and saved to non-volatile memory. After commissioning, only the time and day of the week must be adjusted on-site.

Access to standard settings only requires opening the front flap. For access to this level press . Select individual parameters with and .

Parameter	Display	Factory setting	Settings range	Change
Time		10:00	00:00-24:00	→ or →
Day		Monday	Monday – Sunday	→ or →
Time program		1	1 - 4	→ or →
Economy temperature		12 °C	5 - 30 °C	→ or →
SetDHW temperature 1)		60	15 - 65 °C or 40 - 63 °C	→ or →
Language selection		D	D, F, GB, I, NL, ES, CZ, SK, PL, HU	→ or →

- 1) Only with eBUS interface;
this leaves the DHW thermostat at the boiler disabled.

Time program

The digital temperature control thermostat has four factory-set time programs for heating and DHW mode. For switching times, see the following table.

All time programs can be modified and saved.

Time prog. 1	Heating	Mo-Su 6:00 - 22:00		Day program Mo-Su
	DHW	Mo-Su 5:00 - 22:00		
Time prog. 2	Heating	Mo-Fr 6:00 - 8:00 and 16:00 - 22:00	Simple day program Mo-Fr and Sa-Su	
		Sa-Su 7:00 - 23:00		
	DHW	Mo-Fr 5:00 - 8:00 and 15:00 - 22:00		
		Sa-Su 6:00 - 23:00		
Time prog. 3	Heating	Mo, Tu, We, Th, Fr, Sa, Su 8:00 - 23:00		Individual times can be set for every day
	DHW	Mo, Tu, We, Th, Fr, Sa, Su 7:00 - 23:00		
Time prog. 4	Heating	Mo, Tu, We, Th, Fr	7:00 - 16:00	Individual times can be set for every day
		Sa, Su	— —	
	DHW	Mo, Tu, We, Th, Fr	6:00 - 16:00	
		Sa, Su	— —	

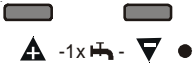
Economy temperature

During economy mode the temperature selected in the standard setting ECON TEMP applies, not the temperature selected at the rotary selector. The set economy temperature is only an approximate value when the room influence = 0.



Language selection

The following languages may be selected:

D	German
F	French
GB	English
I	Italian
NL	Dutch
ES	Spanish
CZ	Czech
SK	Slovakian
PL	Polish
HU	Hungarian

Heating DHW once

If DHW is required outside the period where DHW heating is enabled, the DHW cylinder can be heated to the set temperature by means of function "1 x DHW".

Pressing  and  simultaneously with the front flap open either activates or deactivates this function.

Function "1 x DHW" will be deactivated automatically after one hour.

Summer/winter

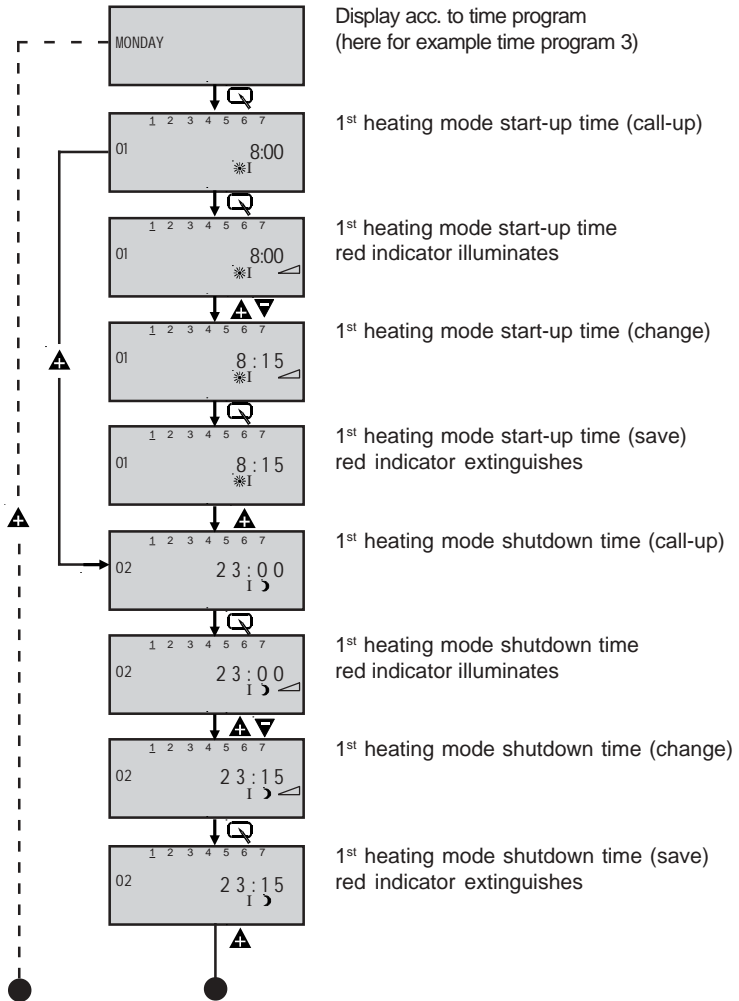
To select the current summer/winter time, adjust the relevant time, as described on page 12 (not required when connecting a radio clock module).

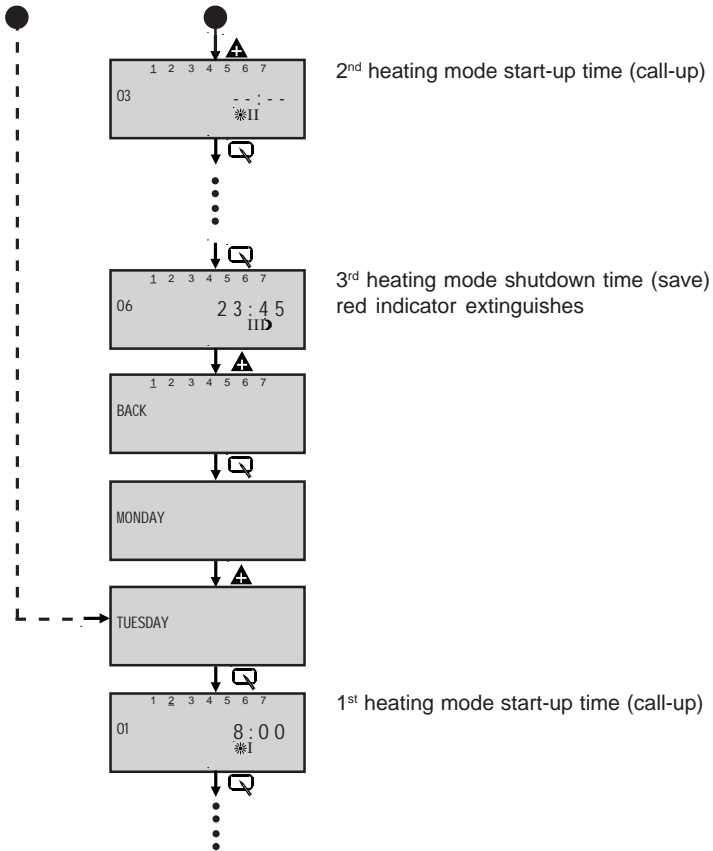
Modifying switching times (heating program)

You can individually modify the switching times of the time programs (1 - 4) selected under the standard setting TIME PROG in the heating program. **Three** ON and OFF times are available for the individual days displayed. Always enter ON and OFF times as pairs.

Setting example

Access to standard settings only requires opening the front flap. Select HEAT PROG with ▲ or ▼. For access to this level press key □.





The setting example shows time program 3.
All other time programs can be changed as above.

Note:

In case of block formation, a time input beyond midnight must be made according to the following example:

Example: In time program 1 (week program), central heating should take place the following day from 16.00 - 03.00 h. For this, set the following times:

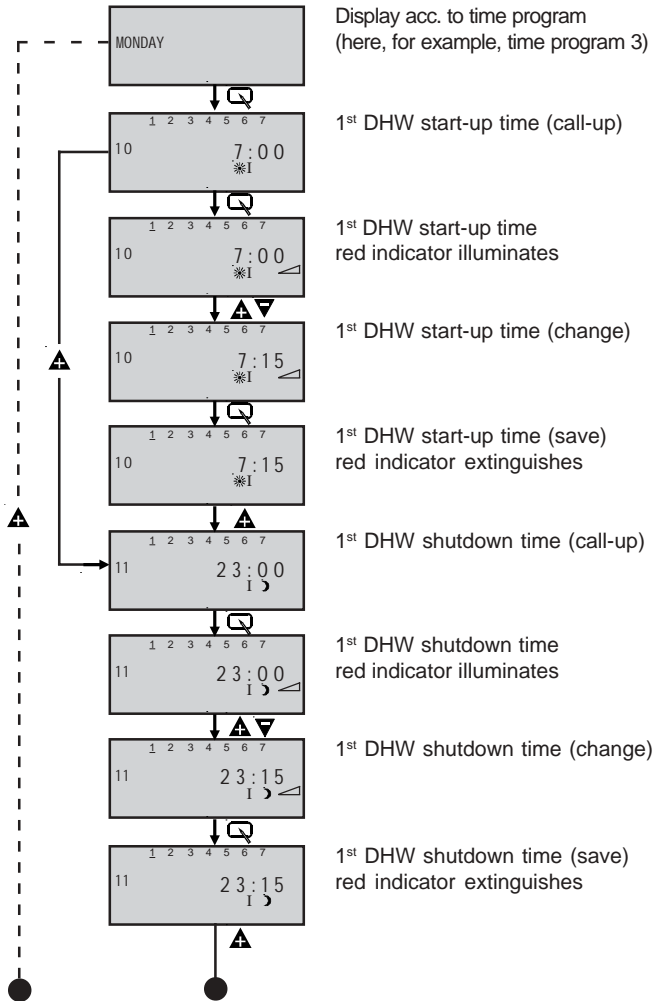
- 1st Start-up time Heating mode: 00:00
- 1st Shutdown time Heating mode: 03:00
- 2nd Start-up time Heating mode: 16:00
- 2nd Shutdown time Heating mode: 24:00

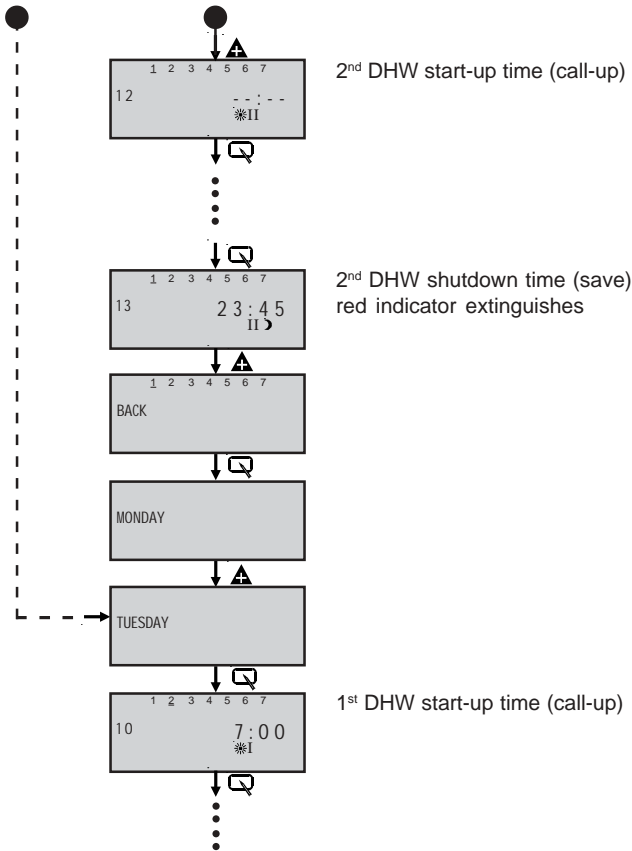
Modifying switching times (DHW program)

You can individually modify the switching times of the time programs (1 - 4) selected under the standard setting TIME PROG in the DHW program. **Two** ON and OFF times are available for the individual days displayed.

Setting example

Access to standard settings only requires opening the front flap. Select DHW PROG with **▲** or **▼**. For access to this level press **□**.





The setting example shows time program 3.
All other time programs can be changed as above.

The set DHW program applies to all boilers with DHW cylinder for cylinder heating, and for combi boilers for DHW QuickStart. The required water temperature is adjusted at the boiler.

The adjusted central heating and DHW programs are saved to non-volatile memory. If the power reserve (minimum 10 hours) expires, only the time and day of the week need to be reset.

Displays

Access to standard settings only requires opening the front flap. Select DISPLAYS with or . For access to this level press . Select individual parameters with and .

Parameter	Display (actual value)	Set value
Domestic hot water		→
Flow temperature Heating circuit		→
Fan speed (r.p.m.) or modulation %		_____
Burner runtime (10 h)		_____
Burner starts (100 starts)		_____

Reset

Parameter	Display	Reset
Burner runtime		→
Burner starts		→

Note: It is recommended to note down the date of the reset, in order to allocate the burner runtime or the number of burner starts, e.g. to a particular year.

Heating contractor

Access to standard settings only requires opening the front flap. Select CONTRACTOR with or . For access to this level press . Select individual parameters with and .

Parameter	Display	Factory setting	Settings range	Change
Required heat-up time		---	---	---
Matching room temperature sensor		0 °C	-5 °C to +5 °C	or
18 Max. limit for param. 28		45 °C	20 °C to 80 °C	or
25 Pasteurisation function		0	0 - 8	or
26 Maintenance message		0	0 / 1	or
27 Interval maint. message		52	25 - 100 Weeks	or
28 Screed drying		0	0,1, 2	or
40 GB - parameters				or
Hysteresis flow temperature			1 - 20	or
Upper fan speed - heating			30 -100	or
Frost protection outside temp.			-10 -10	or
Heating circuit pump mode			0 / 1	or

These parameters may vary, subject to equipment version. See gas fired boiler installation instructions

Heating circuit pump run-on	GB 07 01 	These parameters may vary, subject to equipment version. See gas fired boiler installation instructions.	1 - 30	or
Max. set flow temperature	GB 08 75 		20 - 90	or
Cycle block	GB 09 07 		0 - 30	or
Input 1	GB 13 01 		0 - 5	or
Output 1	GB 14 06 		0 - 9	or
Cylinder hysteresis	GB 15 05 			1 - 15
	back 			or

Maximum heat-up time (heat-up optimisation)

The heat-up optimisation determines, within at least six hours setback time, the optimum timing (advanced timing) when heating should commence, so that the required room temperature has already been achieved at the selected time. Parameter M-OPEN-TIME provides the maximum advance timing. Heat-up optimisation will not take place, if "0" has been entered for maximum advance timing. If the maximum advance timing is not "0", the duration of advance timing will be calculated at the time of the maximum advance timing prior to the programmed start-up time.

Required heat-up time

This value shows the heat-up time, which was last required. Display only.

Room sensor matching

The current display can be changed by +/- 5 K, to match the room temperature display to the installation conditions or other thermometers. The adjusted display value will be applied to all calculations of relevant functions.

Parameter 18

Max. limit for parameter 28

Parameter 18 will then be displayed, if par. 28 = 1 or 2. This parameter will then limit the set flow temperature for screed drying or a heating circuit to be operated at a constant temperature.

Please note: Boiler shutdown = par. 18 (DRT) + hysteresis (factory setting 8 K). Take the hysteresis into account when determining the maximum screed temperature.

Parameter 25

Pasteurisation function (only eBUS)

If pasteurisation has been enabled, the DHW cylinder will be heated to 65 °C during the first cylinder heating of the day in accordance with the switching times program. This set temperature will be maintained for one hour.

Parameter 25 = 0 Pasteur. OFF

Parameter 25 = 1 - 7 Pasteur. once a week (1=Mo; 7=Su)

Parameter 25 = 8 Pasteur. daily

Parameter 26
Maintenance message

If maintenance message is enabled, the message "MAINTENANCE" will be displayed after X weeks (in accordance with the setting of parameter 27). You can acknowledge this message by pressing the economy key . Afterwards, the cycle starts again.

Parameter 27
Interval until maintenance message

This parameter indicates the number of weeks, after the expiry of which the maintenance message will be displayed.

Parameter 28
Screed drying

If an underfloor heating system is started for the first time in new buildings, the set flow temperature may, as an option, be controlled independent of the outside temperature a) to a constant value or b) to control the set flow temperature in accordance with an automatic screed drying program. If this function has been enabled (setting 1 or 2), it can be terminated by resetting par. 28 to 0.

Par. 28 = 0 no effect

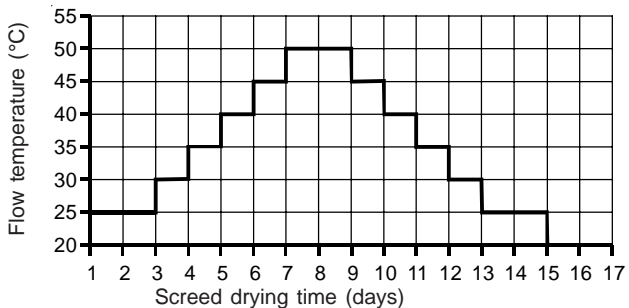
Par. 28 = 1 mixer circuit with a constant temperature

The mixer circuit is heated to the set flow temperature. The flow temperature can be adjusted with the heating operation temperature selector between 15 °C and TV max. (parameter 18).

Par. 28 = 2 screed drying function

For the first two days, the set flow temperature will remain constant at 25 °C. It will then be automatically raised every day (at 0.00 h) by 5 °C up steps to TV max (par. 18). That temperature will then be held for two days. Subsequently, the flow temperature is automatically reduced again in steps of 5 °C per day down to 25 °C. The program sequence is terminated after a further two days.

Fig.:
Flow temperature progress during screed drying (parameter 18 = 50 °C)



Please note:



Agree the time sequence and the maximum flow temperature with the screed contractor, otherwise the screed may be damaged, particularly through cracking.

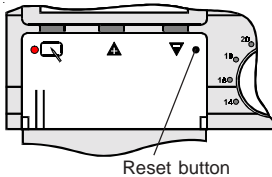
Automatic summer and winter changeover

The DRT will automatically change over to summer mode, if the room temperature rises 1 K above the temperature selected for heating mode. The system automatically reverts to winter mode, when the room temperature falls below the set room temperature.

Room temperature dependent frost protection in summer mode

A frost protection function for the entire heating system has been integrated into the room thermostat. The burner and heating circuit pump are switched ON at +5 °C room temperature. Burner and heating circuit pump (heating circuit pump with/without run-on according to settings at the gas fired boiler) are switched OFF again at +6 °C room temperature.

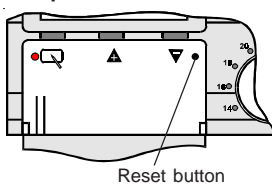
Partial RESET



All adjustable parameters will be reset to their factory-set defaults with "Partial reset". Exceptions are parameters "BUS ID", "Language selection" and switching times.

Open the front flap and push the reset button simultaneously with using a ballpoint pen or similar instrument. Release the reset button and hold down until the display shows STANDARD SETTINGS.

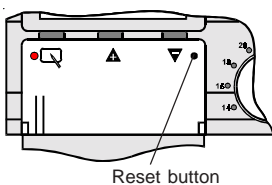
Complete RESET



All adjustable parameters and switching times will be reset to their factory-set defaults with "Complete reset".

Open the front flap and push the reset button simultaneously with and using a ballpoint pen or similar instrument. Release the reset button and hold down and until the display shows STANDARD SETTINGS.

Processor RESET



Fault "81" occurs, when a parameter has an invalid value. The "incorrect" parameter is reset to its factory setting, and a fault message will be displayed. The fault message can be reset with "Processor reset".

The processor will be restarted with "Processor reset". Open the front flap and press the reset button using a ballpoint pen or similar instrument.

Emissions test mode



The DRT display will additionally show symbol if emissions test mode has been selected at the boiler program selector.

Fault display





Any boiler fault will be indicated by a fault code number, which will flash in the boiler display. The fault signal will be transferred to the connected digital weather-compensated DRT temperature controller. The DRT display will show the word "FAULT" as well as the fault code number. In addition, the warning symbol will flash in the display.

Fault codes

In case of faults, the following codes will assist in locating their cause.

No.	Fault
1	Excess temperature (high limit safety cut-out)
4	No flame established
5	Flame failure during operation
6	STW excess temperature
7	STBA excess temperature
8	Flue gas damper does not activate
11	Flame pretence
12	Heating water temperature sensor faulty
13	Flue gas temperature sensor faulty
14	DHW sensor faulty
15	Outside temperature sensor at the control unit faulty
16	Return sensor faulty
17	The modulation current is outside its set range
20	Fault – gas valve circuit V2
21	Fault – gas valve circuit V1
22	Lack of air
23	Differential pressure switch fault
25	Gas fan, fault
26	Gas fan, fault
30	CRC fault boiler
31	CRC fault burner
32	Fault in 24 V AC supply
40	Low water indicator
41	Return temperature > flow temperature +25 K
60	Siphon back pressure
61	Flue gas system back pressure
81	EEPROM fault in DRT
91	Incorrect address set at the DRT
99	Internal fault – control PCB

If the device will not operate properly after the gas fired boiler has been reset twice, or if the boiler cannot be reset, inform your heating contractor of the fault code displayed.

If settings cannot be carried out on the DRT using program selector P , set the program selector on the boiler control unit to position .

Fault code 15: Fault code 15 will be displayed at the DRT, if no outside temperature sensor is connected or the outside temperature sensor fitted to the control PCB is faulty.

=> The heating circuit pump runs permanently, and the DRT acts as a room controller.

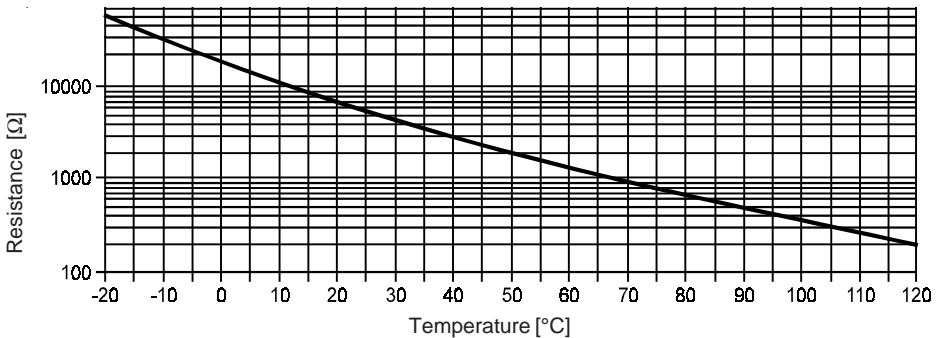
Fault code 91: Two controllers (e.g. DWT, DRT) are set to the same BUS address in systems with several controllers. Correct the address settings using the DIP switches on the respective controllers.

Sensor resistances

Heating water sensor, DHW sensor, return sensor, flue gas sensor

Temperature °C	Resistance Ω	Temperature °C	Resistance Ω	Temperature °C	Resistance Ω	Temperature °C	Resistance Ω
-21	51393	14	8233	49	1870	84	552
-20	48487	15	7857	50	1800	85	535
-19	45762	16	7501	51	1733	86	519
-18	43207	17	7162	52	1669	87	503
-17	40810	18	6841	53	1608	88	487
-16	38560	19	6536	54	1549	89	472
-15	36447	20	6247	55	1493	90	458
-14	34463	21	5972	56	1438	91	444
-13	32599	22	5710	57	1387	92	431
-12	30846	23	5461	58	1337	93	418
-11	29198	24	5225	59	1289	94	406
-10	27648	25	5000	60	1244	95	393
-9	26189	26	4786	61	1200	96	382
-8	24816	27	4582	62	1158	97	371
-7	23523	28	4388	63	1117	98	360
-6	22305	29	4204	64	1078	99	349
-5	21157	30	4028	65	1041	100	339
-4	20075	31	3860	66	1005	101	330
-3	19054	32	3701	67	971	102	320
-2	18091	33	3549	68	938	103	311
-1	17183	34	3403	69	906	104	302
0	16325	35	3265	70	876	105	294
1	15515	36	3133	71	846	106	285
2	14750	37	3007	72	818	107	277
3	14027	38	2887	73	791	108	270
4	13344	39	2772	74	765	109	262
5	12697	40	2662	75	740	110	255
6	12086	41	2558	76	716	111	248
7	11508	42	2458	77	693	112	241
8	10961	43	2362	78	670	113	235
9	10442	44	2271	79	649	114	228
10	9952	45	2183	80	628	115	222
11	9487	46	2100	81	608	116	216
12	9046	47	2020	82	589	117	211
13	8629	48	1944	83	570	118	205

NTC sensor curve



Specification

Supply voltage	18 VDC \pm 15%
Power consumption	max. 1 VA
Protection according to DIN 60529	IP30
Protection class according to VDE 0100	III (max. 24 V)
Time switch power back-up	min. 10 h
Permissible ambient temp. - operation	0 to 50 °C
Permissible ambient temp. - storage	-30 to +60 °C
Communication and power supply via 2-core cable to the gas fired boiler (cross-section 0.5 mm ²)	

Parameter setup report

Parameter	Setting options	Factory setting	Individual settings
Economy temperature (night setback)	5 - 30 °C	12 °C	
Language selection	D, F, GB, I, NL ES, CZ, PL, HU	D	
Max. heat-up time	0 - 3 h	0:00 h	
Room sensor matching	-5 to +5 °C	0 °C	

Preset time programs

Time program 1	Heating	Mo-Su	6:00 - 22:00
	DHW	Mo-Su	5:00 - 22:00
Time program 2	Heating	Mo-Fr	6:00 - 8:00 and 16:00 - 22:00
		Sa-Su	7:00 - 23:00
	DHW	Mo-Fr	5:00 - 8:00 and 15:00 - 22:00
		Sa-Su	6:00 - 23:00
Time program 3	Heating	Mo, Tu, We, Th, Fr, Sa, Su	8:00 - 23:00
	DHW	Mo, Tu, We, Th, Fr, Sa, Su	7:00 - 23:00
Time program 4	Heating	Mo, Tu, We, Th, Fr	7:00 - 16:00
		Sa, Su	— —
	DHW	Mo, Tu, We, Th, Fr	6:00 - 16:00
		Sa, Su	— —

Setting report for individual adjustments

			1 st ON	1 st OFF	2 nd ON	2 nd OFF	3 rd ON	3 rd OFF
Time program 1	Heating	Mo-Su						
	DHW	Mo-Su						
Time program 2	Heating	Mo-Fr						
		Sa-Su						
	DHW	Mo-Fr						
		Sa-Su						
Time program 3	Heating	Mo						
		Tu						
		We						
		Th						
		Fr						
		Sa						
		Su						
	DHW	Mo						
		Tu						
		We						
		Th						
		Fr						
		Sa						
		Su						
Time program 4	Heating	Mo						
		Tu						
		We						
		Th						
		Fr						
		Sa						
		Su						
	DHW	Mo						
		Tu						
		We						
		Th						
		Fr						
		Sa						
		Su						

