

## HRP20/23 Optimiser/Compensator

The HRP20/23 are specifically designed for the regulation, control, optimisation, and monitoring of heating systems. These controllers are ideal for applications where heating systems involve boiler regulation or the control of non-storage heat exchangers as a primary source in addition to the main heating circuit, where the loop may require remote operation, Domestic Hot Water control, and an extremely easy to use interface for the end user.

The controller also incorporates Pump Auto changeover options, legionella protection for the DHWS Storage Calorifier, Automated Summer/Winter Time Changeover, Leap Year Complaint calendars, Full Configuration Back Up and restore options, and 16 Pre-defined application Macros that will control without intervention.

In setting the plant macros, the HRP is completely configured, the accompanying HRP software menus are set, the parameters are configured, and the input and output signals are assigned. The user is guided through the settings via a plaintext menu system. Reading and writing of the data takes place in 3 priority levels accessed through individual codes.

Eight HRP/LRP controllers can be administrated on each of the employed HRP/LRP Bus Systems, each LAN can operate over a distance of 1000 m. Communication to all bus participants can take place between each controller with the BMS. Additionally remote control of one HRP/LRP is possible from any other



HRP/LRP connected on the same LAN. Important plant values and information can also be shared to facilitate plant integration directly between controllers without the need of a front end.

For wide area networks, the separated plants can utilise data transmission to the BMS via modem over the public telephone network. This can take place with direct connection of the modem to the HRP controller.

HRP20-S has the same functionality as the HRP20 but does not have a local CAN bus for connection to other HRP/LRP controllers.

HRP23 has the same functionality as the HRP20 but does not have integrated display (blank version).

### Model Types

Model	Description
<b>HRP20</b>	HRP20 Optimiser/compensator with 3-point output for valve actuator
<b>HRP20-S</b>	HRP20-S Heating Optimiser/Compensator without CAN Bus controller
<b>HRP23</b>	HRP23 Optimiser/Compensator without display

### Features

- Designed for the regulation, control, optimisation and monitoring of heating plants with boiler regulation or district heating plants.
- Bus and modem can be connected.
- Dual control of a District Heating non-storage plate heat exchanger and the compensated circuit is possible in addition to DHWS.
- One-knob operation and a graphic, illuminated display for the input and query of all DDC data (not HRP23).
- Simple extension of the basic functions by means of the HRP software menus such as Optimisation, Room Correction, Set Point Limitation, Stand by, Boiler Regulation, Domestic Hot Water tank control, Circulation Pump, Operating Hours Counter, Heat Counter, Pump Blocking Protection, Legionella Protection.
- 16 Pre-programmed applications
- Remote control features and easy to set up remote overrides

In setting the plant macros, the HRP is completely configured, the accompanying HRP software menus are set, the parameters are configured, and the input and output signals are assigned. The user is easily guided through the operating system with a plain text menu.

- Input and query of the data in 4 priority levels can be accessed with code keys.
- Three independent Time Schedules and additional single shot annual program.
- Holiday Scheduler
- Trend value acquisition and display of important plant values. (Data can be recorded on HRP23 but needs to be viewed by another controller with display).
- Upto 8 HRPs can be administered by means of the HRP LRP Bus. System Communication of all bus participants among each other with queries or modifying all parameters that are an integrated part of the HRP. HRP diagnostics graphically display active members and permit sensor sharing.

A direct connection to the BMS with the RS232 interface is available. For widely separated plants Data transmission for BMS via GSM modem or a modem over the public telephone network is also available.

Technical Data	Inputs and outputs	5 binary inputs BE	Zero-voltage contact Two of these are impulse inputs 20Hz
		4 binary outputs BA	Relay contacts zero-voltage max. 6 (3)A; 250Vac
		1 3-point output for mixing valve actuator	2 relay contacts zero-voltage max. 6 (3)A; 250Vac
		6 analogue inputs AE	KP10, active measuring element
		1 analogue input AE	0...10V continuous (remote setpoint setting)
	Interfaces	Analogue/digital conversion	10 Bit
		Serial RS232	Building Management System BMS, modem
	Bus connection (HRP20 only)	CAN Bus	Maximum 8 HRP/LRP to one bus system
	Power Supply	230Vac ±10%; 50...60Hz; 12VA; 52mA	
	Nominal voltage	HRP20/HRP23: 12VA, current requirements 52mA at 230Vac	
	Displays	Graphics display with backlighting LED for error messages and manual operation	
	Diagnosis jack	Diagnosis/data backup	
	Operation HRP20	One rotating knob, selection button [SET], back step button [ESC]	
	Fuse	Fuse S1 6A (T) for external switching Fuse S2 630mA (T) for electronics Accessible from the rear	
	Processor	80C592	
	Memory	32kByte RAM; 240kByte Flash PROM	
	Operating system	Multi-tasking	
	Mains failure data backup	Lithium battery, unlimited	
	Degree of electrical protection	IP 20	
	Operating temperature	0...45°C	
	Environmental humidity	In service: 20-80%rh, non-condensing Out of service 5-90%rh, non-condensing	
	Housing	Plastic housing fire-resistant	
	Measurements	HRP20: 198.5mm width x 110mm height x 85mm depth (with wall console W/HRP 15mm deeper)	
	Front panel cut-out	200.4mm x 112.0mm	
	Weight	1.2kg	
	Agency Approvals	CE	

**Inputs & Outputs**

	Details
Temperature inputs	6 x analogue inputs for active measuring element type KP10
Analogue inputs	1 x analogue input 0...10V
Digital inputs	5 x binary inputs
Actuator Outputs	1 x 3-point output for valve actuator (230V rated) can be used for other purposes
Digital Outputs	4 x 230V or zero-voltage, 3A for pumps, boilers or plate exchanger
Power Supply	Mains 230Vac ±10% 50...60Hz

**Temperature Ranges**

Please note the sensor ranges of the HRP when dealing with the **trend curves and the outside temperature assignment**.

The sensors are polarity sensitive.

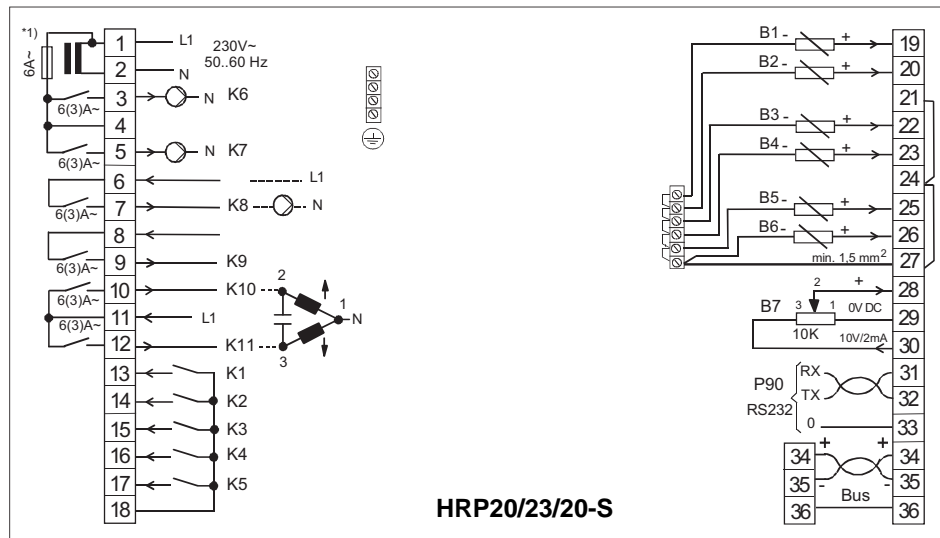
Screened cable should be used.

**For temperatures outside these limits, the value is represented as " " (invalid)!**

Input Address	Name	Lower Limit	Upper Limit	Input Type	Units
b1	Outside Air Temperature	-50.0	70.0	KP10	°C
b2	Space Air Temperature	0.0	120.0	KP10	°C
b3	Compensated Flow Temp	0.0	120.0	KP10	°C
b4	Sensor 4	0.0	120.0	KP10	°C
b5	Sensor 5	0.0	120.0	KP10	°C
b6	Sensor 6	0.0	120.0	KP10	°C
b7	Sensor 7	0.0	100.0	0-10V	% <sup>a</sup>

a. b7 is scalable between -1000.0 and +1000.0

**Wiring Diagram**



\*1) By removing the fuse S1 (6A(T)), the outputs K6 and K7 become zero-voltage.

