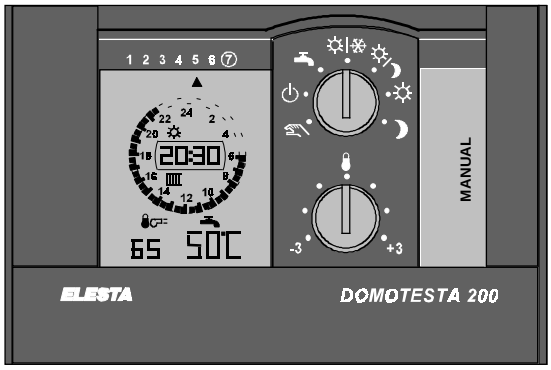
Data sheet

RDO244A000



Application

Heating controller based on microprocessor technology with permanently stored settings for weather- and/or room temperature compensated control of the boiler temperature.
For residential and industrial buildings. Designed for plant engineering.
Energy production with many different energy generators for the activation of one heating circuit (boiler circuit) or one mixing valve-heating circuit (radiator or floor heating circuit) and of the domestic hot water charging.
Straightforward operation due to the clearly structured operating levels.
For the expert: Comprehensive information level for diagnosis and function checking of the system for time-saving, reliable putting into operation and maintenance.

Expandability

Connectable to the pole-reversible two-wire connection (D-Bus):
- 1 room remote control (room sensor) and/or 1 room sensor
- 1 radio controlled clock module (DCF77, emitter Frankfurt a. M. Germany)

Execution

Compact device for installation from the front in boiler or control cabinet, mounting or quick fastening on carrier rails according to DIN 46277. Plastic housing, IP 40 according to DIN 40050 (built-in).
Pluggable on base plate with screw terminals (2x15) or for connection by means of edge connectors (2x15). Control panel standard cut-out 138 x 92mm for controller class 144 x 96mm.
Mounting depth with edge connectors: 81mm / mounting depth with base plate: 101mm.

Characteristics

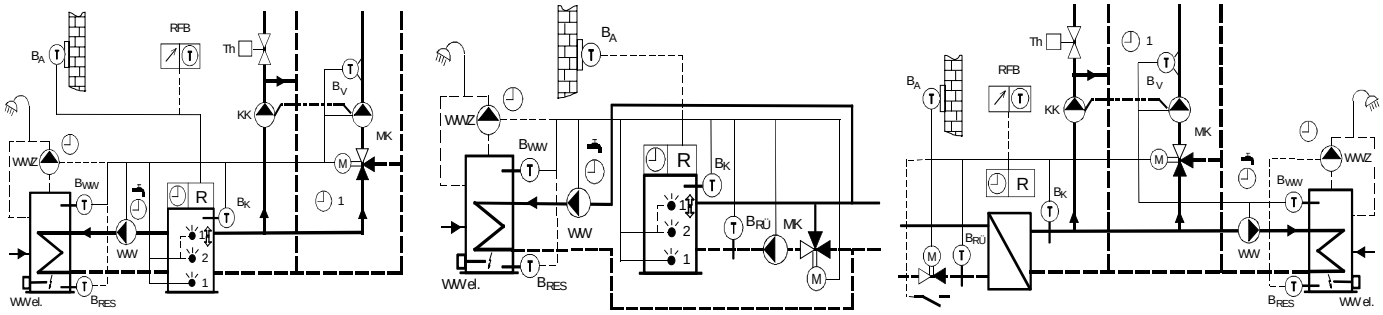
- Heating controller based on microprocessor technology with **analog operation concept** and digital setting possibilities
- Several feedback control circuits with configurable function:
  - 1-stage, 2-stage 2-point feedback control or modulation for burner (or heat pump)
  - Autonomous wood boiler return flow maintenance with/without second energy generator
  - District heating energy control with heat exchanger
  - Mixer feedback control with PI behaviour if the mixer heating circuit is used
  - Automatic for domestic hot water
- Buffer storage usable with storage sensor (2 sensors also possible)
- Hot water charging can be executed with electro insert
- Domestic hot water thermostat or sensor can be connected (2 sensors also possible)
- Easy program input via operation keys or PC-program
- Digital, readily understandable display of time, program, temperatures, system status and basic settings in the straightforward LCD information field
- Block formation and copy function for easy setting of the weekly switch clock
- Three-channel digital weekly switch clock with standard program (automatic summer/winter time switch-over is possible)
- Operation reserve > 24 hours with maintenance-free capacitor
- Counter of operating hours to record the burner operating times (burner stage 2 internally controlled)
- Impulse counter for burner stage 1 activation (burner stage 2 internally controlled)
- Service interface "RS 232" (with cable signal converter RZB008A connectable to PC)
- Self-adaptive heating curve, self-learning optimization
  Most economical use of energy by time adaption of start of heating and temperature lowering
- Holiday program
- "Help" functions for reactivation of the standard clock programs and of the set heating curve
- Control inputs for external commands over terminals
- Automatic frost protection (system frost protection and building frost protection)
- Automatic heating limits (automatic summer/winter and day's heating limit switching)
- Energy-saving automatic pump control
- Operating instruction inside the device

Applications

- **Burner 1, 2-stage or modulating**
- **Mixing valve-heating circuit and direct boiler-heating circuit (auxiliary-heating circuit)** (Both pumps will be energized with the same relays)

The application can be altered by means of the configuration parameters.

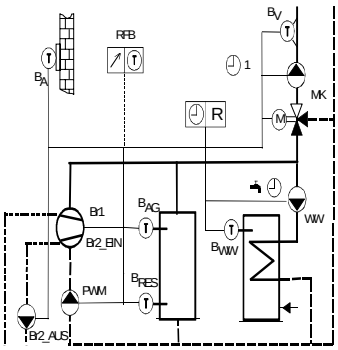
- **Burner 1, 2-stage or modulating**
- **Fixed boiler value control with return flow control**
  (possible with outside sensor)
- **District heating control**
  (with Q_{min} -limitation possible)
- **Mixing valve-heating circuit and direct boiler-heating circuit (auxiliary circuit)**



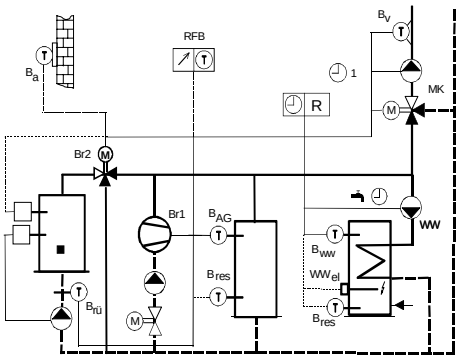
Technical data	Power supply	230	VAC +10%...-15%, 50...60Hz	
	Power consumption	5	VA	
Settings	Room temperature correction	± 3	°C	
	Retention of parameter data	≥ 30	years	
Time switch	Digital week time switch	3	channels	
	Freely programmable switching points per day	6		(total 42 per channel)
	Switching points, switching distance	15	min	
	- Accuracy (deviation)	< 2.5	sec/day	(at T_A=20°C)
	- Operation reserve, typical	> 24	hours	(at T_A=0..50°C)
	LC display indication	time, day of week, switching program,...		
Service interface	Level not DC-decoupled	5	V	(TTL)
	Transmission rate	600..19200	Baud	
Inputs	Cable lengths device bus total, maximum (Remote controls / radio controlled clock)	200	m	(A≥ 1.0mm²)
	Maximum lenght of other cables	100	m	(A≥ 1.0mm²)
	Sensor input NTC (B_A=outdoor)	10	kΩ	(T_A=25°C)
	Sensor inputs PTC (B_{WW}=domestic hot water / B_K=boiler / B_V=flow / $B_{RÜ}$=return / B_{RES}=reserve)	1	kΩ	(T_A=25°C)
	Sensor input PT1000 (B_{AG}=flue gas)	1	kΩ	(T_A=0°C)
	Digital inputs with "Pull up" resistor	5	V	
	Counter of operating hours DC-decoupled	230	VAC	
Outputs	PWM output voltages	11	V	(Ri = 50Ω)
	-relays directly controllable	Yes		(12VDC, Ri > 600Ω)
	Relay 1 on "Burner stage 1" ON	for 250	VAC, 4A cos φ ≥ 0,6	
	Relay 2 on/off "Burner stage 2" ON/OFF	for 250	VAC, 4A cos φ ≥ 0,6	
	Relay KK "Boiler pump" or	for 250	VAC, 4A cos φ ≥ 0,6 *	
	MK "Mixing valve pumps"			
	Relay WW "Hot water charging pump"	for 250	VAC, 4A cos φ ≥ 0,6 *	
	Relay MK "Mixing valve OPEN"	for 250	VAC, 2A cos φ ≥ 0,6 *	
	Relay MK "Mixing valve CLOSE"	for 250	VAC, 2A cos φ ≥ 0,6 *	
	* Max. total current for terminals	* max. 6	A cos φ ≥ 0,6	
	* KK / WW / MK / MK / MK			
Terminals	Wire cross section per screw terminal max.	2 x 1.5	mm²	
Standards / Regulations	Protection class	II according to EN60730		
	Low-voltage part	Protection isolated		
	EMC noise emission	EN50081-1 / EN55022		
	EMC noise immunity	EN50082-1 / EN60730		
	Approval	EN60730 (SEV)		
	CE	CE conformity		
	Protection mode: front	IP 40 according to DIN 40050 (built-in)		
	back	IP 00 according to DIN 40050		
Environment	Temperature: storage	-20...+60	°C	
	operation	0...+50	°C	
	Ambient humidity	Class F according to DIN 40040		
	Weight	500	g	

Applications:

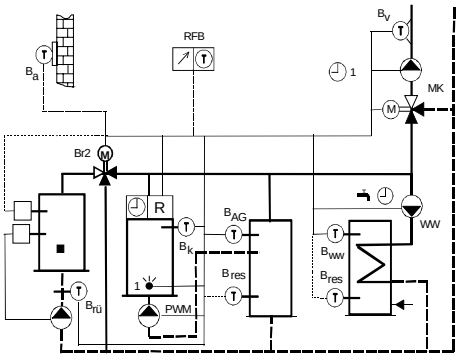
- **2-stage heat pump**
- with/without salt water pump
- with/without buffer storage (-charging pump)
- Mixing valve-heating circuit or direct heating circuit



- **Autonomous wood boiler return flow control and 1-stage heat pump**
- Buffer storage
- **Mixing valve-heating circuit**

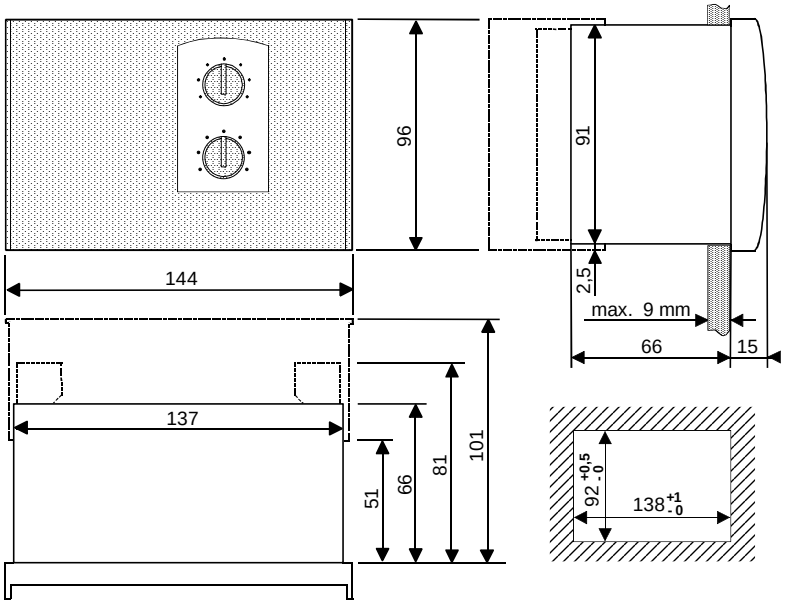


- **Autonomous wood boiler return flow control and 1-stage burner with/without pump**
- Buffer storage
- **Mixing valve-heating circuit**



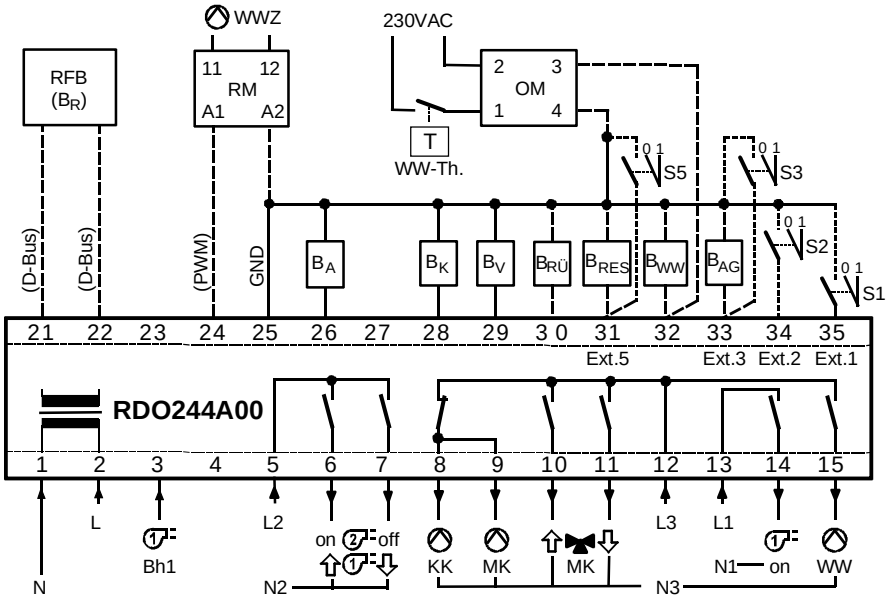
Connector position	Terminal number	Symbols designation	Description	
A: 230 VAC inputs and outputs	1	N (N_)	Neutral	
	2,5,12,13	L, L2, L3, L1	Phase	
	3	⊂ Bh1	Counter of operating hours burner stage1 (230VAC)	
			District heating: minimal flow limitation	
	6	⊂ 2 on / ⊂ 1⇧	Burner stage 2 ON / stage 1 modulation OPEN	
			District heating, autonomous return flow control: "warmer"	
	7	⊂ 2 off/ ⊂ 1⇩	Burner stage 2 OFF / stage 1 modulation CLOSE	
			District heating, autonomous return flow control: "colder"	
			Diverting valve possible in case of two 1-stage energy generators	
			Salt water pump	
	8	⏲ KK	Boiler pump parallel to mixing valve circuit pump	
	9	⏲ MK	Mixing valve pump parallel to boiler circuit pump	
	10	⇧⋈ MK	Mixing valve OPEN: command "warmer"	
	11	⋈⇩ MK	Mixing valve CLOSE: command " colder"	
	14	⊂ 1 on	Burner stage 1 ON	
	15	⏲ WW	Domestic hot water charging pump	
B: Measuring and control inputs	21	D-Bus	Devices bus for room remote control, ...	
	22	D-Bus	Devices bus for room remote control, ...	
	24	PWM	Relay module connectable or PWM output signal	
			(Buffer storage-charging pump, WW-electric coil, ...)	
	25	GND	Ground	
	26	B_A	Outdoor temperature sensor	FT12A
	28	B_K	Boiler temperature sensor	RFT203A (FT1A, FT2A)
	29	B_V	Flow temperature sensor	FT1A (FT2A)
	30	$B_{RÜ}$	Return temperature sensor	FT1A (FT2A)
	31	B_{RES}	Reserve sensor (WW2, SP2)	RFT213A (FT2A)
		S5 (Ext 5)	Input 5 configurable (switch or sensor)	
	32	B_{WW}	DHW temperature sensor	RFT213A (FT2A)
	33	B_{AG}	Flue gas temperature sensor or	RFT223A
			Buffer storage sensor top	RFT213A
		S3 (Ext 3)	Input 3 configurable	
	34	S2 (Ext 2)	Input 2 configurable	(ext. summer operation)
	35	S1 (Ext 1)	Input 1 configurable	(ext. standby controller)
Other symbols	RFB		Remote control for room temperature correction with room temperature sensor	
	RM		Relay module: external relay: 12VDC, Ri > 600Ω (printrelay)	
			Mounting base with screw connection ZGE005	
			for relay ELESTA SVR362 / 12VDC:	
			SVR362: terminals: 11, 12 N.O. contact, 14 N.C. contact	
			SVR362: terminals: A1, A2 connection 12VDC	
	OM		Optocoupler module for domestic hot water thermostat	
			230VAC connections:	low voltage connections:
			1 red (L)	3 grey (5V)
			2 black (N)	4 black (GND)
	⏲ WWZ		Domestic hot water circulation pump (controllable with RM)	
	WW-Th		Domestic hot water thermostat (directly connectable with low voltage contact)	
	WW el.		Domestic hot water charge, electrical (by the electro insert)	
	Th		Thermostat valve should control the radiators	

Dimensions (mm)



Installation / connection diagram

Wire according to application diagram or total current flow plan. Connection through specialists according to local regulations. The temperature sensor- and remote control-connections to the controller are supplied with low voltage protection. Preferrably laid out separately from cables for the power supply.



The function of the inputs (switch functions) is configurable!

Works settings of the configurable ext. inputs:

S1 : External standby controller
0 = Function as per operating mode switch on controller
1 = Controller standby (heating operation OFF; domestic hot water OFF, frost protection active) (Attention: The domestic hot water frost protection is no longer active if a domestic hot water thermostat is used!)

S2 : External summer operation
0 = Function as per operating mode switch on controller
1 = Summer operation active (heating operation OFF, domestic hot water charging active; building frost protection active)

S3 : Works setting: no function
(configurable as flue gas sensor or buffer storage sensor)

S5 : Works setting: no function
(configurable as buffer storage sensor 2 or domestic hot water sensor 2)

Delivery includes

RDO244A000 Heating controller DOMOTESTA; with display lighting