

LK 160 SmartBio®

- With SmartBio you can optimize the energy efficiency, and have more environmentally friendly biomass fuel solution



Technical Data

Voltage:	230 VAC, 50 Hz
Power consumption:	3.5 VA
Relay output:	Max. 240 VAC, 4 A
Triac outputs:	230 VAC \pm 10%, 1 A, 200 VA
High-efficiency pump:	Analog output 0 -10 V, max. 10 mA PWM output 100 Hz - 2 kHz
Sensors:	PT 1000
Display:	TFT backlit colour display 47 x 35 mm
Protection type:	IP 20
Protection class:	II
Approvals:	CE



LK 160 SmartBio® is an electronic differential temperature controller with several preset hydraulic systems for energy efficiency in heating systems with storage tanks. The chosen hydraulic system and operation status is shown on the backlit colour display. Controls and settings are easily carried out using the rotating knob and the esc-button. LK 160 SmartBio® can handle high efficiency pumps.

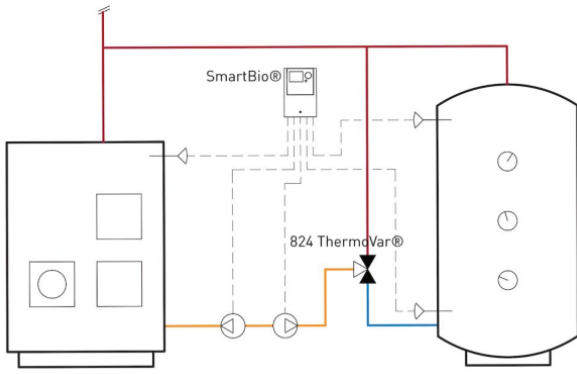
LK 160 SmartBio® can also activate an immersion heater or burner if the temperature in the primary tank falls below the selected value. The additional heat has a sophisticated delay function that further adds to the efficiency of the system.

FEATURES

- Several hydraulic systems
- Two outputs for circulating pumps
- Pump exercise
- Floating relay output
- Sensor balancing
- Adjustable delay function for additional heat
- Graphic, multilingual colour display with time and date
- User-friendly menu system
- SD card slot for data logging (micro SD)

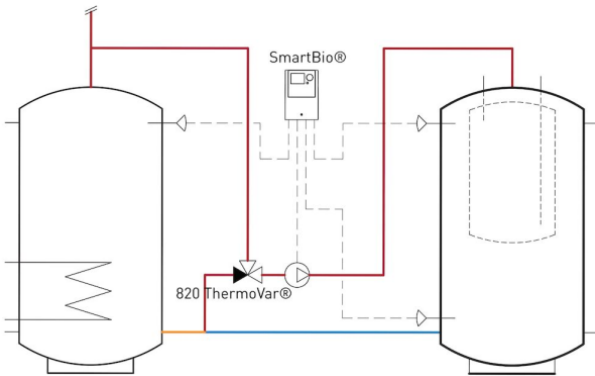


- Speed control possible for two circulation pumps via PWM signal



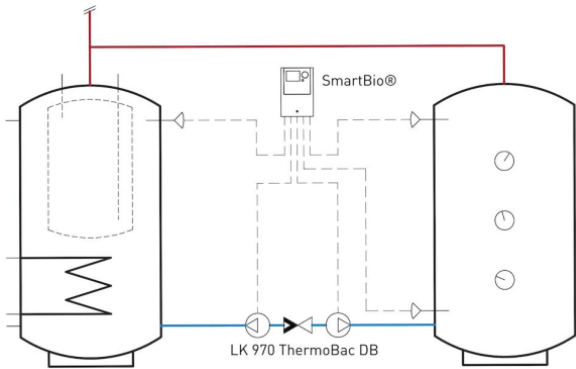
Hydraulic System 1.2

The LK 824 ThermoVar® is a thermic valve with double acting check valve function which ensures a high return temperature to the solid fuel boiler, thus increasing the efficiency of the system – see spare parts and accessories.



Hydraulic System 2

Hydraulic system 2 is intended for storage tank systems in which heating water and domestic hot water are taken from a secondary tank. Heat is to be transferred from the main tank to the secondary tank. By measuring the temperature difference between the tanks LK 160 SmartBio® controls the charge pump.



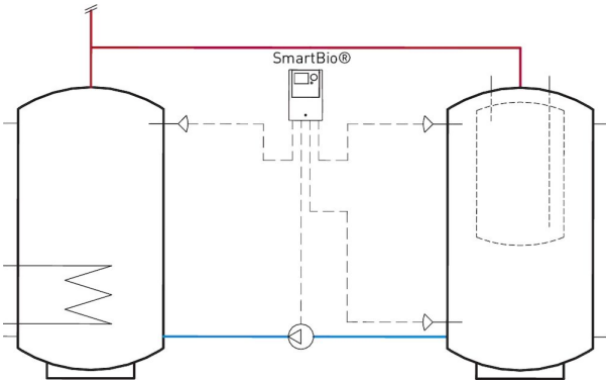
Hydraulic System 1.1

Hydraulic system 1 is intended for storage tank systems with a primary and secondary tank. LK 160 SmartBio® controls the two circulating pumps between the tanks. When the primary tank is fully charged the charge pump starts at the chosen temperature to fill the secondary tank. When the temperature in the primary tank falls, the recharging pump starts and transfers energy back to the primary tank.

HYDRAULSYSTEM 1.1

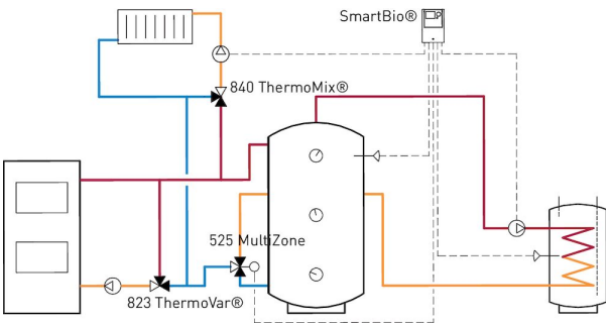
In order to prevent self-circulation in both directions LK 970 ThermoBac DB double acting check valve should be mounted between the circulating pumps - see under spare parts and accessories.





Hydraulic System 3

Hydraulic system 3 is intended for the charging of a storage tank with a pellet, oil or gas fired burner. By measuring the temperatures in the tank and boiler LK 160 SmartBio® controls the burner and charge pump.



Hydraulic System 4

Hydraulic system 4 is intended for storage tank systems with domestic hot water tanks. This system gives priority to the heat in the upper part of the main tank. This enables a fast transfer of heat to the domestic hot water tank. LK 160 SmartBio® controls the charge pump to the domestic hot water tank, the zone valve of the main tank and the circulator in the heating loop.

Items Included



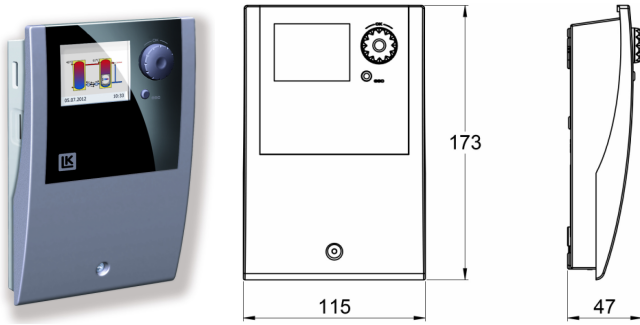
Standard Kit

- Differential temperature controller LK 160 SmartBio®
- Three sensors PT 1000 - 4 m cable

Kit for Hydraulic System 1.1

- Differential temperature controller LK 160 SmartBio®
- Three sensors PT 1000 - 4 m cable
- Two circulating pumps Grundfos Alpha1 25-60/130
- Two ball valves 1"
- Check valve with double acting flow LK 970 ThermoBac DB
- Four gaskets EPDM

LK 160 SmartBio®



Article	Type	Weight (kg)
181234	LK 160 SmartBio standard kit	0.7
181233	LK 160 SmartBio® kit for hydraulic system 1	6.2

Accessories & Spare parts



Article no.	Article	Position
025017	Differential temperature controller SmartBio®	1
181186	Tank sensor PT 1000 Ø 6 mm - 4 m cable	2
187129	Circulating pump Grundfos Alpha1 25-60/130	3
187017	Ball valve F 1"	4
187018	Ball valve F 1¼"	5
187019	Ball valve 28 mm	6
180487	Check valve with double acting flow LK 970 ThermoBac DB	7
180812	Sensor pocket 150 mm	8
013025	Gasket EPDM 1½" - Ø44 x Ø27 x 2 mm	9
181553	LK 824 ThermoVar® M 1½", 45 °C	10
181554	LK 824 ThermoVar® M 1½", 55 °C	10
181555	LK 824 ThermoVar® M 1½", 61 °C	10
181556	LK 824 ThermoVar® M 1½", 66 °C	10
181557	LK 824 ThermoVar® M 1½", 72 °C	10
180810	Connection M 1½" x M 1½", L30 mm	11